



BRITISH
TRAUMA
SOCIETY

Conference Programme

ANNUAL
SCIENTIFIC
MEETING

24+25.11.2021

Location: Virtual/Online



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1988

Dedicated to caring for the injured
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Welcome address from the president – Ansar Mahmood

Dear Colleagues

Welcome to the 32nd annual scientific meeting (ASM) of the British Trauma Society. When planning the meeting at the beginning of 2021, there was a great deal of uncertainty regarding Covid-19 and we so decided to hold this meeting as an online conference.



In the last few months the executive committee has worked tirelessly and introduced innovative ideas to make this online meeting possible. We feel that this meeting should be informative, entertaining while covering topics close to many of our hearts and practice. You, the audience will be the final judge.

In November 2022 we look forward to reverting back to a face-to-face meeting and seeing old friends and meeting new ones!

We have had a large number of applications for oral and poster presentations and as you can see from the programme we have two full days. On both days in the daytime there will be oral and poster presentations and in the evenings keynote speakers.

For ease and precision the oral presentations are pre-recorded and they will be played at the set times followed by live questions from the executive committee and the online attending audience. For practical reasons the executive committee would be grateful for any questions to be emailed to the executive email listed below and the chairman will then put these questions to the speakers.

We have allowed generous time between presentations to allow for internet connections and setting up next online presentation. The programme has been rehearsed to streamline the presentations.

In the evenings we have trauma champions from around the globe presenting their topics with live Q&A in 30 minute slots and these stellar talks and speakers are not to be missed – one of the advantages of online meetings is that these talks will be recorded and made available to delegates after the conference for a period of time and to members permanently on the website members area.

On the first evening Professor Lecky and Mr Marinocowitz will kick-off with a dual act on the effect of Covid on trauma based on data from TARN. They will be followed by Dr Jan Jansen a ‘multi-national’ trauma surgeon now in Birmingham in the USA, who will be speaking about contemporary techniques of haemorrhage control. He will be followed by Mrs Tucker a consultant plastic surgeon from Oxford based on her experiences in trauma care overseas and in Oxford, will be talking about Orthoplastics Care across continents and what we can learn from each other.

Violence reduction in UK will be presented the next evening by Sir Martin Griffiths, from London, a trauma vascular surgeon and the NHS lead for violence reduction in UK. He will be followed by Dr Jamie Colman a leading trauma surgeon from Denver, she will present on wellness and sleep deprivation for surgeons, but obviously applicable more widely. Mr Bob Handley, immediate past president of British Orthopaedic association will discuss the topic of getting it right the first time (GIRFT) in trauma. Mr Alberto Gregori, an orthopaedic surgeon and chair of World Orthopaedic Concern will follow him with lessons learnt from longstanding work in low and middle income environments.

Finally Professor Hans-Christoph-Pape from Zurich and well known internationally for his research work on DCO concepts, will present an Update on damage control orthopaedic concepts and safe definitive surgery.

All the presentations will be judged and handsome monetary prizes awarded for the best paper of a scientific nature, the best presentation of a clinical nature, as well as for the best poster. TLA medicolegal will be presenting a cash prize for the best presentation of medicolegal importance.

Apart from a couple of individuals the executive committee consists of young surgeons with an interest in trauma care. Our desire is to expand this committee and I would encourage all members to join and contribute. We are a multidisciplinary society we would like our membership to include all those involved in trauma management from road side to recovery.

I would encourage non-members to join NOW! - as this year there is a one-off offer of only £20 for annual membership via the website on www.britishtrauma.com.





The trade has been very generous and we thank them for contributions to this meeting and continued association with BTS, which helps subsidise the fees paid by delegates to our conferences and courses.

Archer Yates Associates have helped to organise this and previous meetings for more than a decade and I would like to acknowledge their tremendous help over the years. We now part company as good friends.





Ansar Mahmood MB, ChB FRCS(Orth) Consultant Trauma and Orthopaedic Surgeon Birmingham, UK
President of the British Trauma Society

A handwritten signature in black ink, appearing to be 'AM', written in a cursive style.




EXECUTIVE COMMITTEE

	<p>Ansar Mahmood President</p> <p>I am a Consultant in Trauma & Orthopaedic Surgery and the Major Trauma Service at the Queen Elizabeth Hospital Birmingham (QEHB), part of University Hospitals Birmingham, which is the largest trust in the UK. QEHB is the regional Major Trauma Centre for the City of Birmingham and one of the highest volume major trauma receiving units in the UK. We are currently also home to the largest hip fragility fracture unit in Europe. I am the research lead for major trauma at UHB and a Honorary Senior Clinical Lecturer at University of Birmingham. I have been a proud member of the British Trauma Society since 2003 and wish to see it continue to thrive and grow as an inclusive multi-disciplinary society associated with all those interested in Trauma at any level from student through to senior clinician/manager that is looking after injured patients.</p>
	<p>Stuart Matthews Immediate Past President and Treasurer</p> <p>Highly and widely experienced Trauma Surgeon and Educator used to working in austere as well as in cutting edge environments with French as a Mother Tongue and medicolegal expert for Personal Injury since 1989 and Clinical Negligence since 1994. Stuart's medical interests include the management of multisystem trauma and complex fractures.</p>
	<p>Amratlal D Patel Trustee</p> <p>I have had a life-long interest in trauma ever since my first DHS in Sheffield in 1979. My training was on the South-west rotational training scheme based in London and Surrey followed by one year on a trauma fellowship at Sunnybrook Medical Centre, Toronto with Dr Schatzker, learning about multiply injured patients and pelvic and acetabular surgery. I also learnt about the shoulder at Royal National Orthopaedic hospital in Stanmore. I have retired from clinical work. I am now Orthopaedic lead for Norwich Medical school. I have been a member of British trauma Society (BTS) since its formation in 1988 and served as a president recently. I am now a trustee of BTS and remain involved with the running of the society.</p>
	<p>Alex Bolt Secretary</p> <p>I graduated from Keele University and spent my surgical training years within the West Midlands trauma network. I completed my orthopaedic training on the Oswestry Stoke rotation followed by an ATP hand surgery fellowship in Oxford with a further fellowship planned in Birmingham until 2022. I have a passion for education and hope to engage clinicians involved in trauma care across specialties to facilitate their interest and develop their skills in the management of trauma. My clinical interests are hand & wrist surgery and general trauma with a specialist interest in complex hand & wrist trauma.</p>

EXECUTIVE COMMITTEE

	<p>Prof Peter Giannoudis Scientific Office and President Emeritus</p> <p>I work as the Professor (School of Medicine, University of Leeds) and Honorary Consultant at Leeds General Infirmary (LGI), a major teaching hospital serving a population in the region of 3.5 million. It is a major trauma unit, accepting complex trauma through it's busy Accident and Emergency Department and from other hospitals in the region. I have successfully completed an AO Trauma Fellowship in Hannover, Germany and a Trauma Fellowship at Louisville, Kentucky USA.</p>
	<p>Rory Bonner Medical Student Liaison Officer</p> <p>I am currently completing Core Surgical Training in West Yorkshire with interests in Plastic Surgery and Orthopaedics. I completed a Trauma Surgery elective in Australia and enjoyed my time working as a Foundation Doctor at the major trauma centre in Leeds. I value my experiences in Medical Education and strive to encourage students to get involved in trauma care and academia. Any students or Universities who want to find out more about the British Trauma Society should contact me without hesitance.</p>
	<p>Paul Andrzejowski Web Officer</p> <p>One of the reasons I became a doctor was to work one day in Trauma. It's what I get up for in the morning and I always look forward to another day at the coal face! I got my first taste of Major Trauma as a student in Nottingham, and completed my Core Surgical Training in Yorkshire, with T&O experience at Bradford and the Major Trauma Centre in Leeds, where I am now an SpR on the Yorkshire and Humber North Rotation, and leading the FIT Study, looking into Functional Outcomes after Major Trauma – which should help to deepen our insight into what's most important for patient recovery following injury.</p>
	<p>Sadia Afzal Outreach Liaison</p> <p>I graduated from Barts and The London Medical School, completing my core surgical training in the East of England deanery. I went on to gain invaluable experience as a trauma fellow at St George's Hospital, a level 1 major trauma center in London which cemented my interest in polytrauma. I am currently a specialist registrar in the Northwest deanery. I have an interest in collaborative research and am a member of the North West Orthopaedic Research Collaborative committee. I also enjoy overseas work and have worked in association with World Orthopaedic Concern on their trainee committee as well as the Northwest Orthopaedic Trauma Alliance for Africa on collaborative projects between UK and Ethiopian orthopaedic trainees. I am enthused to be part of the BTS executive committee, working in partnership with other disciplines and specialties to promote education and research in the care of the injured patient.</p>

Keynote Speakers 2021

 <p>Prof Fiona Lecky</p>	<p>Clinical Professor / Hon. Professor / Hon. Consultant in Emergency Medicine University of Sheffield / University of Manchester / Salford Royal Hospital NHS Foundation Trust UK</p>	<p>Fiona Lecky is Clinical Professor of Emergency Medicine at the University of Sheffield, holds an Honorary Chair at the University of Manchester and is an Honorary Consultant Emergency Physician at Salford Royal Hospitals NHS Foundation Trust. She is also Research Director of the Trauma Audit and Research Network - the largest European Trauma Registry (www.tarn.ac.uk), chaired the 2014 NICE Head Injury Guideline Development Group and is an investigator for "Collaborative European Neurotrauma Effectiveness Research in Traumatic Brain Injury (CENTER-TBI)" a multicentre 21 European Country Study to improve understanding of "the most complex disease in the most complex organ".</p>
 <p>Dr Carl N Marincowitz</p>	<p>School of Health and Related Research Clinical Lecturer in Emergency Medicine</p>	<p>Currently completing Higher Specialty Training in Emergency Medicine in South Yorkshire. He graduated from Robinson College, University of Cambridge Medical School in 2010 and completed Foundation Medical training in the East of England Deanery. In 2012 began specialist training in Emergency Medicine in Yorkshire and the Humber. NIHR Academic Clinical Fellowship in Emergency Medicine between 2013-2016 . NIHR Doctoral Research Fellowship on the risk assessment and Emergency Department management of patients with head trauma and subsequent brain injury. He was awarded Post Graduate Researcher of the year at Hull York Medical School and the Rod Little Prize in Emergency Medicine for the research related to his PhD. Co-chief investigator in the Pre-Hospital PRIEST project evaluating risk stratification and triage of patients with suspected COVID-19 infection. He is working with collaborators from CENTER-TBI on a range of projects related to traumatic brain injury. Carl is leading a project within the urgent care theme of the NIHR Yorkshire, and Humber (YH) Applied Research Centre (ARC) aimed at identifying factors which predict ED attendances in care home residents and explain variation between care homes.</p>
 <p>Dr Jan O. Jensen</p>	<p>Honorary Senior Lecturer Birmingham Alabama Part time, honorary consultant trauma surgeon, at St Mary's Hospital in London.</p>	<p>Dr. Jansen joined the Division of Trauma & Acute Care Surgery faculty in August 2017 Birmingham Alabama USA. Undergraduate training in London (MBBS) in 1997 and an intercalated Bachelor of Science degree in anatomy in 1994. Scotland for postgraduate general surgical training, Clinical fellowships in trauma surgery in Johannesburg</p>



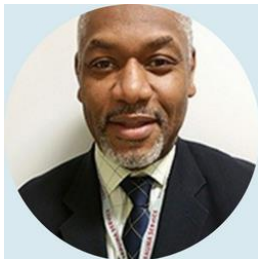
Sarah Tucker

Consultant Plastic and Reconstructive Surgeon, Clinical Lead for Plastics Trauma service Oxford University Hospitals

Sarah grew up in a small town in Devon and applied to study medicine at Bristol. She took a gap year and got a scholarship to spend the year working in healthcare in Pakistan. It was this experience of being immersed in a foreign culture that changed her world view for life. Following this, she went on to study medicine and train in plastic surgery with the expectation that she would be involved in work overseas further on.

Towards the end of her training Sarah took 2 years out to live and work in Nepal, taking her young family with me. She learned the language and lived in a local village setting on the outskirts of Pokhara, working across 2 sites. The work involved correcting burns contractures, treating the effects of leprosy, operating on severe pressure sores and overseeing the local government burns unit. This experience helped Sarah to assess what was helpful in terms of interventions from wealthy nations and it became clear to her that the key to building a sustainable service was by working with local surgeons to empower them and facilitate training for them.

On returning to the UK, Sarah completed her plastic surgery training and subsequently joined the BFIRST committee. She had just settled into a consultant post at Oxford when the Nepal earthquake happened in 2015. She carried out a scoping visit on behalf of BAPRAS and forged strong links with the plastic surgery team out in Kathmandu. Sarah has visited them regularly to provide training and support as directed by them ever since. As a result of listening to what the Nepali surgeons felt they needed, she negotiated the development of global fellowships with BFIRST where surgeons go for an extended period to spend time with star performing surgeons in a setting that equips them with the skills and experience for the work in a resource poor setting.



Martin Griffiths

Consultant Trauma and Vascular Surgeon at Barts Health NHS Trust and National Clinical Director for Violence Reduction for NHS England

Martin is recognised for his work across the NHS in empowering communities and health professionals to challenge the attitudes and behaviours that result in violence and supporting people – many of them young – to make better choices.


Alongside his role as a surgeon based at The Royal London Hospital, part of Barts Health NHS Trust, for over 15 years Martin has worked in the community to educate young people about the grave consequences of knife and gun crime. Martin set up the UK's first hospital ward-based violence reduction service at Barts Health in 2015. The award-winning programme sees hospital staff and case workers from the charity St Giles Trust help young patients injured through knife crime while they are still being treated in the hospital, to help break the cycle of violence at the point of crisis. The service works with victims to unravel the complex social reasons behind knife crime and offers holistic support to help prevent further harm. It has had incredible success in reducing retaliation and violent reoffending in this group of vulnerable young people.

More recently, Martin started a new mission – becoming a Covid-19 vaccinator at The Royal London Hospital and tackling vaccine hesitancy in ethnic minority communities.

Martin is also a passionate campaigner for fairness, equality and promoting diversity.

Martin said: "This award recognises what can be achieved when those who are committed and principled work collaboratively to

		<p>address an issue central to our society. Our communities own the vision to addressing violence. Our role is to listen, challenge and support.</p> <p>“On a personal level I’m not quite sure how to take things. I’m the product of a loving family, and a community that maintained its sense of self-worth and pride in its heritage. I’m the product of a state education and am proud to serve in the NHS which has served us all so well in the darkest of times this past year. I have the best colleagues who support, challenge and (rightly) ridicule me when I start believing the hype.”</p> <p>In 2019, Martin was appointed London’s first NHS clinical director for violence reduction, a role he now holds nationally.</p>
 <p>Dr Jamie Colman</p>	<p>Trauma and Acute care surgeon at Denver Health and Associate Professor of Surgery at the University of Colorado School of Medicine in Denver.</p>	<p>Jamie earned her MD at the University of Tennessee College of Medicine in Memphis, then went on to complete residency in Chicago at the Cook County Hospital and Rush University integrated general surgery program. This was followed by a two-year fellowship in trauma and surgical critical care at Grady Memorial Hospital in Atlanta, Georgia, which is sponsored by Emory University. She is currently double boarded in both general surgery and surgical critical care as well as a Fellow in the American College of Surgeons. Jamie is a medical media expert, public speaker, avid writer and blogger, contributing to Huffington Post and US News & World Report frequently. Dr. Coleman’s work has also been featured on KevinMD, LinkedIn, and FeminEM. Jamie is married to a former NFL player-turned-lawyer and is the mom of 2 boys under the age of 7. Her media work reflects her unique perspective on everything from caring for critically ill patients to navigating work-life challenges amid a demanding surgical career.</p>
 <p>Mr Bob Handley</p>	<p>Consultant Trauma and Orthopaedic surgeon Radcliffe Royal Infirmary Oxford BSc Physiology (Sheffield) MB ChB (Sheffield) FRCS (Edinburgh)</p>	<p>Immediate past president of British Orthopaedic Association Bob Handley is a Consultant on the Trauma Service at the John Radcliffe Hospital in Oxford for 25 years. Past President of the Orthopaedic Trauma Society Past president of AOUK. Bob co-chaired two NICE guideline development groups related to fractures and is National Clinical Lead for GIRFT (getting it right first time) Orthopaedic Trauma.</p>
 <p>Mr Alberto Gregori</p>	<p>MBChB, FRCS, FRCS Ed(Orth),DFM Consultant Orthopaedic surgeon UK</p>	<p>Alberto is an NHS retired, active global health trauma and orthopaedic surgeon and pilot. He has many accolades to his name with a successful career and a resume that continues to grow with exceptional charity work overseas. He worked as a mission medical officer in Zimbabwe in the 1980s, and a spell working the Lebanese Civil War. After his training in the UK, he worked in Zambia with John Jellis and FlySpec. He has continued this relationship and is now a trustee of FlySpec. He worked in the NHS for over 23 years; with an expert practice in knee arthroplasty and reconstruction and complex trauma. Also served as a senior NHS manager and clinical director of NHS Lanarkshire Orthopaedics. He helped develop robotics and</p>

		<p>navigation, enabling the development in theatres throughout the country.</p> <p>Now retired for the past couple of years, he has not slowed down, instead has continued his overseas work alongside his wife, a retired emergency medicine consultant.</p> <p>He works closely with World Orthopaedic Concern and has been elected to be the next Chairman. WOC is a charity that promotes orthopaedic education and care in developing countries, providing advice and help in setting up both training and service programs. It also acts as a pressure group speaking in the United Kingdom to try and advance these aims. And also provides practical help to individual colleagues who require it.</p>
 <p>Professor Hans-Christoph-Pape</p>	<p>MD Trauma Surgeon Zurich</p>	<p>Dr Pape is Professor and Chairman of the Department of Trauma Surgery at University Hospital Zürich.</p> <p>Dr Pape initially qualified at the Hannover Medical School in Germany, which included periods of study at Vanderbilt and Harvard as part of a scholarship. Later, he went on to participate in a combined research program between the Hannover Medical School and Harvard University's Department of Neurology, before completing his residency in trauma surgery at Hannover Medical School. During his time as an attending orthopaedics and trauma surgeon at Hannover, he was appointed as a Professor of Trauma Surgery. From 2003 to 2005, he was a visiting professor at Harvard, the University of Alabama, and the University of Texas. Dr Pape has published more than 70 peer reviewed articles as the lead author and has co-authored over 120 others. He is the recipient of multiple awards from international trauma societies, including the Best Scientific Paper Presentation from the European Trauma Society, and the Best European Paper Presentation from the British Trauma Society, both in 2002. Most recently, he was awarded the 2005 Novartis prize, the 2006 Swiss AO Foundation Annual Award, and the 2008 Kappa Delta Award from the American Academy of orthopaedic Surgeons. He is a founding member of several research groups within the German Interdisciplinary ICU Society (DIVI), of which he has been a member since 1998, and has been a member of the North American Shock Society since 1998. In addition, he is also a member of the American Association for the Surgery of Trauma, the American Association of Orthopaedic Surgeons and a Fellow of the American College of Surgeons.</p>

Wednesday 24th November 2021

09:45–10:00	Conference welcome by British Trauma Society, President Ansar Mahmood
Oral Presentations: Session 1	
10:00-10:05 2 minutes Q&A	0227 – ‘Is ethnicity a risk factor for mortality in major trauma? A single centred cohort study’ – Toby Jennison
10:10-10:15 2 minutes Q&A	0203 – ‘Audit of the Management of Post Traumatic Hypopituitarism in Adults in the Neurosurgery Department in Oxford’ – Arousa Ali
10:20-10:25 2 minutes Q7A	0179 – ‘Alcohol Misuse in Major Trauma Admissions’ – Phoebe Verbeeten
10:30-10:35 2 minutes Q&A	0113 – ‘UK-Wide Major Trauma Centre Tertiary Trauma Survey Pro Forma Review - Aggregation and Consolidation into a Redesigned Document’ – Mark Parson
10:40-10:45 2 minutes Q&A	0027 – ‘The Potential for Non-Continuous, Non-Complete Resuscitative Endovascular Occlusion of the Aorta (REBOA) Approaches to Reduce Ischaemia-Reperfusion Injury in the Management of Traumatic Haemorrhage.’ – Vlad Prodan
10:50-10:55 2 minutes Q&A	0050 – ‘A Novel Method of Teaching Trauma Call Principles: Escape Room Simulation.’ – Samuel Everett
Oral Presentations: Session 2	
11:00-11:05 2 minutes Q&A	0153 – ‘Indications for Emergency Department Resuscitative Thoracotomy in blunt and penetrating trauma: a systematic review of UK guidelines’ – James Bennett
11:10-11:15 2 minutes Q&A	0138 – ‘Surgical Stabilisation of Rib Fractures in Polytrauma Patients – Can we Predict the Need for Surgery?’ – James Chapman
11:20-11:25 2 minutes Q&A	0137 – ‘Rib Fracture as a Component of Total Pain in Major Trauma – Does Fixation Make a Difference?’ – James Chapman
11:30-11:35 2 minutes Q&A	0068 – ‘Re-Audit of Previously Sustained and Further Improvements in the Management of Open Fractures at a UK Major Trauma Centre Following Junior Doctor Changeover’ – Anoopama Ramjeeawon
11:35–12:05	Comfort Break
Oral Presentations: Session 3	
12:10-12:15 2 minutes Q&A	0232 – ‘Assessing routine FY1 competencies in final year EEA medical students’ – Saskia Wicks
12:20-12:25 2 minutes Q&A	0202 – ‘Pseudopathological lesions associated with neck of femur fractures: more common than we think?’ – Mayank Kumar

12:30-12:35 2 minutes Q&A	0201 – ‘Muscle quantity at C3 and/or L3 on routine trauma series Computed Tomography correlate with brain frailty and Clinical Frailty Scale: A Cross-sectional study’ – <i>Austin Roque Gomindes</i>
12:40-12:45 2 minutes Q&A	0055 – ‘Therapeutic efficacy of platelet-Rich plasma injection compared to corticosteroid injection in plantar fasciitis: A Systematic Review and Meta-analysis.’ – <i>Wafi Abeedi</i>
12:50-12:55 2 minutes Q&A	0084 – ‘The Role of Platelet Rich Plasma and other Orthobiologics in Bone Healing and Fracture Management: A Systematic Review’ – <i>Muhammad Shazil Jamal</i>
13:00-13:05 2 minutes Q&A	0151 – ‘The use of Nottingham Hip Fracture Score (NHFS) as a predictor of one year mortality risk following Vancouver B/C periprosthetic fracture’ – <i>Urpinder Grewal</i>
13:10-14:35	Lunch
Oral Presentations: Session 4	
14:40-14:45 2 minutes Q&A	0200 – ‘Urinary and Sexual Dysfunction Following Traumatic Pelvic Fractures: A Retrospective Cross-sectional Study.’ – <i>Elisa Wylleman</i>
14:50-14:55 2 minutes Q&A	0157 – ‘A novel treatment pathway for adults diagnosed with acute stable vertebral compression fractures in a secondary referral centre.’ – <i>Hazel Denton</i>
15:00-15:05 2 minutes Q&A	0071 – ‘A Major Trauma Centre's Experience of its novel Virtual Thoraco-Lumbar Fracture Clinic – an Evaluation of Injuries and Outcomes’ – <i>Aasim Murtaza</i>
15:10-15:15 2 minutes Q&A	0230 – ‘Suspected Cervical Spine Injury – Does a change in guidelines correlate with a change in management?’ – <i>Chiraag Pandya</i>
15:20-15:25 2 minutes Q&A	0214 – ‘No need for routine preoperative imaging in addition to plain radiographs in patients with a traumatic hip fracture and a history of malignancy’ – <i>Martin Sharrock</i>
15:30-15:35 2 minutes Q&A	0191 – ‘Different antibiotic prophylaxis regimens in fracture neck of femur (nof) surgery and association with <i>c. difficile</i> diarrhea and with surgical site infection (ssi)’ – <i>Sonu Mehta</i>
15:00-17:30	POSTER SESSION 1 Running alongside Oral Presentations Sessions 4 & 5
Oral Presentations: Session 5	
15:40-15:45 2 minutes Q&A	0183 - ‘Characteristics and outcomes of children attending hospital with knife injuries: A UK paediatric major trauma centre experience’ – <i>Lucy Watson</i>
15:50-15:55 2 minutes Q&A	0185 – ‘Free-flap outcomes in paediatric lower limb trauma – A systematic review, meta-analysis and meta-regression of prevalence and outcomes’ – <i>Djamila Rojoa</i>
16:00-16:05 2 minutes Q&A	0143 – ‘Early opiate analgesic requirements following non-surgically managed tibial fractures in children.’ – <i>Rye Yern Yap</i>

16:10-16:15 2 minutes Q&A	0123 – ‘Manipulation of severely displaced distal tibial Salter Harris type 2 fractures in paediatric population using intranasal morphine and Entonox in ED.’ – <i>Jaimin Bhanderi, Ravinder Kaur</i>
16:20-16:25 2 minutes Q&A	0196 – ‘Implementation of a Paediatric Fracture Manipulation Pathway in the Emergency Department’ – <i>Kathryn Duke</i>
16:30-16:35 2 minutes Q&A	0165 – ‘Risk of complications following surgical fixation of femoral diaphyseal fractures in children aged 4 to 12 years: a systematic review and meta-analysis.’ – <i>Tomos Edwards</i>
16:40 – 18:00	Comfort Break
18:00-19:00	British Trauma Society AGM
19:00-19:30	Keynote Lecture - Professor Lecky UK and Dr Carl N Marincowitz UK <i>“Impact of the COVID 19 first wave lockdown on the volume, severity and type of major trauma presenting to NHS England”</i>
19:30-20:00	Keynote Lecture – Dr Jan O Jensen PhD, MBBS Trauma Surgeon, Birmingham, Alabama, USA. <i>“Current concepts update on haemorrhage control options in exsanguinating major trauma”</i>
20:00-20:30	Keynote Lecture – Mrs Sarah Tucker, Consultant Plastic and Reconstructive Surgeon, Clinical Lead for Plastics Trauma Service. Oxford University Hospitals, UK <i>“Orthoplastics Care across Continents”</i>
20:30-21:00	Keynote Speaker – Professor Hans-Christoph-Pape MD Trauma Surgeon Zurich <i>“Update in safe definitive surgery and DCO indications in polytrauma?”</i>

Thursday 25th November 2021

Thursday 25 th November 2021	
Oral Presentations: Session 6	
09:30-09:35 2 minutes Q&A	0061 – ‘A Multi-centre Case-control Study of 580 Patients with Proximal Femoral Fractures to Assess the Impact of COVID-19 Pandemic on Their Peri-operative Outcomes.’ – Chiranjit De
09:40-09:45 2 minutes Q&A	0095 – ‘120-day mortality rates for hip fracture patients with COVID-19 infection’ – Tobenna Oputa
09:50-09:55 2 minutes Q&A	0121 – ‘Hip and Distal Femur Fracture Outcomes over three successive UK lockdown periods during the COVID-19 Pandemic: What Have We Learnt?’ – Salman Sadiq
10:00-10:05 2 minutes Q&A	0046 – ‘Is open reduction of Sub-trochanteric femoral fractures to achieve anatomical reduction during ante-grade intra-medullary nailing necessary? A study of open versus closed ante-grade intra-medullary nail fixations’ – Adrian Andronic
Oral Presentations: Session 7	
10:20-10:25 2 minutes Q&A	0078 – ‘The Effect of the COVID-19 Pandemic on Mental Health Associated Trauma, Admissions and Fractures at a London Major Trauma Centre’ – Muhammad Shazil Jamal
10:30-10:35 2 minutes Q&A	0182 – ‘Death Certification in Hip Fracture Mortality – A Comparison of Hospital vs Coroner Completion’ – Graeme Wilson
10:40-10:45 2 minutes Q&A	0221 – ‘The COVID CLAVICLE Study: A predictor of future trauma trends’ – Joann Lum
10:50-10:55 2 minutes Q&A	0022 – ‘Rivaroxaban is a safe and effective method of venous thromboprophylaxis in pelvic and acetabular trauma patients’ – Jos Crush
11:00-11:05 2 minutes Q&A	0087 – ‘Radiation in Orthopaedic (RIO) Study: A national survey of UK orthopaedic surgeons’ – Ryan Geleit
11:10-11:15 2 minutes Q&A	0216 – ‘See one, do one, teach one’: the balance between patient care and surgical training in an emergency trauma department’ – Sulayman Musa Ayub
11:20-11:40	Comfort Break
Oral Presentations: Session 8	
11:40-11:45 2 minutes Q&A	0117 – ‘Radiological Analysis of Gentamicin Eluting Synthetic Bone Graft Substitute Used in The Management of Gustilo IIIB Open Fractures’ – Ahmed Aljawadi
11:50-11:55 2 minutes Q&A	0141 – ‘Education and raising the profile of trauma radiology for foundation doctors working in a regional Major Trauma Centre: a multi-departmental, regional quality improvement project’ – Sara O’Rourke

12:00-12:05 2 minutes Q&A	0144 – ‘Acronym-based intervention sustainably improves content and structure of post-operative reviews; Enhancing the Care of Trauma Patients’- <i>Joseph Dow</i>
12:10-12:15 2 minutes Q&A	0163 – ‘Documentation of Neurovascular Status Following Manipulation of Fractures and Dislocations; A Quality Improvement Project’ – <i>Emma Theobald</i>
12:20-12:25 2 minutes Q&A	0234 – ‘Anaesthetic National Teaching Programme for students (antps)’ – <i>Prakrit Raj Kumar</i>
12:30-12:35 2 minutes Q&A	0210 – ‘The Rise in Trauma & Orthopaedic Trainee-led Research and Audit Collaborative Projects in the United Kingdom Since the Start of the COVID-19 Pandemic’ – <i>Tahir Khaleeq</i>
12:40-14:00	Lunch
	Oral Presentations: Session 9
14:00-14:05 2 minutes Q&A	0158 – ‘Tension band wire versus anatomical locking plate fixation in comminuted displaced olecranon fractures – Clinical and radiological outcomes’ – <i>Hasan Daoud</i>
14:10-14:15 2 minutes Q&A	0030 – ‘Brace it or fix it? – Delayed humerus fixation prolongs healing time.’ – <i>Sammie Jo Arnold</i>
14:20-14:25 2 minutes Q&A	0186 – ‘The impact of COVID-19 on management of tubular bone fractures of the hand: A single-centre concordance study with patient-reported outcome measures (PROMS)’ – <i>Djamila Rojoa</i>
15:00-17:30	POSTER SESSION 2 Running alongside Oral Presentations Sessions 11 & 12
	Oral Presentations: Session 10
15:00-15:05 2 minutes Q&A	0041 – ‘The Effectiveness of Surgical Interventions in the Management of Malunited Calcaneal Fractures: A Systematic Review’ – <i>Mohammed Elmajee</i>
15:10-15:15 2 minutes Q&A	0139 – ‘Clinical and Patient Reported Outcomes following Open Reduction and Internal Fixation (ORIF) for Distal Tibial Intra-articular Fractures’ – <i>Emily Clough</i>
15:20-15:25 2 minutes Q&A	0147 ‘Population analysis of surgical treatment of complex ankle fractures in the United Kingdom’ – <i>Caesar Wek</i>
15:30-15:35 2 minutes Q&A	0190 – ‘Suture-button Versus Syndesmotic Screw Fixation of Ankle Fractures: A Comparative Retrospective Review Over 1-year in Altnagelvin Area Hospital’ – <i>Bakhat Yawar</i>
15:45-16:25	Comfort Break
	Oral Presentations: Session 11
16:30-16:35 2 minutes Q&A	0208 – ‘Concurrent hip and upper limb fractures: a systematic review and meta-analysis’ – <i>Martin Sharrock</i>

16:40-16:45 2 minutes Q&A	0016 – ‘Intramedullary Nailing For tumor Metastasis: Incidence, Complications And Survivorship’ – <i>Ritika Rampal</i>
16:50-16:55 2 minutes Q&A	0057 – ‘The influence of operating surgeon grade on the quantity of intra-operative radiation dose in the management of hip fractures’ – <i>Angus Bruce</i>
17:00-17:05 2 minutes Q&A	0124 – ‘Surgical treatment of dorsally displaced distal radius fractures with a volar locking plate versus conventional percutaneous methods: minimum ten-year follow-up of a randomised controlled trial?’ – <i>Sandeep Deshmukh</i>
17:15–18:00	Comfort Break
18:00-18:30	Keynote Speaker – Mr Alberto Gregori, MBChB, FRCS, ED(Orth),DFM Consultant Orthopaedic surgeon UK <i>“Hippo Bites and Google: Lessons learnt in LMIC Environment”</i>
18:30-19:00	Keynote Speaker – Dr Jamie Colman MD, Associate Professor, Trauma Surgeon, Denver USA <i>“Stress and sleepless nights: what it means to the surgeon”</i>
19:00-19:30	Keynote Speaker – Mr Bob Handley, Consultant Trauma and Orthopaedic Surgeon, Oxford, UK BSc Physiology (Sheffield) MB ChB (Sheffield) FRCS (Edinburgh) <i>“Getting it right first time in Orthopaedic Trauma”</i>
19:30-20:00	Keynote Speaker – Martin Griffiths – Consultant Vascular Surgeon and National Violence Reduction lead, UK <i>“Violence Reduction in the UK”</i>
20:00-20:30	Close of Conference and Prizes

POSTER SESSION 1 – WEDNESDAY 24TH NOVEMBER

2 minutes presentation followed by 2 minutes Q&A per poster

Abstract Number	Time of Presentation	Title	Authors
0002	15:00	<i>Assessing the Compliance of Senior House Officers in Documentation of the New Trauma and Orthopaedic Post-Take Ward Round Proforma and Measuring Allied Health Professionals Opinion of Documentation – A Full Audit Cycle</i>	<i>Kalsoom Altaf, Jonathan Cormack, Oliver Adebayo, Zain Sohail</i>
0015	15:04	<i>Assessing the use of splints/walker boot for stable wrist and ankle fractures & cost implications of casts</i>	<i>Wajiha Zahra, Adam Sykes, Tamer Sweed, John Morley</i>
0019	15:08	<i>Does timing to fixation of unstable ankle fractures contribute to surgical site infection?</i>	<i>Surendra Patnaik, Chetan Dojode, Preetha Sadasivan, Medhat Hasan, Efthymios Iliopoulos</i>
0039	15:12	<i>Management of Displaced Intra-articular Calcaneal Fractures: A Comparative Study of Open and Minimally Invasive Surgery</i>	<i>Ahmed Aljawadi, Amirul Islam, Charles Mcdonald, Noman Niazi, Anand Pillai</i>
0043	15:16	<i>Effect of COVID-19 Lockdown on trends of shoulder injuries presenting to Virtual Fracture Clinic (VFC): Experience from a DGH</i>	<i>Edward Mckee, Nikhil Gokhale Kate Wallace, Richard Hartley</i>
0044	15:20	<i>Treatment of Fragility Ankle Fractures Using Hindfoot Nail, a Systematic Review</i>	<i>Abdullah Gabr Mohammed Elmajee Ahmed Aljawadi Dominic Sprott</i>
0045	15:24	<i>Delays in NCEPOD Class 2 Trauma Surgery during the first wave of the Covid-19 Pandemic</i>	<i>Umar Rehman, Joanna Shepherd, Jolanda Schoon</i>
0054	15:28	<i>Balloon tibioplasty as a novel surgical treatment option for depressed tibial plateau fractures</i>	<i>Amit Sinha, Nicola Maffulli</i>
0056	15:32	<i>Surfing for shin guards: the accuracy of online information</i>	<i>Wafi Abeedi, Salma Farah, Mujtaba Nassiri, Kyle Borain</i>
0064	15:36	<i>Treatment of off-ended distal radius fractures in children using a straight plaster</i>	<i>Ben Marson, Jimmy Ng, Simon Craxford, Jullian Chell, Kathryn Price, Dominik Lawniczak, Benjamin J Ollivere, James Hunter</i>
0066	15:40	<i>Morbidity and Mortality in Chronic Prolonged Hyponatremia with Neck of Femur fractures.</i>	<i>Jonathan Dsouza, Shoaib Khan, Ravindra Badge</i>
0069	15:44	<i>Patient Experiences of a Virtual Thoracolumbar Fracture Clinic: Lessons Learned in Pandemic Times</i>	<i>Aasim Murtaza, Ahmad Faraz, Mohammad Al-Ashqar, PR Loughenbury</i>
0072	15:48	<i>Overview of Acute admissions in Trauma and Orthopaedic Department during COVID-19 Pandemic - a DGH experience</i>	<i>Asterios Dramis, Panagiotis Karachalios, Anca Duca</i>
0074	15:52	<i>Plain Roentgenographic and CT scan based morphometric analysis of the Atlantodens interval in Indian population.</i>	<i>Sudeep Date</i>
0082	15:56	<i>Paediatric Acetabular Fracture - An Easily Missed Injury</i>	<i>Dominic Waugh</i>
0088	16:00	<i>Setting A Standard For Post-operative Care Documentation In Orthopaedic Polytrauma At A Major Trauma Centre (MTC)</i>	<i>Cieran McGrory, William Giles, Kay Wynn, Raveen Jayasuriya</i>
0089	16:04	<i>Near infrared spectroscopy & intramuscular PH use in Compartment Syndrome: systematic review and meta-analysis</i>	<i>Mohammed Elmajee, Salem Jamhor, Yousuf Hashmi, Firas</i>

POSTER SESSION 1 – WEDNESDAY 24TH NOVEMBER

2 minutes presentation followed by 2 minutes Q&A per poster

			<i>Hamdan, Mohamed Khalefa, Ansar Mahmood</i>
0090	16:08	<i>Cattle-related Trauma: A 5-years Retrospective Review in An Adult Major Trauma Centre</i>	<i>John-Henry Rhind, Dominic Quinn, Lucy Cosbey, Douglas Mobley, Ingrid Britton, Justin Lim</i>
0100	16:12	<i>Analysis of risk factors and consequences of consecutive neck of femur fractures in elderly patients</i>	<i>Suranga Gurusinghe, Konara Weerasinghe, Devaraj Navaratnam, Girish Gopinath, Gudrid CastejonMorales, Theophilus Joachim, Chika Uzoigwe</i>
0102	16:16	<i>Comparison between cemented vs uncemented hip hemiarthroplasty following neck of femur fracture in elderly patients</i>	<i>Suranga Gurusinghe, Konara Weerasinghe, Vikas Sharma, Munier Hossain, Rizwan Shahid</i>
0107	16:20	<i>Impact of lockdown on fracture patterns in acute paediatric orthopaedic admissions in a tertiary referral centre</i>	<i>Jana Nouredine, Hussein Nouredine, Alyssa Tan, Innes Smith</i>
0112	16:24	<i>The Impact of COVID-19 on Neck of Femur fracture patients</i>	<i>Benyamin Alam, Amir Reza Akbari, Noman Niazi, Anand Pillai</i>
0114	16:28	<i>How has the COVID-19 pandemic impacted the incidence of hand trauma surgery in Wales?</i>	<i>Jasper Cattell, Rob Duncan, Dean Boyce</i>
0116	16:32	<i>The Choice of a Shoulder Reduction Technique for a Traumatic Anterior Shoulder Dislocation Following a Vehicle Accident.</i>	<i>Ali Al-Isawi</i>
0119	16:36	<i>Falls from heights greater than 2 metres: impact on services at a UK major trauma centre</i>	<i>Marysia Cywinski, Jennifer Reynolds, Simon Mercer</i>
0122	16:40	<i>Literature review of triradiate cartilage fractures and case report of dual pelvic pathology of triradiate cartilage fracture and proximal hamstring avulsion fracture in an adolescent</i>	<i>Abu Saeed, Nikhil Pandit, Shahbaz Malik</i>
0128	16:44	<i>Mortality following Periprosthetic Fractures of the Femur: A Retrospective Analysis of the Risk Factors</i>	<i>Caroline Low, Andrew Brunt, Jerusha Jeyakumar, Andrew Hall, Phil Walmsley, Andy Ballantyne, Muhammad Adeel Akhtar</i>
0129	16:48	<i>Delays in NCEPOD class 2 trauma surgery during the first wave of the COVID-19 pandemic</i>	<i>Umar Rehman, Joanna Shepherd, Jolanda Schoon</i>
0132	16:52	<i>The Effect of COVID-19 Lockdowns on Paediatric Lower Limb Orthopaedic Presentations</i>	<i>John Darling, Maria Nowicka, Noman Niazi, Anand Pillai</i>
0133	16:56	<i>The impact of the COVID-19 pandemic and lockdown on adult foot and ankle fractures – A retrospective cohort study</i>	<i>Amir Reza Akbari, Benyamin Alam, Cheuk Yin Tse, Noman Niazi, Anand Pillai</i>
0134	17:00	<i>Autologous Micro Fragmented Adipose Cells Therapy for End-Stage Ankle Osteoarthritis in Young Patients – Case series</i>	<i>Maria Nowicka, Noman Niazi, Anand Pillai</i>
0135	17:04	<i>Patient Reported Outcomes (PRO) Research in Traumatic Brain Injury: testing the usability, feasibility and acceptability of an electronic PROs platform</i>	<i>Christel McMullan, Sally Bradshaw, Ameeta Retzer, Anita Slade, Elin Haf Davies, Luke & Jackie Flavell, Tony Belli, Melanie Calvert, Grace Turner</i>

POSTER SESSION 2 – THURSDAY 25th NOVEMBER

2 minutes presentation followed by 2 minutes Q&A per poster

Abstract Number	Time of Presentation	Title	Authors
0140	15:00	<i>Ilizarov Wire Tensioning - The Ring Deflection Phenomenon</i>	<i>Patrick Nicholas, Jabu Mthethwa, Bilal Jamal, David Shields</i>
0142	15:04	<i>Improving the safety of nerve blocks in fractured neck of femur patients in Bristol Royal Infirmary</i>	<i>Niki Kochhar</i>
0146	15:08	<i>Optimising pre-operative intravenous fluids in hip fracture patients to reduce the incidence of AKI in Victoria Hospital Kirkcaldy</i>	<i>Thomas Smith, Nicholas NgJun Leow, Marie Williams</i>
0149	15:12	<i>Surgical Site Infections & Theatre Timings: Hip Fractures and COVID-19 in a district general hospital</i>	<i>John Graham, Ryan Moffatt, Angel Ruiz, Rebecca Reid</i>
0150	15:16	<i>The relationship between the COVID-19 pandemic and the incidence and management of upper limb fractures in Manchester Foundation Trust</i>	<i>Thomas Springthorpe, Maria Nowicka, Noman Niazi, Anand Pillai, Matthew Pearce</i>
0155	15:20	<i>Does preinjury clopidogrel use increase the risk of intracranial haemorrhage post head injury in adult patients? A systematic review and meta analysis.</i>	<i>Samuel Moffatt, Sara Venturini, Paul Vulliamy</i>
0161	15:24	<i>An Audit on the Management of Displaced Supracondylar Fractures at a District General Hospital: Do We Follow BOAST Guidelines?</i>	<i>Alexander Boucher. Hatem Salem</i>
0162	15:28	<i>The Impact on Orthopaedic Departments and Common Injury Patterns from Standing Electronic Scooter Users: The Bristol Experience</i>	<i>Kathryn Hogan, Christopher Jenkins, Phil McCann</i>
0167	15:32	<i>The Impact of COVID-19 on Virtual Fracture Clinics at a Manchester teaching hospital</i>	<i>Alexander Oh, Maria Nowicka, Noman Niazi, Anand Pillai</i>
0168	15:36	<i>Patient satisfaction of the Virtual Fracture Clinic delivered via Pathpoint™ eTrauma system</i>	<i>Joon Hee Bang, Maria Nowicka, Noman Niazi, Anand Pillai</i>
0170	15:44	<i>Comparison of materials used for splenic artery angioembolisation (SAE) in blunt splenic trauma</i>	<i>Elina Stokolova</i>
0171	15:48	<i>Pacemaker Lead Dislodgment Secondary To Chronic Reverse Polarity Arthroplasty Dislocation: A Case Report</i>	<i>Mazin Al-Salihy</i>
0174	15:52	<i>Whole body MDCT – the gold standard for imaging in the severely injured patient?</i>	<i>Ashvin Sharma</i>
0176	15:56	<i>Outcomes of periprosthetic hip and knee fractures at a Major Trauma Centre (MTC)</i>	<i>Apoorva Khajuria, Shomit Shahul, Iqra Khan, Anatasios Nikolaidis</i>
0177	16:00	<i>Mortality in hip fracture patients during the pandemic - a meta-analysis and metaregression of risk factors</i>	<i>Djamila Rojoa, Firas Raheman, Jvalant Parekh, Reshid Berber, Robert Ashford</i>
0178	16:04	<i>Evaluating the impact of the cardiac chair position for day 1 mobilisation following hip fracture surgery. A single-centre 281 patient cohort study.</i>	<i>Shannon Tse, Adeel Ikram, Ben Marson, Grace Cowley, Benjamin Ollivere</i>
0180	16:08	<i>The impact of COVID-19 restrictions and changes in guidelines on adult wrist fracture management</i>	<i>Cheuk Yin Tse, Lawrence Hin Hai Lee, Amir Reza Akbari, Noman Niazi, Anand Pillai</i>
0181	16:12	<i>Does a Protocol for Hip Fracture Surgery in Patients Taking a Direct Oral Anticoagulant Unnecessarily Delay Time to Theatre?</i>	<i>Graeme Wilson, Georgina Laing, Muthukrishnan Ramakrishnan</i>

POSTER SESSION 2 – THURSDAY 25th NOVEMBER

2 minutes presentation followed by 2 minutes Q&A per poster

0187	16:16	The role of ultrasonography in the assessment of the ulnar collateral ligament injury of the thumb: A diagnostic test accuracy meta-analysis	Djamila Rojoa, Firas Raheman, Mohit Dhingra, Christopher Macdonald
0188	16:20	The use of Cone-Beam Computed Tomography (CBCT) Arthrography for wrist ligamentous injuries – A diagnostic test accuracy meta-analysis	Djamila Rojoa, Nicholas Cereceda-Monteoliva, Firas Raheman
0192	16:24	Delayed presentation of septic arthritis in the Glenohumeral joint caused by Streptobacillus Moniliformis	Georgia McMahon, Sudheer Akkena, Ashwanth Ramesh, Anand Pillai
0194	16:28	Effects of COVID-19 on the Trauma and Orthopaedic Fracture Clinic at Wythenshawe Hospital	Aysha Zahid
0197	16:32	Total hip replacements for neck of femur fractures during the COVID-19 pandemic: a review of outcomes	Rosemary Wall, Mohammedabbas Remtulla, Amit Kotecha, Ansar Mahmood
0198	16:36	Reporting trauma CTs – Are we keeping to time?	Kathryn Duke, Jo Dartnell, Alastair Robertson
0199	16:40	Does Perioperative Tranexamic Acid administration reduce the need for post-operative blood transfusion in patients undergoing pelvic and acetabular fracture fixation? A Systematic Review	Harman Khatkar, Loay Salman, Raja Rajasekaran
0204	16:44	Short term outcomes following periprosthetic hip fractures managed in a Level 1 Major Trauma Center	Ikechukwu Ejiofor, Christopher Anthony
0207	16:48	Was trauma operating safe during the COVID-19 phase one lockdown?	Agneish Dutta, Baseem Choudhry, Stefan Sleiman, Tanvir Akhtar, Lee David, Jo Dartnell
0209	16:52	ESTABLISHMENT OF VIRTUAL FRACTURE CLINIC IN PRINCESS ROYAL HOSPITAL TELFORD ; PROGRESS AND RECOMMENDATIONS DURING THE FIRST 9 MONTHS	Tahir Khaleeq, Patrick Lancaster, Keji Fakoya, Usman Ahmed
0213	16:56	Review of the ‘Code Red and Code Crimson’ protocols at the Queen Elizabeth Hospital Birmingham	Sandisile Ndlovu, Justine Lee
0217	17:00	Incidence of traumatic deliberate self harm presenting to the Emergency Department during the COVID-19 lockdown	Sunil Parthiban, Nader Henry, Azzam Farroha
0219	17:04	Efficacy of tracheal tube introducers and stylets for endotracheal intubation in the prehospital setting: a systematic review and meta-analysis	Jaden Tollman, Zubair Ahmed
0220	17:08	Ventilating the blast lung: exploring ventilation strategies in primary blast lung injury	Jaden Tollman
0223	17:12	Are UHB trauma patients receiving care at the right place first time?	Sharon Darkwa, Ayomikun Ajibade
0224	17:16	Is there a role for empirical treatment of orthopaedic patients with suspected, but not confirmed, VTE in the post-operative period?	Deepak Menon, Oussama Abcha, Sofienne Kallel, Hemant Pandit
0225	17:20	Long-term functional limitations following non-surgical management of displaced adolescent clavicle fractures	Shannon Tse, Benjamin Varghese, Yasar Nassif, Ben Marson, Kathryn Price

POSTER SESSION 2 – THURSDAY 25th NOVEMBER

2 minutes presentation followed by 2 minutes Q&A per poster

0228	17:24	<i>The Litigation Burden of Paediatric Trauma and Orthopaedics in comparison to Paediatric and General Surgery: A 15 year trend analysis</i>	<i>Ghazal Hodhody, Sadia Afzal</i>
0229	17:28	<i>Major Trauma in Nonagenarians: Mortality and Outcomes</i>	<i>Toby Jennison, Chane Kulenkampff, Justine Lee, Ansar Mahmood</i>
0231	17:32	<i>The Golden Patient – Can we identify the first trauma patient on the list, the night before?</i>	<i>Chiraag Pandya, Jonathan France, Paresh Kothari</i>



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0227

Is ethnicity a risk factor for mortality in major trauma? A single centred cohort study

Toby Jennison¹, Chane Kulenkampff¹, Justine Lee¹, Ansar Mahmood¹

¹ *University Hospitals Birmingham , Birmingham, United Kingdom*

Introduction

With recent publicity of COVID 19 demonstrating increased mortality rates of those of ethnic minorities and the publication of higher mortality rates in those of ethnic minorities

The aim of this prospective cohort study was to analyse if ethnicity was an independent risk factor for 30 day mortality in patients presenting to a major trauma centre when adjusting for confounders

Methods

A prospective review of all patients presenting to a single major trauma centre from (2010-2020). Data was collected on age, sex, ethnicity, mechanism of injury, ISS, Glasgow coma score, and predicted survival. Statistical analysis was undertaken using Stat (Version 15) using logistic regression to determine significant predictors of mortality

Results

There were 10,668 data sets with ethnicity data, of these 9,098 were white, 1,143 were Asian and 427 were classified as black. The 30 day mortality rate was 7.56% (807). The mortality rate was 7.76% for white ethnicities, 6.91% for Asian, and 5.15% for people of black ethnicity.

On univariate logistic regression ethnicity was not associated with mortality (Odds ratio 1.0924, 95% CI 0.9696-1.2308)

On multivariate logistic regression ethnicity ($p=0.076$), social deprivation ($p=0.953$), injury mechanism ($p=0.079$) and gender ($p=0.055$) were not associated with mortality. Age, Injury severity score, Predicted survival score, shock and GCS (all p value < 0.001) were associated with 30 day mortality

Conclusion

Ethnicity is not a significant risk factor for 30 day mortality in trauma patients. Any differences in mortality rates can be accounted for by differences in predicted survival which accounts many factors including co-morbidities

0203

Audit of the Management of Post Traumatic Hypopituitarism in Adults in the Neurosurgery Department in Oxford

Arousa Ali¹, Mario Ganau¹

¹ *Oxford Univeristy Hospitals, Oxford, United Kingdom*

Background:

Traumatic brain injury (TBI) has an estimated incidence of 235/100 000 per year. The prevalence of post-traumatic hypopituitarism (PTHP) is thought to be 27.5% and patients may suffer from clinical sequelae including physical, psychological and cognitive deficits. Therefore early identification and management is crucial.

Aim:

To audit the management of PTHP against guidelines set out by the British Neurotrauma Group after teaching provided in November 2020.

Methods:

Retrospective data collection of patients admitted from August 2020 to October 2020 (cycle 1) and management compared against British Neurotrauma Group guidelines. Then audited in March 2021 to May 2021(cycle 2), after teaching on managing PTHP provided in November 2020. All patients with TBI on presentation to John Radcliffe Hospital, Oxford were included.

Results:

83 patients were admitted with a TBI in cycle 1 and 88 patients in cycle 2. In both cycles, there were approximately 60% male patients. Median age range was 55-65 years. The most common mechanism of injury was a fall (49% in cycle 1, 69% in cycle 2). In both cycles, about 35% of the total patients developed PTHP. In cycle 1, 48% of those with a fall developed PTHP versus 39% of those with a fall in cycle 2. 72% were GCS 13-15 at presentation in cycle 1, 82% in cycle 2. In cycle 1, only 10% of patients with PTHP had the appropriate investigations completed. This increased to 24% in the 2nd cycle after teaching was provided. 13% of patients were discharged or repatriated with ongoing dysfunction in cycle 1, compared with 7% in cycle 2. Referral to the endocrine team was made in 17% of patients in cycle 1, versus 13% in cycle 2. Of all those with PTHP, 83% had GCS 13-15 on discharge in cycle 1 and 90% had GCS 13-15 on discharge in cycle 2.

Conclusion:

Current management of PTHP is not consistent with the guidelines set out by the British Neurotrauma Group. Teaching regarding management needs to be incorporated into departmental induction, including education of nursing staff to allow timely urine samples to be sent off and improve patient outcomes.

0179

Alcohol Misuse in Major Trauma Admissions

Phoebe Verbeeten¹, Surabhi Varma¹, Eleanor Pews¹, Anna Jones¹

¹ Imperial College Healthcare NHS Trust, London, United Kingdom

Background:

Alcohol is the leading risk factor for morbidity and mortality amongst 15-49-year-olds and the 5th risk factor across the general UK population (1). In trauma patients, alcohol use is predictive of recurrent motor vehicle collision (2). Screening and brief intervention reduce trauma recidivism (3). Use of an in-hospital screening tool would increase early identification of alcohol-related presentations and enable health promotion.

Aims:

- (1). To investigate the assessment of alcohol misuse by the multi-disciplinary trauma team
- (2). To identify shortfalls in this assessment and develop an educational tool
- (3). To improve identification of alcohol-related presentations and deliver health promotion to major trauma patients.

Methods:

The first stage of this quality improvement project consisted of a staff survey and admission audit.

- (1). A snapshot survey of 17 members of the multi-disciplinary trauma team at St Mary's Hospital was conducted over 5 days.
- (2). An audit of alcohol misuse management in 50 patients admitted to the Major Trauma Ward (MTW) in January 2020, looking at mechanisms of injury, alcohol screening and management.

Results:

The survey showed that 82% of staff had cared for a patient with a history of alcohol misuse during the preceding week, however only 53% had screened for withdrawal. 6% reported providing relevant advice but none referred to the alcohol liaison service. Of 50 patients admitted to the MTW, 98% had a potentially alcohol-related mechanism, yet only 44% were asked about alcohol use. Only 44% had a recorded blood ethanol level. 18% of all presentations were found to have resulted from alcohol misuse.

Conclusion:

Our results indicate that we are failing to adequately screen patients for alcohol misuse and identify the role of alcohol in trauma presentations. Due to lack of staff awareness, we are missing opportunities to provide appropriate care to an at-risk population. Following the audit, we have developed an education tool entitled '3As of Alcohol: Ask, Assess, Advise' and teaching on this was delivered at local trauma meetings. A re-audit is planned for 2021.

In order to provide holistic major trauma care, alcohol misuse must be considered in injury aetiology and managed appropriately thereafter.

0113

UK-Wide Major Trauma Centre Tertiary Trauma Survey Pro Forma Review - Aggregation And Consolidation Into A Redesigned Document

Mark Parson¹, Adam Pickard¹, Dan Simpson¹, Lisa Rampersad¹, Michael Treece²

¹ Royal Sussex County Hospital, Brighton, United Kingdom ² Medway Maritime Hospital, Gillingham, Kent, United Kingdom

The Trauma Tertiary Survey (TTS) is an essential part of the continued care for major trauma patients and is performed to ensure that all injuries have been identified. At the Royal Sussex County Hospital the TTS pro forma is a single A4 page situated on the last page of a trauma booklet. A previous local audit has uncovered poor completion rates thought to be due to the inadequate pro forma location and structure. We believed that the first stage to improving this was designing a new pro forma. However, there are no published guidelines for what should be included in a TTS.

Method

Using local consultant expert opinion and a literature search we identified a set of 32 TTS features that may be included within a TTS pro forma. MTC documents were requested from every MTC within the UK. Four investigators sequentially interrogated each MTC TTS document looking for 1) presence of each standard and, 2) how well the standard was represented on the document (0-4 Likert Scale). Any previously unidentified potential TTS features were noted and later reviewed in a second round of document analysis.

Results

A total of 21 out of all 26 UK MTCs had a TTS pro forma document. A total of 68 possible standards were identified. Respiratory and Abdominal assessment sections were the most frequently identified standards (present in 90.4% of the TTS proformas each; n=19). Further aspects identified for round 2 analysis typically included standards that were thought to be important but highly specific, for example, pregnancy test and DNACPR discussions. Both of these were found in 1 MTC TSS each (4%).

Our draft RSCH TTS document contains all 68 identified features. Also included are checkpoints in appropriate system areas for the most common missed injuries which have been identified from a literature search. These aimed to improve injury identification.

Discussion

We feel we have produced an evidence based document which will guide and enhance assessment of patients in the days following an initial trauma event. We feel this document could easily be modified for other hospital local MTC requirements.

0027

The Potential for Non-Continuous, Non-Complete Resuscitative Endovascular Occlusion of the Aorta (REBOA) Approaches to Reduce Ischaemia-Reperfusion Injury in the Management of Traumatic Haemorrhage.

Vlad Prodan¹

¹ *University of St Andrews, St Andrews, United Kingdom*

Background:

Non-compressible torso haemorrhage (NCTH) is the leading cause of preventable trauma-related mortality in both military and civilian populations. (1) Clamping management with a Resuscitative Thoracotomy followed by aortic cross-clamping has high mortality and exposure to pathogens. (2) An emerging solution has been Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA). By using a balloon catheter, it can achieve aortic occlusion in a minimally invasive fashion. However, the maximum acceptable length of occlusion is limited by the ensuing ischaemia distal to the balloon leading to ischaemia-reperfusion injuries. (3) To combat this, several types of non-continuous, non-complete REBOA variants have been developed. (4-12) By allowing a degree of blood flow through the aorta, ncREBOA aims to reduce the metabolic burden of complete REBOA (cREBOA). This literature review aims to assess the potential of different ncREBOA techniques to reduce ischaemia while still providing adequate haemorrhage control.

Methods:

To compile the existing research, five databases were searched using the terms “Resuscitation” and “Balloon Occlusion”. Results were screened on title and abstract before final analysis of the full texts. Studies to be included were based on a set of predefined exclusion and inclusion criteria

Results:

9 Translational Experimental Comparative Studies were analysed. 3 looked at intermittent REBOA (iREBOA), 4 at partial REBOA (pREBOA), 1 compared the two, and 1 assessed a novel computer-controlled REBOA technique (EVAC). 6 papers found ncREBOA techniques successful (2 – iREBOA, 3 – pREBOA, 1- EVAC). 1 iREBOA study found no significant difference, 1 pREBOA study was unable to gather complete data, and the study comparing intermittent and partial occlusion found no significant differences.

Conclusions:

ncREBOA techniques are successful in reducing the ischaemic burden of occlusion, with pREBOA and EVAC showing the greatest promise. Analysis of recurrent study design issues might help guide future research and technological development.

0050

A Novel Method of Teaching Trauma Call Principles: Escape Room Simulation.

Samuel Everett¹, Angeliki Kosti¹, Sarah Law¹, Kirsty Benton¹, Emma Jacobs¹, Tom Badenoch¹, Alexander Curtis¹, Manal Ahmad¹, Richard Bamford¹, Ian Hunter¹

¹ *Musgrove Park Hospital, Taunton, United Kingdom*

Background

The use of escape rooms in medical education has increased in recent years. This study aims to determine if escape room simulation (ERS) can improve performance in trauma calls. To do this an educational escape room incorporating a trauma call was developed.

Methodology

Ten FY2 level doctors were randomised into two groups of five and each group completed the same assessed trauma call simulation. One group received a one-hour teaching session on trauma call principles taught through ERS, two weeks prior to the assessed trauma call simulation. The control group relied on pre-existing knowledge and completed the same simulation without preceding ERS teaching. The times taken to perform important tasks within the assessed trauma call simulation were recorded. These tasks included: cervical spine immobilisation, application of oxygen, recording of observations, needle thoracotomy, IV access, IV fluids, initial investigations, pelvic binder application, prescription of tranexemic acid, activation of the major haemorrhage protocol and handover to a major trauma centre.

Secondary outcome measures included a knowledge based multiple choice questionnaire on trauma call principles that was completed by participants before and after the ERS session and a Likert scale where participants rated their confidence in attending trauma calls following the ERS.

Results

The time to perform the expected key tasks in the trauma call were significantly faster in the group that had received ERS training, with an average time to complete each task being 6 minutes 25 seconds faster. Additionally, crucial steps such as pelvic binder application were missed in the group that had not been exposed to ERS. Mean result from the MCQ completed before the ERS was 6.8 out of 10 (range: 5 – 9), mean result after was 9.0 out of 10 (range: 7 – 10). 100% of participants agreed or strongly agreed ERS improved their confidence in attending trauma calls.

Discussion

This study demonstrates that ERS is an effective teaching method for improving knowledge of trauma call principles, confidence in attending trauma calls and crucially in improving performance in simulated trauma calls, which may be translatable to clinical practice.

0153

Indications for Emergency Department Resuscitative Thoracotomy in blunt and penetrating trauma: a systematic review of UK guidelines

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Introduction

Traumatic Cardiac Arrest (TCA) is a severe consequence of penetrating or blunt major trauma and is associated with high mortality. Emergency-Department Resuscitative Thoracotomy (ED-RT) is the last resort procedure to restore cardiac output following TCA. This study reviews the current UK guidelines for Major Trauma Centres (MTCs) to identify common indications for ED-RT and chest compressions following TCA.

Methods

Departmental policies were requested from all MTCs in the UK. Data including indication and contraindications for ED-RT were extracted by three reviewers. A planned subgroup analysis was performed for blunt and penetrating trauma.

Results

21 guidelines were identified covering 23 MTCs across the UK. All guidelines made recommendations regarding the indications for performing an ED-RT.

Time thresholds from loss of signs of life to undertaking RT in blunt trauma were given in 13 (62%) of guidelines and ranged from 5 (3 guidelines), 10 (8 guidelines) and 15 minutes (2 guidelines).

Prehospital loss of output was a contraindication to blunt trauma ED-RT in 6 guidelines.

Penetrating trauma guidelines recommended ED-RT within 10 (8 guidelines) or 15 minutes (10 guidelines) from the time of loss of output. Fewer than 50% of guidelines identified specific contraindications to RT which included massive head injury and asystole.

3 guidelines stated chest compressions were not to be performed in TCA. 8 stated that chest compressions may not be contra-indicated and 1 guideline advised chest compressions be restricted to blunt trauma.

1 Guideline commented on the use of Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) as a preferred intervention for haemorrhage control in extra-thoracic trauma resulting in TCA.

Conclusions

In a systematic review of UK guidelines, we have found inconsistency in the indications for ED-RT, particularly associated with blunt trauma. A maximum time from loss of output to ED-RT for penetrating trauma of 15 minutes is compatible with most guidelines but is less consistent with findings for blunt trauma. There is little consensus regarding the use of chest compressions.

0138

Surgical Stabilisation of Rib Fractures in Polytrauma Patients **– Can we Predict the Need for Surgery?**

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Background: Rib fracture treatment has developed over recent years, with controversy surrounding the benefits of surgery. Surgical management has been shown to decrease complications, need for mechanical ventilation and hospital stay, however the decision making process in identifying surgical candidates is difficult.

Objectives: The primary aim in this study was to identify the factors which correlated with the decision to undertake surgical fixation of patients with rib fractures.

Design and Methods: All major trauma patients with rib fractures who were reviewed by our specialist pain team, were included in this study. The study included a group of surgically treated patients from February 2016 to September 2019 and a separate non-surgical group from February to September 2019. Patients were identified from our prospectively collected database, and medical documentation was retrospectively analysed. All statistical analysis was performed using SPSS.

Results: There were 89 in each group. The average age was 61 (range 21-99), with no significant difference between groups. Decision for surgical intervention was used as the dichotomous variable for analysis. On univariate analysis, increased injury severity score, pain on movement, abdominal/pelvic injury, increase in number of ribs fractured, radiological flail, lateral and posterior fracture position, critical care admission, intubation, increasing oxygen flow rate, decreasing respiratory rate and use of high-flow nasal oxygen were all significant factors. Using these factors to build a multi-regression model, only pain on movement (OR 6.60, $p = .001$), Abdomen/pelvic injury (OR 3.98 $p = .046$), number of ribs fractured (OR 4.68 $P = .03$), radiological flail (OR 17.79, $p = 0$) and decreasing respiratory rate (OR 5.26 $p = .022$) remained predictive factors with the model being 88.4% correct.

Conclusion: Our findings suggest that the decision to offer surgical management for rib fractures is very strongly associated with radiological flail chest and strongly with increasing pain on movement, increasing number of ribs fractured, concurrent abdominal/pelvic injury and decreasing respiratory rate. The significance of decreasing respiratory rate could be due to patient fatigue and impending respiratory failure. Therefore we believe that respiratory parameters, pain and radiological findings could be combined to set forward a model to predict the need for surgery.

0137

Rib Fracture as a Component of Total Pain in Major Trauma **– Does Fixation Make a Difference?**

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Introduction:

Rib fracture treatment has developed over recent years, with controversy surrounding the benefits of surgery. BOAST guidelines recommend use of a multimodal assessment, including patient pain scoring. This study aimed to retrospectively review the total pain scores in both operatively treated and nonoperatively treated rib fractures in a major trauma setting, to identify if surgical stabilisation of rib fractures had an impact on patient perceived total pain scores.

Methods:

All major trauma patients with rib fractures who were reviewed by our specialist pain team, were included in this study. The study included surgically treated patients from February 2016 to September 2019 and non-surgical patients from February to September 2019. Patients were case-matched in each group. Primary outcome measures were pain at rest and pain on movement at first and final review. All data was analysed using SPSS.

Results:

There were 89 in each group. The average age was 61 (range 21-99), with no significant difference between groups. The pain on movement at first review was significantly greater in the surgical group vs non-surgical group (mean 8.25 vs 7.52, $p=0.000$), although there was no significant difference at rest. Comparing pain at last review compared to first review, the surgically treated group had a significantly greater improvement of pain on movement as compared to the non-surgical group (mean 2.95 vs 1.76, $P=0.039$). There was no significant difference in pain improvement at rest between the two groups (mean 1.97 vs 1.53, $p=0.015$). The ISS was significantly greater in the surgical group than the nonsurgical group. The mean pain score at last review in the surgical group was lower both at rest (2.53 vs 3.36, $p=0.016$) and on movement (5.36 vs 5.82, $p=0.023$) than the non-surgical group, regardless of other injury.

Conclusion:

Although the decision for surgery has not been explored in this study, pain on movement was a clear factor that differed between the groups prior to surgery. Despite the greater initial pain on movement in the surgical group, the pain at final review was significantly lower in the surgical group than the non-surgical group at rest and on movement.

0068

Re-Audit of Previously Sustained and Further Improvements in the Management of Open Fractures at a UK Major Trauma Centre Following Junior Doctor Changeover

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Aim

To re-audit pre-operative hospital management of open fractures following junior doctor changeover to identify if previously sustained and further improvements seen following three previous audit cycles were sustained.

Methods

A re-audit of patient notes was performed using the NICE and joint BOAST and BAPRAS guidelines on open fracture management. Interventions previously used in the audit were junior doctor education and awareness, and editing of trauma clerking form. Following the first three audit cycles junior doctors on the team were exposed to the full intervention, whilst in the fourth audit cycle junior doctors on the team following changeover only had access to the edited clerking form, without the education and awareness component.

Results

Patient notes before (3rd audit) and after (4th audit) changeover were reviewed. Correct complete use of the clerking form decreased (93%vs21%). Correct antibiotic administration and documentation of initial neurovascular examination were equivalent (100%), however, specifying arteries (71%vs64%) and nerves (86%vs64%) assessed, assessing all relevant arteries (71%vs64%) and nerves (71%vs64%), and using Medical Research Council grading (71%vs29%) in nerve assessment deteriorated. Neurovascular assessment post-manipulation (75%vs17%), documentation where not possible to perform this assessment (50%vs40%), tetanus cover (100%vs86%), photo taken of injury (93%vs71%) and appropriate dressing use (71%vs36%) deteriorated. Comparison of the first audit, prior to any interventions, with the 4th audit cycle, showed improvements in: correct antibiotic administration rate (93%vs100%), documentation of initial neurovascular assessment (93%vs100%), documentation of assessment of specific arteries (30%vs64%) and nerves (23%vs64%), assessing all appropriate arteries (13%vs64%) and nerves (20%vs64%), documenting manipulation in A&E (47%vs57%), neurovascular assessment post-manipulation (16%vs17%), tetanus cover (77%vs86%), injury photo availability (40%vs71%) and appropriate dressing use (27%vs36%).

Conclusion:

Junior doctor changeover poses challenges to maintaining improvements following audits, particularly if the doctor leading an audit leaves. Following junior doctor changeover, most parameters assessed deteriorated compared to previous audit, however, were nonetheless an improvement on the initial audit. Long-term education and/or awareness activities as part of audit interventions may lead to better, sustainable improvements. Following this re-audit, a teaching resource was developed (for independent review) explaining the necessity for components of management of open fractures, linking to relevant clerking form prompts.

0232

Assessing Routine Fy1 Competencies In Final Year Eea Medical Students

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Background

The number of European Economic Area (EEA) doctors in training in the NHS has increased by 29% since 2016, representing 4.3% of all doctors. From 1 January 2021, amendments to the Medical Act will ensure that most EEA-qualified doctors will continue to be able to apply for a full medical license with the GMC, and undertake a Foundation Year 2 (FY2) post. Thus, it is expected that EEA-medical-graduates are confident in routine Foundation Year 1 (FY1) competencies.

The aims of the study were 3 fold: (1) to establish the level of confidence in routine UKFPO FY1 competencies amongst final year students at EEA medical schools eligible to apply for UK FY2, (2) to determine if COVID-19 has impacted clinical exposure, (3) to assess whether additional teaching would be necessary to support final year EEA-students in transitioning into a full licensed FY2 doctor.

Methods

A 43-item structured questionnaire, registered at University College Hospital R&D, was distributed amongst final year students studying in EEA medical schools between November 2020-March 2021 via social media platforms.

Results

From 834 students that completed the questionnaire across 22 EEA medical schools, 673 participants met the inclusion criteria. Alarming, 47.3% (n=318) reported to not be confident in recognising and assessing acutely ill patients using the basic ABCDE approach, with 52.7% (n=355) reported to not feel confident in managing sepsis. COVID-19 has significantly reduced in-person teaching from 10-15 hours (n=297) to less than 5 hours (n=617), $p < 0.001$. Despite participants reporting an increase in remote teaching from less than 5 hours (n=516) to 5-15 hours (n=539), 48% stated that their current university teaching is not sufficient to improve their confidence in routine FY1 competencies and 90% strongly agreed that they would benefit from near-peer-teaching to improve confidence in routine FY1 competencies.

Conclusions

Our findings demonstrate that there is lack of preparedness amongst EEA-medical-students to demonstrate adequate competencies outlined by the UKFPO at the level of a FY1 doctor, despite having the opportunity to apply for a full medical license. Therefore, further teaching is required to increase students' confidence in day-to-day competencies, to ensure patient safety is not compromised.

0202

Pseudopathological lesions associated with neck of femur fractures: more common than we think?

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Introduction:

Femoral heads are often sent for histological analysis when malignancy is suspected following a neck of femur (NOF) fracture. Anecdotally, a commonly seen lytic appearance on plain radiographs prompts suspicion of malignancy but does not correlate with histology results.

Aim:

To evaluate the radiographic patterns of NOF fractures deemed suspicious for malignancy, and correlate those patterns with their subsequent histology results.

Methods:

We performed a retrospective study of all NOF fracture patients who had femoral head histopathological analysis, across five hospitals in Yorkshire, over three years (2017-2019). Included were patients whose radiographs were deemed suspicious for malignancy by their clinicians. All radiographs were evaluated and their patterns categorized. Chi-Square test was used to analyse the relationship between each radiographic pattern and histology outcome (benign vs malignant disease). A p -value < 0.05 was deemed statistically significant.

Results:

79 eligible patients were identified, comprising 51 females and 28 males, with a mean age of 77 years. Radiographic patterns most associated with malignancy were 'multiple sclerotic lesions' (9 patients, 7 malignant, $p < 0.01$), and 'single lytic central neck lesion' (8 patients, 6 malignant, $p = 0.01$). 26 patients had an eccentric lesion with lytic appearance in the superolateral aspect of the femoral head/neck, all of which were benign ($p < 0.01$). The average lead time for results being available was 42 days for the cohort.

Conclusion:

Being familiar with radiographic patterns of disease will help clinicians decide when to investigate a femoral head for malignancy. We identified a discrete pseudopathological pattern that commonly prompts clinicians to investigate for malignancy. We named this the 'calcar crush lesion' as we posit that this 'lytic' appearance is due to mechanical impaction of osteoporotic bone during injury. Histopathological analysis of the femoral head is a resource intensive process (£300 and 20 man hours/cycle of sample processing). Recognizing this pattern can save time and resources by avoiding unnecessary investigations and undue stress that the patients undergo awaiting the result.

0201

Muscle quantity at C3 and/or L3 on routine trauma series Computed Tomography correlate with brain frailty and Clinical Frailty Scale: A Cross-sectional study

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Background:

Sarcopenia (low muscle mass and function) is increasingly recognised to impact on quality of life and patient outcomes. The relationship with brain frailty is unknown.

Objectives:

Assess if muscle mass at C3 correlates with muscle mass at L3 on routine trauma imaging. Assess for associations between muscle mass, brain frailty, and Clinical Frailty Scale (CFS) on routine trauma imaging.

Methods:

Routine trauma-series Computed Tomography (CT) scans were retrospectively analysed for patients aged ≥ 16 years-old admitted to Queen Elizabeth Hospital in January 2020. Paravertebral, sternocleidomastoid, and total muscle cross-sectional area (CSA) at C3 (C3-SMM), and Total Psoas muscle CSA (TPA), total muscle CSA (L3-SMM), and total adipose CSA at L3 were calculated. Brain frailty scores were calculated assessing for leukoaraiosis, cerebral atrophy, and old vascular lesions/infarcts. CFS was calculated retrospectively from clinical notes. We assessed for correlation against age, CFS, muscle mass, and brain frailty using Pearson's correlations.

Results:

We included 111 patients in this study (mean age 49, SD 25.6; 65.8% female). C3-SMM strongly correlated with L3-SMM ($r=0.746$, $p<0.001$). Paravertebral and sternocleidomastoid CSA correlated with C3-SMM (paravertebral: $r=0.814$, $p<0.001$; sternocleidomastoid: $r=0.814$, $p<0.001$). TPA strongly correlated with L3-SMM ($r=0.800$, $p<0.001$). Sternocleidomastoid CSA and TPA both negatively correlated moderately with age (sternocleidomastoid: $r=-0.460$, $p<0.001$; TPA: $r=-0.468$, $p<0.001$), CFS (sternocleidomastoid: $r=-0.414$, $p<0.001$; TPA: $r=-0.431$, $p<0.001$), and brain frailty (sternocleidomastoid: $r=-0.395$, $p<0.001$; TPA: $r=-0.436$, $p<0.001$). Adipose CSA at L3 did not correlate with age, CFS, brain frailty, or muscle mass.

Conclusion:

Muscle mass at C3 relates to muscle mass at L3.

Muscle mass on routine trauma imaging is negatively associated with age, CFS, and brain frailty.

0055

Therapeutic efficacy of platelet-Rich plasma injection compared to corticosteroid injection in plantar fasciitis: A Systematic Review and Meta-analysis.

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Background and aims:

Within the past few years, better understanding of the plantar fasciitis as condition stemming from underlying degenerative pathology supported by histological findings from operative specimens, led to strong advocating of platelet rich plasma injection (PRP) as more promising second line treatment due to its regenerative properties. This study aims to assess the long term effect of PRP injection compared to corticosteroid injection to relieve pain and consequently improve function among patients affected with plantar fasciitis.

Research design and methods:

Randomized controlled trials (RCTs) and prospective comparative studies comparing PRP with steroid injections as treatments for Plantar fasciitis were searched using the following databases: MEDLINE (via PubMed), ExcerptaMedica (EMBASE) , clinicaltrials.gov, The Cochrane Library and conference proceedings via the web of Science core collection database. Databases have been searched from their establishment to 1st of August, 2019. Inclusion criteria were: Adult patients diagnosed with plantar fasciitis, Failure of conservative management for at least 3 months, Visual analogue score used for baseline and outcome measurement. Random effect model was used for all comparison and results were presented as weighted mean difference with corresponding 95% Confidence Interval (CI).

Results:

Ten prospective trials were included with total number of 543 participants, the outcome measure was change of mean VAS score difference. There was no significant difference in VAS score between the two groups at 4 weeks follow-up (WMD:0.98, 95% CI: -0.38,2.33, P: 0.16).At three months follow up, VAS scores were significantly improved in the PRP group (WMD, -1; 95% CI: -1.8 to -0.19; p = 0.02). Significant improvement was maintained in the PRP group at 6 months follow up (WMD: -1.32; 95% CI: -2.33 to -0.31; p = 0.01).

Conclusion:

PRP injection led to improved pain score compared to CS injection among patients diagnosed with PF at three months and six months follow up but no difference was found at 4 weeks follow up.

0084

The Role of Platelet Rich Plasma and other Orthobiologics in Bone Healing and Fracture Management: A Systematic Review

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Background

Treatment of large bone defects and fracture healing complications (delayed and non-union) presents a substantial challenge for orthopaedic surgeons. Given that bone healing requires mechanical stability as well as a favourable biological microenvironment, orthobiologics such as Platelet-Rich Plasma (PRP) may have a significant clinical role to play.

Aims

To perform a systematic review of the available literature to assess the clinical effect of PRP, with or without other orthobiologics, on bone healing.

Method

Two independent reviewers performed the literature search based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. Clinical studies of any evidence, assessing effect of PRP with or without other orthobiologics on bone healing, were included. A qualitative analysis was carried out on the clinical and radiological outcomes reported, with a quantitative analysis carried out on time to union. A p value <0.05 was considered statistically significant.

Result

27 articles with 1,631 patients (mean age = 43.56, 57.1% male, mean follow-up = 17.27 15 months) were included in the qualitative synthesis and 5 in the quantitative synthesis. Of the 27 studies, 13 dealt with fracture complications (delayed or non-unions), 7 with acute fracture healing, 4 with tibial osteotomies and lengthening procedures and 3 with lumbar spine pathology. Of the 5 studies included in the quantitative analysis, 3 dealt with fracture complications and 2 with acute fracture healing. 18/27 studies showed a clinical benefit of PRP, 8/27 showed no significant effect, and 1/27 showed a worse outcome with PRP. Although the quantitative analysis showed the mean time to union was faster (2.86 months) in the PRP group vs the control group, these results were not statistically significant (p value = 0.12).

Conclusion

Our review suggests PRP may play a clinical role in bone healing, however the lack of significant findings in our quantitative analysis suggests there is a need for further high quality RCTs with large participant populations for specific bone pathology comparing PRP, prepared and activated according to a standardised preparation protocol and delivered according to a standardised regime, to control groups with standardised, comparable outcomes reported.

0151

The use of Nottingham Hip Fracture Score (NHFS) as a predictor of one year mortality risk following Vancouver B/C periprosthetic fracture

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Background:

Mortality with regards to native hip fractures is closely studied in the United Kingdom (UK) within the national hip fracture database; however there is limited data regarding periprosthetic fractures. Whilst NHFS is widely used as a predictor of mortality with regards to native hip fractures; its role in predicting mortality with regards to periprosthetic hip fractures has not been investigated.

Objectives:

The primary objective was to determine if the Nottingham Hip Fracture Score (NHFS) could be used to stratify 1-year mortality risk amongst periprosthetic hip fracture patients. The secondary objective was to identify 1year mortality rates amongst surgically managed periprosthetic hip fractures.

Methods:

A retrospective review of our fracture database program was conducted for all Vancouver B/C periprosthetic fractures between September 2009 and April 2019. Patients with a THA implant or Hemiarthroplasty implant were included. Radiographic and electronic clinical record review was performed for each case.

Results:

A total of 104 patients were identified; these patients included 74 females and 30 males. The mean age at the time of fracture was 80.5years. 62 patients had a total hip arthroplasty implant in situ, the remaining 42 patients had hemiarthroplasty femoral stems. Increase in NHFS was found to be highly predictive of 12month mortality amongst this patient cohort ($p=0.000016$). We find that each unit increase in the NHFS is correlated with about a 110% increase in mortality risk. There was no evidence that time lag from presentation to surgery led to an increased mortality ($p=0.456$).

Conclusion:

Our 1 year mortality 26.0% highlights the significant mortality risks associated with these fractures. NHFS can be used to stratify the 1-year mortality risk amongst patients after a Vancouver B or C periprosthetic fracture; this is a new finding that we have not found in published literature. Given that time to surgery does not correlate with mortality, patients should be risk stratified on admission with NHFS. Time is then available to conduct a multi-disciplinary approach to optimize the patient, personnel and equipment.

0200

Urinary and Sexual Dysfunction Following Traumatic Pelvic Fractures: A Retrospective Cross-sectional Study.

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Introduction:

Traumatic pelvic fractures are known to be associated with urological injuries and subsequent urinary and sexual dysfunction. However, accurate estimates of their frequency and development outside the hospital setting are lacking and as such they are often overlooked. Therefore, the aim of this study was to identify the prevalence of urinary and sexual dysfunction symptoms and investigate patterns of urological injury following pelvic ring fractures in men.

Materials and Methods:

A retrospective cross-sectional cohort study was conducted of male patients treated for pelvic ring fractures at a UK major trauma centre between 2015 and 2019. Identified patients were administered two questionnaires by telephone concerning their injuries. These included a specially designed questionnaire assessing urinary and sexual dysfunction, and the validated "Index of Erectile Function-5 (IIEF-5)" questionnaire diagnosing post-injury erectile dysfunction (ED).

Results:

The final sample included 93 eligible patients, of which 28 patients sustained a urological injury post pelvic fracture. Patients with pelvic fractures caused by anterior posterior compression (APC) forces were found to be at higher risk of urological injury compared to lateral compression (LC) (relative risk: 2.37, 95% confidence interval: 1.17 - 4.82, p=0.0168). Of the full sample, 32 patients completed the first questionnaire with 18 patients reporting having urinary symptoms and 19 patients having sexual dysfunction. Only seven patients discussed these issues with their clinicians and five received written information. 26 patients answered the IIEF-5, of which 10 patients were diagnosed with post pelvic fracture ED.

Conclusion:

Urinary and sexual dysfunction post pelvic fracture was common in our cohort. Patients with APC fractures in particular are at an increased risk of urological injury. Symptoms unfortunately often remain undiagnosed in these, predominantly, young men and have important implications for quality-of-life post injury, calling for proactive collaboration and follow-up by orthopaedic and urology clinicians.

0157

A novel treatment pathway for adults diagnosed with acute stable vertebral compression fractures in a secondary referral centre.

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Introduction:

Our department is a regional referral centre that serves a population in excess of 500,000 people. There are over 200 vertebral compression fractures referred to our department annually. 25% of post-menopausal women suffer a vertebral compression fracture (VCF) in their lifetime^[1]. Previously individuals who were diagnosed with a VCF were referred to our centre and had an outpatient follow up at 2 weeks, 6 weeks and finally at 3 months. The new pathway focuses on an MDT approach to the patient. At initial referral suitability for VCF pathway is determined.

Methods:

The study sample (n=48) includes individuals diagnosed with a VCF between February 2021 and June 2021. Patients were reviewed virtually by an orthopaedic consultant, based on imaging and clinical notes and their suitability for inclusion on the new pathway was determined. Patients deemed suitable for inclusion received a letter via their GP with information regarding their follow up treatment plan and referred onto our fracture liaison service and geriatrician as indicated.

All patients received an information leaflet which included contact information if they had any queries regarding their treatment pathway. At 2 weeks patients received a virtual appointment with a clinical specialist physiotherapist. If the patient was having difficulty or not reaching milestones, then they were offered an urgent OPD advanced imaging within 1 week and in person follow up. Further virtual follow up at 6 weeks following an x ray.

Results:

During the period February 2021- June 2021, 61 patients have been referred through this pathway. 48 have completed their 6 week review. Since diagnosis of a VCF 1/3 of patients have been admitted to hospital. However, just 13% of these were due to their VCF. N=2 patients required OPD follow up, however their management did not change. n= 1 patient underwent vertebroplasty.

Conclusion:

Patients with acute stable vertebral compression fractures can safely be managed virtually. This novel pathway for the treatment of vertebral compression fractures can potentially revolutionise the management of VCF's

[1] Greenberg M. 6th ed. New York: Thieme Publishing Group; 2005. Handbook of Neurosurgery

0071

A Major Trauma Centre's Experience of its novel Virtual Thoraco-Lumbar Fracture Clinic – an Evaluation of Injuries and Outcomes

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Background

Leeds Major Trauma Centre is among the first in the UK to launch a Virtual Thoraco-Lumbar Fracture Clinic (VTLFC). The importance of virtual and remote management of patients has only increased since the COVID-19 pandemic.

Aim

Audit the throughput of the Leeds VTLFC during the first 7 months of its inception.

Methods

A retrospective review of all patients booked into the Leeds VTLFC between 01/06/2019 and 31/12/2019. Patient demographics, injury classifications, and treatment outcomes were analysed.

Results

A total of 340 patients were processed through the clinic; mean age 61, 165 males and 175 females. 26.5% had fractures of L1, 14.7% of T12, 9.1% of L2, and the rest with fewer frequencies. 68.2% had A1 fractures, 8.2% had A2 fractures, 11.5% had A3 fractures, 5% had A4 fractures, and 2.1% had A0 fractures.

73% of patients were discharged directly after remote management. 25.6% patients were invited to a face-to-face fracture clinic for further management, usually for organisation of weightbearing spine X-rays or other clinical assessments.

Only 2 patients discharged from VTLFC (0.6%) contacted the service and requested to be seen due to ongoing concerns. Out of all 340 patients processed through the VTLFC, 2 (0.6%) went on to have surgery.

Conclusions

Our experience in Leeds suggests that a majority of stable thoracolumbar vertebral fractures can be managed virtually and remotely safely. Less than 1% of discharged patients called back to request to be seen, suggesting a high degree of satisfaction with and understanding of self-management of these injuries with the letters and resources provided by the VTLFC. Less than 1% of patients ultimately required surgery, and both were among the patients invited to face-to-face clinics for further assessments and radiographs.

0230

Suspected Cervical Spine Injury – Does a change in guidelines correlate with a change in management?

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Background

NICE guidance was updated in 2016 to recommend assessment using Canadian C-spine rules (CCR) for cervical spine injuries and when warranted CT scanning should be first line imaging. Audits against these standards were carried out in 2016, 2018 and 2020 with trust guidelines being changed to reflect the national guidelines in 2019. We aim to see whether a change in trust guidelines corresponds to a change in management.

Methods

The results pertaining to 'use of CCR' and 'imaging requested' of the 2018 audit were compared against the 2016 audit. The same comparison was made between the 2020 audit and 2018 audit between which the trust guidelines had been updated.

These results were then compared to ascertain whether a change in trust guidelines altered management.

Results

Comparison between the 2016 and 2018 audits showed an overall static documentation rate for CCR. When imaging was requested the rate of CTs improved (55% v 90%) with static rate of patients who warranted imaging but didn't receive any (8% v 9%). The rate of imaging in patients where it wasn't warranted was relatively unchanged (4% v 6%)

Comparison between the 2018 and 2020 audits showed improved documentation of Low-risk factors (96% v 100%) in CCR. When imaging was requested the rate of CTs was again improved (90% v 100%) however, the rate of patients that warranted imaging but didn't receive any increased (9% v 42%). The rate of imaging in patients where it wasn't warranted was improved (6% v 0%).

The results show that a change in trust guidelines has eradicated the use of x-rays in evaluation of Cervical spine injuries and ensured that imaging when not warranted doesn't occur.

Conclusion

Updating more locally used trust guidelines appears to have an impact to ensure that correct imaging is used, and imaging patients unnecessarily doesn't happen.

There was a drop in the use of imaging when warranted in the 2020 audit when compared to the 2018 audit. Some of the decisions to not image were made by a Senior ED Medic but this was not the case for all patients.

0214

No need for routine preoperative imaging in addition to plain radiographs in patients with a traumatic hip fracture and a history of malignancy

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Aim

To determine whether there is value in obtaining additional pre-operative imaging (MRI, CT or bone scan) in patients with a traumatic hip fracture and a history of malignancy.

Methods

This is a retrospective analysis of patients presenting between 1st August 2013 to 30th April 2021 with a traumatic hip fracture and history of malignancy at a site distant to the hip/femur. We collected data on demographics, type of cancer, date and type of fracture, mechanism of injury, date and type of surgery, and histology results. We assessed whether obtaining additional imaging affected management.

Results

351 patients were included. 330 had no suspicion of metastasis on their plain radiograph. 32 of these had further pre-operative imaging, none of which demonstrated a pathological fracture. Of the 298 who were not imaging further, three were found to have evidence later that the fracture was pathological (two by histology, one on follow up radiographs). It was felt that prior knowledge of this would not have affected surgical management. Patients undergoing further pre-operative imaging waited significantly longer for their surgery (2.67 ± 1.8 versus 1.39 ± 1.05 days, $P < 0.0001$). 95 patients had intra-operative tissue sent for histological analysis. Nine samples showed metastases. With histology as the gold standard, we found plain radiographs to have a sensitivity of 78% and a specificity of 94% for identifying a pathological fracture. Histology identified two cases not evident on radiographs.

Conclusions

If there are no metastases identified on the initial plain radiograph, then further pre-operative imaging is unlikely to identify a lesion that will affect surgical management. Awaiting additional pre-operative imaging causes significant delays to surgery. Sending intra-operative tissues for histological analysis can help rule out metastases, and also identify small metastases not seen on plain radiographs; which can guide post-operative oncological management.

0191

Different antibiotic prophylaxis regimens in fracture neck of femur (nof) surgery and association with c. difficile diarrhea and with surgical site infection (ssi)

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Background

C. Difficile infections in elderly patients with hip fractures is associated with high morbidity and mortality. Antibiotic regimens with penicillin and its derivatives is a leading cause. Antibiotic prophylactic preferences vary across different hospitals within NHS. We compared two antibiotic prophylactic regimens - Cefuroxime only prophylaxis and Teicoplanin with Gentamicin prophylaxis in fracture neck of femur surgery, and evaluated the incidence of C. Difficile diarrhea and Surgical Site Infection (SSI).

Objectives

To assess the Surgical Site Infection and C. Diff infection rate associated with different regimens of antibiotics prophylaxis in fracture neck of femur surgery.

Study Design & Methods

Data was analyzed retrospectively. Neck of femur fracture patients treated surgically from 2009 in our unit were included. Age, gender, co morbidities, type of fracture, operation, ASA grade was collected. 1242 patients received Cefuroxime only prophylaxis between January 2009 and December 2012 (Group 1) and 486 patients received Teicoplanin with Gentamicin between October 2015 and March 2017 (Group 2). There were 353 males and 889 female patients in Group 1 and 138 males and 348 female patients in Group 2. The co morbidities in both groups were comparable. Incidence of C. Diff diarrhea and Surgical Site Infection (SSI) was noted. Statistical analysis with chi square test was performed to determine the 'p' value.

Results

C. Diff diarrhea rate in Group 2 was 0.41 % as compared to 1.29 % in Group 1. The Surgical Site Infection (SSI) rate in Group 2 was 0.41 % as compared to 3.06 % in Group 1. The comparative results were statistically significant ($p = 0.0009$).

Keywords: Fracture Neck Of Femur, Antibiotic Prophylaxis, Cefuroxime, Teicoplanin & Gentamicin, C. Difficile Diarrhea, Surgical Site Infection

Conclusions

Prophylactic antibiotic regimen of Teicoplanin with Gentamicin showed significant reduction in C. Difficile diarrhea & Surgical Site Infection in fracture neck of femur patients undergoing surgery.

0183

Characteristics and outcomes of children attending hospital with knife injuries: A UK paediatric major trauma centre experience

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Introduction:

Knife injuries in children are a growing public concern. This study aimed to describe the epidemiology of knife-related injuries and quantify disease burden at an urban paediatric major trauma centre.

Methods:

Observational study of children (<16 years) attending the Emergency Department (ED) following knife injuries (January 2013 – December 2018). Patients were identified using ED and discharge coding and the Trauma Audit and Research Network (TARN) registry. Patient characteristics, management and outcome were collated from ambulance and hospital records.

Results:

168 patients were identified (24 by TARN); 131 (78%) males, median age 14 years (IQR 9.5-15.3 years). 80 children (47.6%) arrived by ambulance; 87 (51.8%) self-presented. 82 (48.8%) were injured at home, 55 (32.7%) in a public area and 15 (8.9%) at school. Causative weapon was household knife (n=76, 45.2%), knife (other/unspecified) in 24 cases (14.3%), machete (n=6, 3.6%) and unrecorded in 52 (31.0%) cases. Intent was accidental in 93 children (55.4%), assault in 71 (42.3%) and deliberate self-harm (DSH) in 3 (1.8%); children with accidental injuries were younger (median age 10.5 years) than those suffering assault or DSH (median age 15 years). Median decile of deprivation was 1 (IQR 1-3), this did not vary with intent.

108 (64.3%) attended ED only whilst 52 (31.0%) required admission (median duration 0.5 days, IQR 0-1); 4 (2.4%) required intensive care. Mortality was 2/168 (1.2%). Median Injury Severity Score (ISS) was 1 (IQR 1-1); 20 children sustained ISS>9, 13 of these sustained chest injuries. 58 (34.5%) underwent surgery. Plastic surgery was involved in the most numerous cases (n=47, 28.0%) followed by paediatric surgery (n=37, 22.0%) and orthopaedics (n=9, 5.4%).

Conclusions:

Accidental knife injuries outnumbered assaults. Most children attending hospital suffered minor, superficial injuries. TARN captured only 14.3% of knife-injured children. Injury prevention strategies should target children from deprived backgrounds and access to household knives.

0185

Free-flap outcomes in paediatric lower limb trauma – A systematic review, meta-analysis and meta-regression of prevalence and outcomes

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Introduction:

Traumatic lower limb defects in children involving open fractures, structural damage and extensive tissue loss can be challenging. We aim to evaluate paediatric free flap outcomes in lower limb trauma, where restoration of function is important whilst preserving the cosmetic aspect.

Methods:

Healthcare databases were searched to identify eligible studies. Meta-analysis of proportion was performed to obtain pooled values of prevalence, perioperative flap outcomes alongside flap morbidity and mortality. A random-effects meta-regression was performed to assess the effect of moderator variables on the outcomes of free tissue transfer in paediatric lower limb trauma.

Results:

17 studies were identified, reporting 454 paediatric lower limb trauma cases, of which 79% were open fractures. The mean age was 10 years old and 80% of patients were males. Road traffic accidents accounted for 69% of cases. A total of 457 free flaps were analysed, with a 12% return to theatre rate due to vascular insufficiency, haematoma, or infection. Anterolateral thigh flaps were most common (33.8%), followed by latissimus dorsi flaps (26.2%). A complete flap failure rate of 3% (95%CI 1-5) was observed, whilst the partial flap failure rate was 9% (95%CI 5-12). The mean time-to-surgery was 11.8 days, with an average duration of 376 minutes and length of hospital stay of 9.2 days. The mean follow-up was 11.9 months, at which time most patients were ambulatory. A negative association was observed between an increasing case volume and complete flap loss, where $B = -0.756$ (95%CI -1.711-0.199), $p = 0.105$. Interestingly, despite the increasing risk of flap failure, the risk of complete flap loss was lower with a high unit case volume. This indicates that with a high number of flaps performed, flaps had a greater salvage rate, resulting in a reduction in complete flap loss.

Conclusions:

Our analysis supports the use of paediatric free flap transfer in lower limb trauma as a viable reconstructive option with comparable success rates to adults. This may be attributed to the low rate of vascular diseases in children and the relatively larger pedicle vessel sizes. Moreover, they have a better functional outcome due to the ability to overcome the postoperative challenges.

0143

Early opiate analgesic requirements following non-surgically managed tibial fractures in children.

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Background:

Historically, children with tibial fractures have been admitted for observation. Currently, many of these children are being managed as outpatients. It is unclear how much opiates should be prescribed to ensure adequate analgesia at home without over-prescription. This study aimed to evaluate the risk factors for requiring opiates following admission for tibial fractures and to estimate opiate requirements for children being discharged directly from the emergency department (ED).

Methods:

All children aged 4 – 16 years admitted with closed tibial fractures being treated in a moulded circumferential above-knee plaster cast between October 2015 – April 2020 were included. Case notes were reviewed to identify demographics, analgesic prescriptions and complications. Risk factors were analysed using logistic regression.

Results:

75 children were included, of which 64% were males. The mean age was 9.5 (SD 3.4) years. Opiates were required by 36 (48%) children in the first 24 hours following admission. The median number of opiate doses in the first 48 hours was 0 (range 0 – 5), with 93% of children receiving ≤ 3 doses. The odds of requiring opiates in the first 24 hours were unchanged for age > 10 years (OR 0.85, 95% CI 0.33 – 2.23), male sex (OR 1.58, 95% CI 0.59 – 4.19), high-energy injury (OR 1.65, 95% CI 0.45 – 6.04), presence of a fibula fracture (OR 2.21, 95% CI 0.72 – 6.76) or need for fracture reduction in the ED (OR 0.57, 95% CI 0.20 – 1.65). No children developed compartment syndrome and the mean length of stay was 1.4 (SD 1.2) days. No children were readmitted following discharge.

Conclusions:

We have found no cases of compartment syndrome or extensive requirement for opiates following closed tibial fractures treated in plaster cast. These children are candidates to be discharged directly from the ED. We have not identified any specific risk factors for the targeting of opiate analgesics. We recommend a guideline prescription of 6 doses of opiates for direct discharge from the ED to ensure adequate analgesia without over-prescription.

0123

Manipulation of severely displaced distal tibial Salter Harris type 2 fractures in paediatric population using intranasal morphine and Entonox in ED.

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Purpose:

Distal tibial Salter Harris type 2 (SH2) fractures are uncommon childhood injuries that have previously been associated with high rates of growth arrest. Management of displaced fractures requires reduction, either following a general anaesthetic, sedation, or analgesia. Reduction following analgesia (e.g. nitrous oxide and diamorphine) has been shown to be effective for upper limb injuries and reduces the duration of hospitalisation compared to surgical procedures under general anaesthetic. This investigation sought to evaluate patient satisfaction and assess the patient experience following reduction with analgesia to evaluate the acceptability of this procedure in the Emergency Department.

Methods:

12 paediatric patients who underwent closed manipulation of SH2 distal tibial fractures were identified from a prospective database. Children were treated with intranasal diamorphine (0.1mg kg⁻¹) and 50% oxygen and nitrous oxide (Entonox) according to an established pathway in the Emergency Department a UK trauma centre. A patient satisfaction questionnaire to evaluate procedural experience and acceptance was developed and telephone follow-up was conducted. Pre- and post-manipulation and the final radiographs were also reviewed.

Results:

Of the 12 patient cohort, there was significant improvement in AP angulation after manipulation from 17.8° to 3.8° (Wilcoxon signed-rank p<0.001). Fracture position was maintained

There were no negative reported experiences at the time of manipulation. There was only 1 reported case of ongoing moderate discomfort >6 months post manipulation. All the subjects stated they would be willing to undergo the same management again with none reporting any suggestions for changes regarding the procedure. The mean level of satisfaction with pain management was 9.5±1.2 and overall satisfaction with the experience was 9.8±0.6 (0-10, 10 fully satisfied).

Conclusions:

Closed reduction in ED is safe and effective management strategy, eradicating the necessity for overnight admission and treatment in theatre. The high satisfaction rate recommends the procedure facilitates discharge on the same day and highly benefits patient's experience.

0196

Implementation of a Paediatric Fracture Manipulation Pathway in the Emergency Department

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Background

Approximately one-third of under 17 year olds will sustain a fracture, with 30% involving the forearm. Paediatric forearm fractures can be largely managed by manipulation and plaster cast application. Current local hospital practice is that all fractures deemed to be in an unsuitable position are taken to theatre for manipulation.

The primary objective was to reduce the number of paediatric patients undergoing a general anaesthetic (GA) for fractures deemed suitable for manipulation in the emergency department (ED) and therefore reduce overall admissions.

Methods

Retrospective analysis was carried out over 6-months looking at forearm fractures in the paediatric ED. Data was collected on length of stay, total operative time and operation type.

A protocol was designed and implemented in conjunction with Orthopaedics and ED to manipulate appropriate fractures under intra-nasal diamorphine (IND) and entonox to avoid the need for GA and potential admission.

After implementation of this protocol, prospective data was collected for a further 6 months, including if patients were readmitted for operative management.

Results

Prior to implementation a total of 66 patients attended ED with forearm fractures, of which 36 were taken to theatre for MUA with 23 of those requiring overnight admission.

After implementation of the new protocol, 26 patients presented with forearm fractures meeting the criteria for manipulation in ED, of these, 17 were treated with manipulation and plaster in ED.

1 patient was taken to theatre after a planned manipulation in ED to ensure soft tissue protection until operative management. No other patients were taken to theatre between ED manipulation and discharge from Orthopaedic follow-up.

Conclusion

Successful implementation of a safe protocol has been demonstrated and can be further trialled and used at hospitals elsewhere to both reduce admissions and the number of GAs, freeing up trauma capacity for other patients.

0165

Risk of complications following surgical fixation of femoral diaphyseal fractures in children aged 4 to 12 years: a systematic review and meta-analysis.

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Background

There is debate regarding the optimal surgical technique for fixing femoral diaphyseal fractures in children aged 4 to 12 years. The aim of this study was to conduct a systematic review and meta-analysis to compare the complication rate following flexible intramedullary nailing (FIN), plate fixation and external fixation (EF) for traumatic femoral diaphyseal fractures in children aged 4 to 12.

Methods

We searched MEDLINE, EMBASE and CENTRAL databases for interventional and observational studies. Two independent reviewers screened, assessed quality and extracted data from the identified studies. The primary outcome was the risk of any complication.

Results

Nine randomised controlled trials (RCTs) and 19 observational studies fulfilled the eligibility criteria. Within the RCTs, five analysed FIN (n=161), two analysed plates (n=51) and five analysed EF (n=168). Within the observational studies, 13 analysed FIN (n=610), seven analysed plates (n=214) and six analysed EF (n=153). The overall risk of complications was lower following plate fixation when compared to FIN (RR 0.45, 95% CI 0.28 to 0.73, p=0.001) in the observational studies. The overall risk of complications was higher following EF when compared to FIN in both RCTs (RR 1.94, 95% CI 1.25 to 3.01, p=0.003) and observational studies (RR 1.97, 95% CI 1.50 to 2.58, p<0.001). The overall risk of complications was higher following EF when compared to plate fixation in both RCTs (RR 7.42, 95% CI 1.84 to 29.98, p=0.005) and observational studies (RR 4.39, 95% CI 2.64 to 7.30, p<0.001).

Conclusion

Although the National Institute for Health and Care Excellence (NICE) and the American Academy of Orthopaedic Surgeons (AAOS) recommend FIN for femoral diaphyseal fractures in children aged 4 to 12, this study reports a significantly decreased relative risk of complications when these injuries are managed with plates. Our findings provide valuable information to healthcare professionals who are involved in discussing the risk and benefits of different management options with patients and their families. The overall quality of evidence is low, highlighting the need for a rigorous prospective multicentre randomised trial at low risk of bias due to randomisation and outcome measurement to identify if any fixation technique is superior.



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0061

A Multi-centre Case-control Study of 580 Patients with Proximal Femoral Fractures to Assess the Impact of COVID-19 Pandemic on Their Peri-operative Outcomes.

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Introduction

On 12th March, 2020, the WHO declared the COVID-19 outbreak as a pandemic. Multiple new guidelines were proposed and existing models of social, domestic and hospital care were challenged. Most healthcare systems were largely unprepared for this and the pandemic has tested their adaptability. This study's aim was to assess the impact of COVID-19 pandemic on the demographics, presentation, and clinical management of patients with hip fractures and comparing that information with the similar patients who presented before the pandemic.

Method

The data was obtained from three different large hospitals from different geographic regions in the UK using the hospitals' local and National Hip Fracture Databases. Patients admitted with hip fractures were divided into two groups: 1) patients presenting between 1st March and 30th May 2019 (Group PC: Pre-COVID) and 2) patients admitted over the same period during the pandemic (Group C: COVID - control). Primary outcomes were time to theatre, in-patient length of stay and 30-day mortality.

Results

580 patients were included. There was no difference in the demographic distribution, Charlson comorbidity index, hip frailty score, ASA Grade and fracture type between the groups. There were no significant differences in the numbers of DHS ($p=0.770$) and hemiarthroplasties ($p=0.363$). There were, however, a significant reduction in percentage of THRs (11% to 5%, $p=0.006$) and a significant increase in those managed conservatively (1% to 5%) in Group C ($p=0.002$). The time to theatre was significantly longer in Group C ($p=0.0009$). Length of hospital stay was similar in both groups. 30-day mortality rate for both cohorts was comparable at 8% ($p=0.828$). However, the mortality rate for COVID positive patients was significantly higher, 35.3% compared to 5.4% for COVID negative ($p<0.0001$).

Discussion

Despite the challenges COVID-19 has presented, the 30-day mortality rate for hip fracture patients who were COVID negative was similar to the control cohort, suggesting that these patients were being treated expediently, appropriately and safely. This study highlights the absolute need for maintaining strict protocols to minimise the risk of COVID-19 transmission, as the mortality rate for patients with hip fracture and positive COVID-19 status is unacceptably high.

0095

120-day mortality rates for hip fracture patients with COVID-19 infection

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Background

Increased 30-day mortality rates have been reported for hip fracture patients with COVID-19. Due to nosocomial spread of infection and the variable incubation period with the virus, follow-up past 30-days is required to evaluate the true mortality. No studies have examined mortality rates beyond 45 days. We aim to assess 120-day mortality rates in hip fracture patients with COVID-19 compared to those without presenting during the same period.

Methods

We reviewed all patients aged ≥ 60 admitted with a hip fracture between 5th April and 5th May 2020 across nine U.K. trauma units. gender, age, injury, treatment, comorbidities, time of diagnosis and death were recorded. Comparison was made using unpaired t-tests and Pearson's Chi Squared test between patients with and without a confirmed diagnosis of COVID-19. Kaplan Mayer survival analysis and Cox regression analysis were performed to assess mortality rates and analyse the association between patient characteristics and survival times.

Results

Data were collected for 265 patients. Eighty male, 185 female. Two hundred and fifty patients underwent surgery. Forty-six patients had COVID-19. Patients with COVID-19 were more likely to be male ($p < 0.01$). Twenty-three patients (50%) were diagnosed with COVID-19 at ≥ 14 days following admission. There was no difference in age ($p = 0.07$) or Charlson Comorbidity Index ($p = 0.51$) between the those with and without COVID-19. Mortality at 120 days was significantly greater in patients with COVID-19 at 63% compared to 17% in patients without ($p < 0.01$). This was also increased on subgroup analysis by gender and surgical treatment. Multivariate analysis demonstrated decreased survival time in patients with a previous MI (HR 2.87), and increased survival in patients undergoing surgery (HR 0.11).

Conclusion/Findings

This is the only study reviewing 120-day mortality rates for hip fracture patients with COVID-19 infection. We report that this is significantly increased at 63% compared to 17% for those without COVID-19. Previous MI was a predictor of increased mortality. This is useful for clinicians when planning treatment, consenting and counselling patients. With half of patients being diagnosed with COVID-19 at 14 days or greater following admission we also highlight the importance decreasing nosocomial infection in hip fracture patients.

0121

Hip Fracture Outcomes over three successive UK lockdown periods during the COVID-19 Pandemic: What Have We Learnt?

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Background

COVID-19 has greatly impacted the management of hip fracture patients. This study assessed the impact of COVID-19 on hip fracture outcomes across three successive UK lockdown periods over one year.

Methods

A single-centre retrospective cohort study was performed at an acute NHS Trust in the West Midlands. Hip fracture patients admitted within the first month from each of the three starting dates of each national UK lockdown were included and compared to a control group in March 2019. The lockdown periods were therefore: lockdown 1 (March 23rd to April 21st, 2020), lockdown 2 (November 5th to December 4th, 2020) and lockdown 3 (January 4th to January 31st, 2021). Data was collected as per the hip best-practice-tariff outcomes including additional outcomes as required. Data collection included COVID-19 status, time to theatre, 30-day mortality, presence of acute kidney injury (AKI) and pneumonia and do-not-attempt cardiopulmonary resuscitation (DNACPR) status for each patient. Data was analysed using an independent t-test or chi-square test with Fisher's exact test where appropriate. A p-value of <0.05 was considered statistically significant.

Results

95 patients during the COVID-19 pandemic were included and 20 patients tested positive for COVID-19. Patients experienced a statistically significant increase in time to theatre in lockdown 1 compared to 2019 ($p=0.039$) with a decrease in time to theatre with successive lockdown periods by lockdown 3. 30-day mortality increased from 8.9% in 2019 to 10.0-14.8% in all lockdown periods. COVID-positive patient mortality was 30.0% ($p=0.063$, OR=4.43 versus 2019). The rates of AKI and pneumonia experienced were higher for patients during the pandemic. The highest rates were experienced in COVID-positive patients, with 45.0% of patients diagnosed with AKI versus 27.0% in 2019 ($p=0.38$, OR=1.80), and 50.0% of patients diagnosed with pneumonia versus 16.2% in 2019 ($p=0.0012$, OR=5.17). The percentage of patients with a DNACPR increased from 30.0% in 2019 to 60.7% by lockdown 3 ($p=0.034$, OR= 3.61).

Conclusion

COVID-positive hip fracture patients are at a higher risk of mortality due to AKI and pneumonia. Patient outcomes have gradually improved with successive lockdowns to pre-pandemic levels.

0046

Is open reduction of Sub-trochanteric femoral fractures to achieve anatomical reduction during ante-grade intra-medullary nailing necessary? A study of open versus closed ante-grade intra-medullary nail fixations.

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Background.

Sub-trochanteric fractures account for 10-34% of all hip fractures. The incidence of sub-trochanteric fractures has a bimodal age distribution. The treatment of choice is ante-grade intra-medullary nailing however whether anatomical reduction should be achieved using open reduction remains controversial.

Objectives.

To assess the clinical outcomes of sub-trochanteric fractures treated with ante-grade intra-medullary nail using either open or closed reduction techniques.

Study Design & Methods.

We retrospectively report a case series of 42 patients who sustained a closed fracture of the sub-trochanteric region of the femur between February 2014 and May 2019. All patients were treated with an ante-grade long intra-medullary nail. An independent clinical assessor, not involved in patient care, reviewed all relevant patient electronic records. Our primary outcome was the presence of union and our secondary outcomes were length of hospital stay, blood loss, need for transfusions and postoperative infections.

Results.

Average age was 66.6 (15 - 98). Sex ratio was 1:1. Sixteen cases underwent open reduction and 26 cases underwent closed reduction. The fracture pattern was comparable in the two groups and the decision to open was the choice of the individual surgeon. The average time from surgery to discharge was 13 days in the open group and 12 days in the closed group. The average blood loss was 644mls in the open group and 250mls in the closed group. Three patients received a transfusion post operatively in the open group and five in the closed group. There was one case of superficial wound infection (in the open group) and no deep wound infections. In the open group 13 patients achieved union, 2 went into non-union and 1 was lost for follow-up (moved abroad). In the closed group 21 patients achieved union, 2 went into non-union and 3 were lost for follow-up (early deceased). Mean follow-up was 218 days.

Conclusions.

Patients in both groups achieved similar clinical outcomes in terms of union and length of stay. Our study concludes that in this group of patients there was no significant advantage in performing an open reduction to achieve anatomical reduction of the fracture.

0078

The Effect of the COVID-19 Pandemic on Mental Health Associated Trauma, Admissions and Fractures at a London Major Trauma Centre

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Introduction

Non-injury related factors have been extensively studied in major trauma and shown to have a significant impact on patient outcomes, with mental illness and associated medication use proven to have a negative effect on bone health and fracture healing. We present the epidemiological effect of COVID-19 pandemic on mental health associated trauma, fractures and admissions.

Materials and Methods

We collated data retrospectively from the records of Orthopaedic inpatients in an 8-week COVID and non-COVID period analysing demographic data, referral and admission numbers, orthopaedic injuries, surgery performed and patient co-morbidities including psychiatric history.

Results

There were 824 Orthopaedic referrals and 358 admissions (6/day) in the non-COVID period with 38/358 (10.6%) admissions having a psychiatric diagnosis and 30/358 (8.4%) also having a fracture. This was compared to 473 referrals and 195 admissions (3/day) in the COVID period with 73/195 (37.4%) admissions having a documented psychiatric diagnosis and 47/195 (24.1%) a fracture.

Conclusion

There was a reduction in the number of admissions and referrals during the pandemic, but a simultaneous three-fold rise in admissions with a psychiatric diagnosis. The proportion of patients with both a fracture and a psychiatric diagnosis more than doubled and the number of patients presenting due to a traumatic suicide attempt almost tripled. The implications of these findings are two-fold. Firstly, the impact of a pandemic and lockdown appears to disproportionately affect those with mental health problems and it is therefore imperative that increased services are put in place to support our vulnerable mental health patients during these periods. Secondly, this may further impact the workload of non-union and delayed union work and affect length of stay due to the potential effects of mental health conditions and medications on bone healing.

0182

Death Certification in Hip Fracture Mortality – A Comparison of Hospital vs Coroner Completion

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Background

Hip fractures are common and post-operative mortality, whilst falling, still poses a significant risk. Death certification can be completed by the medical team or referred to the coroner. Relevant indications for referral to coroner include death that may be related to an accident, or to surgery, or occurring within 24 hours of admission. The aim of this review was to determine the rate of coroner referrals, the inclusion of 'hip fracture' on the death certificate, and the common causes of death offered.

Methods

A retrospective review of all hip fracture patients who died during their admission, in a single hospital between 1/1/19 and 15/5/20 was undertaken. Medical records were reviewed, and a discussion with the coroner's office was undertaken, to answer the above aims.

Results

56 patients were identified (46 managed operatively). 36 patients were referred to the coroner (cause of death offered by the hospital doctor and accepted by the coroner for 14 of these), and 20 were completed wholly in hospital without a discussion with the coroner.

Of those completed by the coroner, 20/22 contained 'hip fracture', and of those discussed with the coroner but completed in hospital, 1/14 contained 'hip fracture'. Only 2/20 of those completed wholly in hospital contained 'hip fracture'.

Respiratory complications formed the majority of '1a' cause of death in both coroner and hospital completed certificates (19/36 and 11/20 respectively), followed by cardiovascular complications.

Conclusions

Death certificates completed in hospital have a lower rate of inclusion of 'hip fracture' when compared to those completed by the coroner. However, cases discussed with the coroner but completed in hospital also have a low inclusion rate. We recommend that 'hip fracture' is included in hospital death certificates more often in order to align with the coroner's office. This is important for hospital statistics and epidemiological studies.

0221

The COVID CLAVICLE Study: A predictor of future trauma trends

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Background:

Clavicle fractures are a common presentation to the Emergency Department following falls and sporting injuries. During 2020, the COVID-19 pandemic brought with it a long period of social isolation resulting in a change of behaviour patterns and in return, the presentation of fractures to our local hospitals.

The effects of this global pandemic on the presentation and management of clavicles were noted with particular interest to the change in mechanism and its future implications.

Methods:

We performed a longitudinal observational study in 10 hospitals in the North West of England, reviewing all patients presenting with a clavicle fracture during six weeks in the first peak of COVID-19 pandemic and compared these with the same time period in 2019. Collection points included the patient demographics, fracture characteristics, mechanism of injury and management.

Results:

A total of 427 clavicle fractures were assessed with lower numbers of patients presenting with a clavicle fracture during the COVID-2020 period (n=177) compared with 2019 (n=250). Cycling related clavicle fractures increased three fold during the pandemic compared to the 2019 control group. We also noted an overall increase in clavicle fractures resulting from higher energy trauma as opposed to low energy or fragility fracture. We also found a faster time to surgery in the COVID cohort by 2.7 days on average when compared to 2019.

Conclusions:

Government restrictions and the encouragement of social distancing led to behavioural changes with a vast increase in cyclists on the road. This created a significant rise in clavicle fractures related to this activity. This is likely to be further driven by the Government pledge to double cyclists on the road by 2025 in the United Kingdom.

We forecast that this increase in cyclists, a behaviour change accelerated by the pandemic, is a reliable predictor for future trauma trends.

0022

Rivaroxaban is a safe and effective method of venous thromboprophylaxis in pelvic and acetabular trauma patients

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Aims

The aim of this study was to determine the efficacy and safety of rivaroxaban as venous thromboembolism (VTE) prophylaxis in patients with pelvic and/or acetabular fractures managed either conservatively or operatively.

Background

Patients with pelvic trauma are at high risk of thromboembolic complications, which represents the commonest cause of morbidity and mortality in this cohort. Yet effective methods of prophylaxis are still to be accepted and adopted widely. Low-molecular-weight heparins (LMWH) have been shown to reduce the rate of VTE in high-risk patients with injury to the pelvis or lower limbs in a number of studies. However, meta-analyses of the existing literature fail to determine the most suitable method of thromboprophylaxis in this cohort, with reported incidences of VTE ranging from 2-33%. Oral anticoagulants are now available and have not been comprehensively considered in the previous pelvic and acetabular trauma literature, but their known benefits include increased patient compliance, and that it does not require monitoring.

Patients and methods

All patients referred to our pelvic trauma service between 2015 and 2020 were considered for this study, exclusion criteria involved those patients who had contraindications to rivaroxaban, those who were referred to our service but were never managed at our centre, and those managed by other teams (e.g neurosurgery). Operative patients were initially managed with LMWH until 24 hours post-operatively when they started rivaroxaban. Conservatively managed patients started Rivaroxaban straight away. Data was collected on demographics, injury mechanism, fracture classification and clinically relevant VTE and bleeding events up until 3 months post discharge.

Results

385 patients met the inclusion criteria for this study (252 males, 253 operatively managed, mean age 54.67). The overall incidence of VTE was 2%. All these events occurred in the operative group and before the patient began rivaroxaban therapy as per protocol. These represented 3 DVTs and 4 PEs. No major bleeding events related to Rivaroxaban use were observed. There were 2 minor bleeding events, both occurring in the non-operative group and not requiring further intervention.

Conclusion

These data show Rivaroxaban is safe and effective in this group, and at least non-inferior to standard LMWH prophylaxis.

0087

Radiation in Orthopaedic (RIO) Study: A national survey of UK orthopaedic surgeons

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Introduction

Ionising radiation is widely used in Trauma & Orthopaedic operating theatres in both trauma and elective settings. The risks of ionising radiation are well documented and orthopaedic surgeons have a responsibility to minimise these risks to patients, themselves and staff. The aim of this study is to establish the understanding of radiation practice, legislation and risk by orthopaedic surgeons with a view to identify areas of further training required.

Methods

A nationwide online survey of UK based orthopaedic surgeons was conducted. Participants answered eighteen multiple-choice questions assessing level of radiation safety training, basic principles/knowledge of ionising radiation, relevant legislation and operating practice.

Results

A total of 406 surgeons completed the survey. 92% reported using intra-operative ionising radiation at least once per week. 38% had received no formal training or teaching on radiation safety. Knowledge of basic principles of radiation and legislation was limited. There was variable knowledge when labelling an image intensifier machine and choosing its safest orientation. Poor uptake of radiation protection equipment was noted. Only 19% agreed they had adequate training in ionising radiation safety. Only 27% stated that they had received adequate training in the use and principles of equipment emitting ionising radiation in the operating theatre.

Conclusion

Many orthopaedic surgeons in the UK do not believe they are adequately trained in radiation safety. There is a deficiency amongst practicing surgeons in basic knowledge, relevant legislation and practicalities of the use of ionising radiation in the operating room. This could potentially put patients and healthcare professionals at additional risk. We recommend that a standardised national training programme on the basic principles and safety of ionising radiation is implemented for all practicing orthopaedic surgeons as part of the certificate for completion of training or revalidation.

0216

'See one, do one, teach one': the balance between patient care and surgical training in an emergency trauma department

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'See one, do one, teach one' refers to a methodology of learning new skills through a three-tiered approach. A traditional teaching style whereby once a skill has been observed, the student/trainee is expected to perform the procedure followed by the ability to teach it. This model was developed with the purpose of giving increased responsibilities to trainees, however this concept has become less acceptable in British medical schools. Technology has supported this shift in education; students in the UK commonly practice procedures using a variety of simulations before meeting patients.

However, within trauma departments in resource-poor settings these facilities are not readily available. Doctors take advantage of the three-tiered approach in order to train their students/trainees to tackle multi-trauma cases. As a student within the trauma department at Chris-Hani-Baragwanath Hospital, Johannesburg, my skills developed rapidly through this hands-on teaching method. Skills such as chest drains, central lines and surgical procedures commonly undertaken at a senior level in the UK. Nevertheless, it is clear this teaching method requires careful consideration. This project details the use of this method in trauma settings through literature and personal experience, providing reflections relevant for educators and students.

It is imperative that patient care is prioritised. Through this teaching method, various ethical concerns arise. Autonomy: patients may not understand what proficiency their doctor/student is at before the procedure. Beneficence/non-maleficence: all procedures must provide more benefit than harm with patients at risk of being reduced to surgical practice. Supervisors must also be willing to develop a close relationship to encourage asking for help if completing a procedure is difficult.

Despite this, valid arguments are made for this teaching method as it fosters a culture of mentoring and peer-assisted learning. In understaffed departments, this method provides the quickest way to up-skill students/trainees to support struggling trauma units. Studies have also found that trainees taught in this manner demonstrate superior performance compared to colleagues who were trained under complete supervision. At the end of seven shifts, I went from a student who needed to be taught to one who was now instructing new students/interns, thus vastly improving my confidence.

0117

Radiological Analysis of Gentamicin Eluting Synthetic Bone Graft Substitute used in the Management of Patients with Traumatic Bone Voids

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Background:

Management of traumatic bone void have always been challenging. Gentamicin eluting synthetic bone graft substitute (Cerament-G) showed encouraging results in achieving good bone healing with satisfactory degree of resorption when utilised as a void filler. This study aims to assess the radiological signs of Cerament-G remodelling when used for patients with traumatic bone voids.

Methods:

Retrospective data analysis of all patients admitted to our unit between 2015 and 2021 with traumatic bone void who had Cerament-G applied intraoperatively as a void filler. Postoperative radiographic images of the fracture site at 6 weeks, 3 months, 6 months, and at the final follow-up were reviewed. The radiological signs of Cerament-G integration, percent of void healing at the final follow-up were assessed.

Results:

51 patients (52 fractures) included in the study, there were 10 females and 41 males with mean age of 42.7 (11 – 90) years. The mean void size was 6.58 cm³. Mean follow-up duration was 9.73 months. Primary fracture union achieved in 44 (86.3%) patients. Delayed union was reported in 6 (11.7%) patients, while one patient had non-union (1.9%). 27 (52%) patients had > 90% of void healing with normal trabecular bone. 20 (38.5%) patients had 50-90% void healing with normal bone. Whereas only 5 (9.5%) patients had less than 50% of void healing.

Conclusion:

Cerament G used as a void filler for patients with traumatic bone void has resulted 98% fracture union rate with good signs of radiological remodeling into a trabecular bone. More than 50% void filling with new trabecular bone was reported in more than 90% of patients. Non-union was reported in only one patient.

0141

Education and raising the profile of trauma radiology for foundation doctors working in a regional Major Trauma Centre: a multi-departmental, regional quality improvement project

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Introduction

The importance of radiology in trauma management is particularly relevant today as Scotland develops its Major Trauma Network and opens its first Major Trauma Centres. Nevertheless, radiology is scarcely covered in current foundation programme curricula, despite its growing use as a diagnostic and interventional tool. Currently, the majority of radiological investigation requests are made by foundation doctors, who are also most often the first to be notified of results. Accordingly, there is an urgent need to ensure foundation doctors feel adequately trained in trauma radiology.

Aim

A quality improvement project which addresses the lack of current trauma radiology teaching in Scottish foundation curricula through the development and delivery of a tailored teaching programme that is both comprehensive and reproducible and improves foundation doctors' knowledge of radiology in trauma.

Methods

- Multi-departmental project covering Major Trauma, General Surgery and Trauma and Orthopaedics of 46 foundation doctors and clinical fellows over the course of 6 months (June – December 2020.)
- Audit of self-reported confidence in knowledge of indications, limitations and basic interpretation methodology for common radiological investigations used in trauma using a numeric scale.
- Development of regional trauma radiology teaching programme in conjunction with local consultant leads.
- Delivery of multiple evidence-based, thematic teaching sessions over the abovementioned period.
- Re-audit of self-reported indicators on completion of individual sessions and on completion of the programme as a whole.

Results

- 100% reported an increase of 70-100% in **confidence** in ordering trauma radiological investigations.
- 50-75% reported increased **understanding** of indications and basic interpretations of common trauma radiological investigations.
- 100% agreed radiology was **not sufficiently covered** in the foundation curriculum.
- 100% agreed radiology **teaching was important** and **relevant** to their stage of training.
- 100% **would attend further radiology teaching**.

Conclusion

- The foundation curriculum would benefit from the introduction of regular radiology teaching for its foundation doctors, across multiple specialities and in parallel to the demands of a growing national trauma network. Our teaching programme is suitable for delivery across the network.
- Education is well-received and globally improves foundation doctors' understanding of radiological investigations for trauma, with benefits to patient safety.

0144

Acronym-based intervention sustainably improves content and structure of post-operative reviews; Enhancing the Care of Trauma Patients

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Introduction

Elderly and frail patients make up a large proportion of the Trauma and Orthopaedic (T&O) workload and are at increased risk of medical complications. The Heartlands' Elderly Care Trauma & Ongoing Recovery Programme encourages a systematic approach to daily reviews of these patients. Foundation doctors, Advanced Nurse Practitioners and Physician Associates perform the bulk of daily reviews, with varying experience levels leading to considerable variation in approach and documentation. Hence, these reviews are neither standardised nor consistent. Previous quality improvement initiatives have struggled with sustainability due to frequent staff turnover and acceptability of proformas. Acronyms can serve as both a cognitive aid and structured framework for documentation, without additional paperwork.

Method

A "HECTOR" acronym was designed to prompt the T&O junior team to consider key parameters and systematically document them daily when reviewing patients post-operatively. Areas were Hydration (fluid balance, electrolyte balance), Enteral (nutrition and bowels), Comfort and Confusion (analgesia, alertness), Thromboembolism (calves, prophylaxis), Observations and Other Systems (systems review), and Recovery (impression). The acronym was introduced via departmental induction teaching and ward posters. Ward round entries were retrospectively reviewed pre-intervention and at 3, 5, and 8 months to assess sustainability

Results

Over 8 months, introducing the "HECTOR" acronym demonstrated statistically significant ($p < 0.05$) improvements in documentation of all key parameters: fluid balance ($\uparrow 46\%$), electrolyte monitoring ($\uparrow 47\%$), eating ($\uparrow 58\%$), bowels ($\uparrow 40\%$), pain ($\uparrow 52\%$), confusion ($\uparrow 38\%$), thromboprophylaxis ($\uparrow 36\%$), calves ($\uparrow 25\%$), observations ($\uparrow 35\%$), systems review ($\uparrow 37\%$) and impression ($\uparrow 22\%$). This was sustained following three departmental staff changeovers.

Conclusion

Our acronym-based approach demonstrated acceptability and sustainability in improving and standardising the quality of post-operative reviews by a multidisciplinary T&O junior team of variable experience. Operation site (neurovascular status, dressing review) has been added in response to feedback with a further cycle planned. Further work will focus on extending the HECTOR acronym approach to elective post-operative reviews, and undergraduate teaching to encourage continued quality and standardisation of post-operative reviews, and ultimately improved care and safety for T&O patients.

0163

Documentation of Neurovascular Status Following Manipulation of Fractures and Dislocations; A Quality Improvement Project

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BOAST standards for peripheral nerve injury state that neurovascular examination should be performed and clearly recorded for all injuries and that "this examination must be repeated and recorded after any manipulation" (1). Poor examination or documentation of neurovascular status has many implications both from a medicolegal perspective as well as for patient safety and outcomes. I undertook a QI project to audit documentation of neurovascular status and make improvements in clinical practice.

The sample was collected from our local online trauma referrals list, along with information gathered from clinical notes and Xrays. Included were all cases of fractures and dislocations requiring manipulation that presented to the emergency department and were referred to T&O during a 1 month period. Completely undisplaced fractures, injuries involving digits, and cases where clinical notes were unavailable were excluded.

48 cases met the selection criteria over the 1 month sampling period. Standard was set at 100% as per BOAST (1). Of these cases, 15 (31.25%) had clear documentation of neurovascular status post-manipulation. 33 cases (68.75%) did not.

Posters outlining audit results were placed around the emergency department and T&O. I conducted small group seminar style teaching on assessment of neurovascular status.

Re-audit at both 1 week and 1 month post-intervention showed a marked increase in adequate documentation. At 1 week, 11 cases were identified, 8 of which (72.73%) had documentation of neurovascular status, 3 (27.27%) did not. At 1 month 15 cases were identified. 13 met the standards for documentation (86.67%), showing a marked and sustainable improvement.

This was certainly an area greatly in need of improvement. The intervention of the combination of posters and teaching did improve documentation of neurovascular status although there is still room for further improvement. Many of the posters have since been removed and teaching cannot be easily replicated as new doctors join in order to create a long-term solution, I have been working on a proforma for the clinical notes prompting documentation and with pictures to demonstrate correct neurovascular examination technique for both upper and lower limbs.

References:

1) British Orthopaedic Association Standards for Trauma. Peripheral Nerve Injury. September 2012.

0234

Anaesthetic National Teaching Programme For Students **(Antps)**

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Introduction

The COVID-19 pandemic has significantly undermined undergraduate anaesthetic teaching in spite of the vital role of the specialty against the pandemic. ANTPS was designed to meet the evolving needs of undergraduates and tomorrow's doctor by standardising anaesthetic training, preparing for final exams and equipping competencies vital for doctors of all grades and specialities.

Methods

Our RCSEn-accredited University-College-Hospital-affiliated programme consisted of six-biweekly sessions were delivered online by anaesthetic trainees. Pre- and post- randomised session-specific MCQs assessed students' improvement in knowledge. Anonymous feedback forms were provided to students after each session and two months following the programme.

Results

From 3743 student responses (92.2% of attendees) across 35 medical-schools, 313 students completed all six sessions. There was a mean improvement in knowledge (0.94 ± 1.27 , $p < 0.001$). Based on 5-point Likert scale, students who completed the programme showed an improvement in their confidence in knowledge and skills to face common foundation challenges (1.59 ± 1.12 , $p < 0.001$) and thus felt better prepared for life as junior-doctors (1.60 ± 1.14 , $p < 0.001$). With an increase in confidence in students to pass their MCQs, OSCEs and CBDs assessments, 3525 students stated they would recommend ANTPS to other students.

Conclusions

Unprecedented COVID-19 factors impacting training, positive student feedback and extensive recruitment, demonstrate that our programme is an indispensable learning resource which standardises anaesthetic undergraduate education nationally, prepares undergraduates for their anaesthetic and peri-operative exams and lays strong foundations for implementation of clinical skills required by all doctors, to optimize training and patient care.

0210

The Rise in Trauma & Orthopaedic Trainee-led Research and Audit Collaborative Projects in the United Kingdom Since the Start of the COVID-19 Pandemic.

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Introduction

There has been a significant rise in trainee/resident-led trauma & orthopaedic multi-centre research collaborative projects globally. These collaboratives increase trainee involvement in research with an opportunity to deliver highly generalisable results on a particular topic, recognising the importance of trainees position in answering clinically important questions. Since the start of the COVID-19 pandemic, more emphasis has been on global collaborative research efforts to tackle important research questions both related to COVID and otherwise.

Objective

To evaluate the number of trauma & orthopaedic trainee-led research collaborative projects that took part since the start of the COVID-19 pandemic in the UK, exploring the value and feasibility of such collaboratives in driving forwards clinical academia.

Methods

This was a retrospective study that evaluated trauma & orthopaedic trainee-led national collaborative projects within the UK since the start of the COVID-19 pandemic lockdown (March 2020 to January 2021). Our exclusion criteria included any regional collaborative projects, projects that were started pre-COVID-19 and projects that involved other surgical specialities. The number of projects identified was compared to that in 2019.

Results

In 2019, 0 trainee-led collaborative projects were commenced nationally in the UK. Since the COVID-19 pandemic, we identified 10 trainee-led collaborative trauma & orthopaedic projects with 1 being published so far. The level of evidence ranged between 3 and 4.

Conclusion

Covid-19 has placed significant challenges across the healthcare. However, one positive aspect that has been noted is the increase in multi-centre trainee-led collaborative projects within the UK since the start of the first lockdown period. Our study highlights the feasibility of a trainee-led high quality collaborative research projects in trauma & orthopaedic in the UK, emphasising the growing contribution of trainees towards research and policymaking in our global trauma & orthopaedic health system. Wide-spread availability of new technological tools such as social media and centralised confidential online databases such as Redcap[®] facilitates such projects in terms of recruitment and data collection. We would, therefore, recommend expanding this trainee-led

collaborative platform in the field of trauma & orthopaedics across in Europe and Worldwide.

0158

Tension band wire versus anatomical locking plate fixation in comminuted displaced olecranon fractures – Clinical and radiological outcomes

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Introduction:

Optimal fixation in comminuted displaced olecranon fracture is yet to be defined. Anatomical locking plates offer strength whilst tension band wiring (TBW) converts triceps distractive force into fracture compression. However, over-compression across comminution is a concern with TBW. We aim to compare clinical and radiological outcomes in plate fixation and TBW of these fractures as a comparative series is not yet reported.

Method:

Retrospective cohort analysis of Mayo 2B/3B fractures requiring isolated olecranon fixation presenting to a teaching hospital trauma unit 2016-2020. Data collected included patient demographics, injury mechanism, associated injuries, operative time, union time, elbow flexion-extension and pronosupination arcs and complications. Radiographic analysis was performed to identify union and maintenance of articular curvature of the olecranon notch. Radius of curvature was measured at the deepest part of the olecranon notch on a lateral radiograph and compared to the diameter of curvature (line drawn between olecranon and coronoid process tips). Patients have been recently contacted by postal Oxford Elbow Score (OES) questionnaire.

Results:

25 patients were included; 17 underwent plate fixation and 8 TBW. No significant differences in age (51 vs 52 years), gender, proportion of high energy injuries, Mayo classification or mean time to clinical and radiological union (87 vs 138 days). 3 patients receiving plate fixation sustained concurrent radial head dislocation. There were proportionally more smokers in the TBW group (56% vs 24%). Operative time was significantly longer in plate fixation (77 vs 56 minutes; $p < 0.05$). A consultant surgeon was present in 65% plate fixation and 88% TBW. Ulnohumeral congruity was achieved in all cases. No redisplacement or revision of plate fixation occurred; though 2 removals were required for symptomatic hardware. No redisplacement or removal of TBW occurred; though 1 exchange of TBW was performed for wound infection. No significant differences were identified in elbow flexion-extension (100 vs 111°) or pronosupination (176 vs 169°) or maintenance of radiographic articular curvature of olecranon notch (radius:diameter 0.5 vs 0.5). No non-union occurred.

Conclusion:

TBW and anatomical locking plates can provide satisfactory clinical and radiological outcomes in comminuted displaced olecranon fractures. TBW fixation can be successfully performed without radiological over-compression.

0030

Brace it or fix it? – Delayed humerus fixation prolongs healing time.

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Background:

Humeral shaft fractures have traditionally been treated conservatively using functional braces with perceived low costs and high union rates whilst avoiding the additional risks of surgery. More contemporary studies have identified high rates of nonunion with conservative management.

This study aims to determine the factors associated with delayed union and compare acute versus delayed surgical fixation.

Methods:

A consecutive series of humeral shaft fractures was identified over a 4-year period (April 2015–May 2019). Retrospective analysis of case notes and radiographs was performed. Fractures were analysed in two main groups; conservatively treated fractures and operatively treated fractures.

Results:

141 fractures were identified. 99 were treated conservatively and 42 with acute surgical fixation (within 6-weeks).

Of the conservatively treated fractures (42M, 57F), 61 had united by 6-months and 38 had not. Factors associated with non-union at 6-months were a clinically mobile fracture at 6-weeks and less visible callus on radiographs as assessed by the Radiographic Union Score for HUmeral fracutres (RUSHU). Median weeks to union was 17(IQR 13). A longer time to union was seen in smokers (25.5 weeks vs 16 weeks;P=0.04); fractures in the lower-third of the humerus (30 weeks) vs middle-third (16-weeks) and upper-third(19-weeks;P=0.039); mobile fracture at 6-weeks(29 weeks vs 16-weeks;P=0.008); RUSHU score 8+(16-weeks) vs <8 (29 weeks;P0.008). 20 fractures went on to delayed fixation.

Acutely operated fractures healed at mean 19-weeks(SD11.8) vs 27.2 weeks(SD16) from time of surgery in those with delayed fixation(P=0.034) which was in addition to the time spent being treated conservatively in a brace (median 30 weeks).

Conclusions:

Treatment of humeral shaft fractures in a humeral brace is effective; however, the importance of identifying those at risk for delayed or nonunion can avoid delayed fixation which is associated with a longer healing time than acute fixation.

0186

The impact of COVID-19 on management of tubular bone fractures of the hand: A single-centre concordance study with patient-reported outcome measures (PROMS)

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Introduction:

Management of hand trauma has evolved to incorporate assessment, treatment and rehabilitation of patients in a 'one-stop' clinic on initial presentation. Our aim was to evaluate the effect of COVID-19 on hand trauma management using inter-rater agreement between hand surgeons.

Methodology:

Patients with hand fractures were consecutively assessed from March to May 2020. Two experienced hand surgeons blinded to management and outcomes independently reviewed radiographic images and relevant clinical history to provide their opinion on optimal treatment. Weighted-kappa analysis was performed to determine concordance and inter-rater agreement between the two surgeons and actual management. Patient-reported outcomes using qDASH scores were evaluated at 6-month follow-up and compared to actual management.

Results:

268 patients were identified, 82 had fractures involving tubular bones of the hand. 62 were male and 20 were female. Mean age was 40.3 (SD 19.7). Mechanism of injury was secondary to home-related injuries (34%) and falls (28%). Fractures involving the metacarpals (n=24) and distal phalanx (n=20) were most commonly seen. 35 patients underwent surgery whereas 47 were managed conservatively. Overall agreement between actual management and consultant-1 and consultant-2 was moderate ($\kappa=0.55$, $p<0.0001$ and $\kappa=0.63$, $p<0.0001$, respectively). Subgroup analysis showed a weak agreement between actual management of metacarpal fractures and consultant-1 and consultant-2 ($\kappa=0.22$, $p=0.29$ and $\kappa=0.47$, $p=0.02$, respectively). Inter-rater agreement was substantial for management of metacarpal fractures ($\kappa=0.73$, $p<0.0001$), but weak for distal phalanx fractures ($\kappa=0.29$, $p=0.03$). In 37% of patients, there was no difference in functional outcomes irrespective of management at 6 months follow-up ($p=0.05$).

Conclusion:

Our study has shown that overall management of hand fractures remained optimized throughout the pandemic. However, lack of concordance was observed in the management of metacarpals. Despite this disagreement, satisfactory functional outcomes were observed for patients treated during this ongoing crisis. This reflects an adequate assessment and triage of patients to identify those suitable for conservative management, despite the pandemic-related pressures to limit hospital attendances where appropriate.

0041

The Effectiveness of Surgical Interventions in the Management of Malunited Calcaneal Fractures: A Systematic Review.

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Nonoperative management of calcaneal fractures may result in calcaneal malunion with consequences of pain, deformity, and functional limitation. The aim of this review was to proffer an evidence-based scientific account of the effectiveness of contemporary surgical procedures in the management of malunited calcaneal fractures after initial conservative management.

This systematic review included studies that evaluated the surgical procedures in the management of calcaneal malunion published in 10 years time. The search was conducted using the following search engines: the Cochrane Library, Web of Science, PubMed/ MEDLINE, EMBASE, CINAHL, Academic Search Premier, and Open Grey. Methodologic assessment was conducted using the Cochrane Risk of Bias In nonrandomized Studies- of Interventions assessment tool version 7.

Ten observational studies (212 patients) were included in this review. Five articles explored various means of achieving subtalar arthrodesis, 2 articles evaluated joint-sparing osteotomies, 1 examined corrective osteotomy for extra-articular os calcis malunion, and 2 articles explored combined procedures based on the Stephen and Sanders calcaneal malunion classification. Clinical and methodologic heterogeneity did not allow quantitative pooling of results. The overall risk of bias was considered moderate in 7 studies and 3 were considered at high risk of bias. The inability for any study to be considered at low risk of bias in this review might be mainly attributed to the lack of a valid and reliable outcome measure for the assessment of foot and ankle conditions.

There is clear evidence that appropriately indicated procedures are effective in terms of pain alleviation, correction of deformity, and improved function. However, long-term outcomes may improve the acceptability to joint-preserving osteotomies, subtalar arthrodesis with the VIRA implant and subtalar distraction osteogenesis.

0139

Clinical and Patient Reported Outcomes following Open Reduction and Internal Fixation (ORIF) for Distal Tibial Intra-articular Fractures

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Aims:

Intra-articular fractures of the distal tibia are rare, but pose a significant challenge for the surgeon, often with poor outcomes and high complications. The aims of this study were to assess the long-term clinical and patient reported outcomes following ORIF (Open Reduction Internal Fixation) of distal tibial intraarticular fractures, the impact of this injury on patient quality of life (QoL), rates of complications and incidence of clinical post-traumatic osteoarthritis.

Methods:

Between September 2014 and January 2021, 20 patients from a single centre with a mean age of 50.6 years (24-71 years) were identified and reviewed. Function was assessed with the OMAS score (Olerud- Molander Ankle Score) and the DRI (Disability Rating Index). Quality of life (QoL) was assessed with the EQ5D5L score and compared to the UK population (age matched) norms, and complications were collected.

Results:

The mean follow up was 3.8 years (0.5-6.4 years). 35% were Rüedi Allgöwer (R-A) Type 1, 45% R-A Type 2 and 20% R-A Type 3. 20% were open fractures. All fractures united. One patient (5%) had a superficial wound infection, one patient had delay to wound healing, and one patient required revisional fixation for loss of position. Four patients (20%) developed clinical post-traumatic ankle arthritis, requiring targeted steroid injection. The average OMAS score was 54.3, the average DRI was 34.0 and the average EQ5D5L was 0.602. QoL scores were significantly lower for R-A Type 3 (0.456) compared to R-A Type 1 (0.754) fractures. Long-term ankle function was only around 60% of full function, and patients mean QoL scores were only 70% of age related UK population based norms. Only 35% of patients returned to within 10% of UK population based QoL norms.

Conclusions:

Results from this study show that ORIF of distal tibial fractures achieved an acceptable and reliable outcome with low incidence of complications, comparable with those in the literature. However, these fractures have a dramatic impact both on long-term ankle function and QoL, with most patients unlikely to ever make a full recovery from this injury. 20% develop clinically symptomatic post-traumatic ankle arthritis by a mean of 3.8 years.

0147

Population analysis of surgical treatment of complex ankle fractures in the United Kingdom.

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Introduction

The management of open or unstable ankle and distal tibial fractures involving the ankle joint poses many challenges. In certain situations, hindfoot nailing (HFN) is indicated, however this depends on surgeon preference and regional variations exist. This study sought to establish the current management and outcomes of complex ankle fractures in the UK.

Methods

A National collaborative study in affiliation with BOTA collected data retrospectively between January 1st – June 30th 2019. All adult patients with open and closed complex ankle fractures (AO43/44) were included. Complex fractures included the following patient characteristics: diabetes +/- neuropathy, rheumatoid arthritis, alcoholism, polytrauma and cognitive impairment. We obtained data on fixation choice and patient outcomes. Institutional approval was obtained by all centres, and statistical analysis was performed including propensity matching.

Results

Fifty-six centres provided data for 1360 patients. The average age of the cohort was 53.9 years +/-19 (SD) with a male/female ratio of 1:1.3. 920 patients were ASA 1/2, 440 were ASA 3/4; 316 had diabetes, and 275 were open fractures. Most fractures were AO44 (71.2%) and more commonly associated with diabetes (P<0.001), alcoholism (P<0.007), open (P<0.013), and greater age (55.7 vs. 46.3).

1227 patients underwent primary-fixation (111 HFN), with the remainder treated with external fixation (84 definitive). Of the 111 HFN, 35% underwent primary fusion. Wound complication and thromboembolic rates were observed to be greater in the HFN group compared to ORIF groups (P<0.003), being more evident in the HFN group with primary fusion even after propensity matching. However, 1081 patients were non-weight bearing post-op contrary to BOAST guidance.

Conclusion

This is the first National collaborative audit of complex ankle fractures. Hindfoot nails were used in 9% of patients and we observed more complications in this group when compared to the other cohorts. Despite BOAST guidance, only 21% of patients undergoing operative management were instructed to fully weight-bearing post-operatively.

0190

Suture-button Versus Syndesmotic Screw Fixation of Ankle Fractures: A Comparative Retrospective Review Over 1-year in Altnagelvin Area Hospital

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Background:

Syndesmotic fixation is essential in management of unstable ankle fractures with syndesmotic disruption. It can be achieved either by rigid fixation with screws or dynamic fixation with suture-button devices. Syndesmosis screws are considered the gold-standard for stabilisation and fixation of distal tibiofibular syndesmotic injuries. We use both types of devices in our unit for stabilisation of syndesmotic injuries. Some studies have reported better outcomes with use of suture-button devices. Here, we compare the outcomes with use of both these devices.

Materials and methods:

This was a retrospective cohort study from 1st June, 2019 until 31st May, 2020 which included all patients who underwent syndesmotic fixation. Data was collected from Northern Ireland Electronic Care Record (NIECR) and Northern Ireland Picture Archiving and Communication System (NIPACS). Primary outcomes were reoperation rates due to failure of syndesmotic hardware. Secondary outcomes included comparison of complications (e.g., infection, wound problems or loss of reduction) radiographic fixation/stability, duration of follow-up and significant ongoing symptoms.

Results: Fifty-three patients had syndesmotic stabilisation in this period. Thirty-four had fixation with tigtrope and nineteen had syndesmotic screw fixation. Three patients (9%) had reoperation due to any cause in tigtrope group compared to four patients (21%) in syndesmotic screw group. All four patients in syndesmotic screws group had implant removal due to failure or symptoms due to implant. Only one patient (3%) in tigtrope group had implant removal due to ongoing pain (other two- 6% patients included one with lateral ankle abscess and one with long distal fibula screws- both unrelated to use of tigtrope and tigtrope left in situ at reoperation). Rediastasis was reported in one patient (5.2%) with syndesmotic screws. Median duration of follow-up was 82 days in syndesmotic screw group compared to 77.5 days in tigtrope group.

Conclusions:

We report lower incidence of implant related problems and need for implant removal with use of tigtrope. Quicker return to weightbearing and slightly better radiographic stabilisation were noted as well. Our study has its limitations in terms of small number of patients and absence of functional outcomes as these were not routinely recorded at time of discharge from clinics.

0208

Concurrent hip and upper limb fractures: a systematic review and meta-analysis

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Background:

The impact of concurrent hip and upper limb fractures has not been well defined, and there are controversies within the literature. A greater understanding of this can support decision making in the rehabilitation of such patients.

Aims:

To identify if patients with concurrent hip and upper limb fractures have different demographics and outcomes than those with an isolated hip fracture.

Methods:

A search of MEDLINE and EMBASE was performed to identify cohort and case-control studies, comparing concurrent hip and upper limb fractures with isolated hip fractures. Meta-analysis was conducted using RevMan 5.4. A fixed-effect model was used, unless there was significant heterogeneity, whereby a random-effects model was used. Subgroup analyses were performed for concurrent distal radius and concurrent proximal humerus fractures.

Results:

13 studies were included. 196,916 patients had an isolated hip fracture and 13,373 sustained concurrent hip and upper limb fractures. Patients with concurrent upper limb fractures had a significantly greater length of stay (MD: 4.51, 95% CI: 1.74, 7.28, P=0.001) and in-hospital mortality (OR: 1.48, 95% CI: 1.35, 1.62, P<0.00001). Patients with concurrent upper limb fractures were significantly more likely to be female (OR: 0.64, 95% CI: 0.61, 0.67, P<0.00001), reside at home pre-injury (OR: 0.6, 95% CI: 0.37, 0.97, P=0.04) and have no cognitive impairment (OR: 0.54, 95% CI: 0.35, 0.84, P=0.006). When comparing concurrent hip and distal radius fractures to isolated hip fractures, the distal radius group were significantly younger (MD: -0.93, 95% CI: -1.67, -0.18, P=0.01) and had lower 90-day mortality (OR: 0.68, 95% CI: 0.48, 0.97, P=0.03) and 1-year mortality (OR: 0.68, 95% CI: 0.51, 0.90, P=0.008). There is low quality evidence to suggest that concurrent distal radius fractures and concurrent proximal humerus fractures have worse functional outcomes at discharge.

Conclusions:

Concurrent hip and upper limb fractures lead to increased length of stay and higher in-patient mortality. These patients appear to be more independent and less cognitively impaired pre-injury, and therefore have a greater rehabilitation potential than isolated hip fracture patients. More research needs to be done looking at the outcomes following concurrent hip and proximal humerus fractures.

0016

Intramedullary Nailing For tumor Metastasis: Incidence, Complications And Survivorship

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Background

The humerus is the second commonest bone involved in skeleton metastasis, accounting for a large proportion of cases with actual or impending pathological fractures. Humeral shaft pathological fractures usually occur late in course of metastatic disease, and if symptomatic or fracture, may require surgical intervention, usually in the form of humeral intramedullary nail.

Objectives

We aimed to investigate the referral pathway for humeral metastasis to orthopedic care at our institution, and suggest improvements. This study was conducted to determine the number of humeral metastatic tumours required surgery, and name the primary tumour. We also aimed to quantify the survivorship following intramedullary nailing of humeral fractures, and document any further interventions required following surgery, as well as any complications.

Design and Methods.

The medical records and radiographic images of all 64 patients undergoing intramedullary nailing for humeral metastasis between 2004–2017 were analysed retrospectively.

58% of referrals were made for symptomatic metastasis, with 42% referred with pathological fractures. Prior to orthopaedic referral, 98% had a plain humeral radiograph, yet only 21% had full haematological work up. 65% of patients died at the time of follow-up. Mean survival after humeral nailing was 12.6 months. Humeral intramedullary nail for breast cancer metastasis provided the best survivorship at mean 14 months, whilst the shortest survivorship was for lymphoma and prostate cancer metastasis (<4 months).

Conclusion

There is little previously documented on the incidence, complications and survivorship of intramedullary nailing for humeral metastasis. It is an uncommon procedure, but our series demonstrated patients often presented after sustaining a pathological fracture. Therefore, earlier recognition and work-up is required to prevent such a fracture. However, our mean survival >1y demonstrates humeral nail can provide symptomatic relief for a reasonable portion of the latter stages of this cohort's lives.

0057

The influence of operating surgeon grade on the quantity of intra-operative radiation dose in the management of hip fractures

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The use of intra-operative fluoroscopic imaging in modern orthopaedic practice is commonplace and imperative for assessment of reduction, implant positioning and fixation. However, it has proven associations with various harmful effects. This study aimed to analyse the relationship between the level of experience of the operating surgeon and the radiation dose administered during fixation of neck of femur fractures.

A study was performed on all patients having fixation of neck of femur fractures from January – September 2018 (n=93). Fracture types were classified according to AO/OTA classification model. The grade of operating surgeon was subdivided into Consultant, Senior Trainee (>5 years of experience), and Junior Trainee (<5 years of experience). Comparison made of the effect of the grade of operating surgeon on the radiation dose, as measured by centi-Gray/cm² (cGcm²).

Primary operating surgeon was a Consultant in 11 cases (11.8%), Senior Trainee in 59 (63.4%), and Junior Trainee in 23 (24.7%). The age, BMI and gender of the patients was comparable (p=0.82, 0.46 and 0.73 respectively).

The mean intra-operative radiation dose was 133.8cGcm² for Consultants, 169.4cGcm² for Senior Trainee, and 191.4cGcm² for Junior Trainee.

When further categorised according to AO/OTA classification, A1 fractures had an average of 130.4cGcm² radiation intra-operatively (70.4 Consultant, 142.4 Senior Trainee, 135.7 Junior Trainee), A2 183.8cGcm² (211.2 Consultant, 150.6 Senior Trainee, 263.3 Junior Trainee), while A3 had 309.3cGcm² on average (203.8 Consultant, 322.5 Senior Trainee, nil performed by Junior Trainees).

Our study demonstrates that the quantity of intra-operative radiation dose used in the fixation of hip fractures is inversely proportional to the experience of the operating surgeon. Our results also show that as severity of hip fracture increases, adequate stabilisation requires additional radiation doses. We conclude that the experience and confidence associated with seniority aids the decreased reliance on intra-operative imaging. The learning requirements of trainees should not be ignored and it is only with training and experience that one develops skills and confidence. It is therefore recommended that Consultants should scrub in for complex hip fractures to provide experienced support, and help reduce the quantity of radiation administered to patients and indirectly to the surgeon.

0124

Surgical treatment of dorsally displaced distal radius fractures with a volar locking plate versus conventional percutaneous methods: minimum ten-year follow-up of a randomised controlled trial

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Background

We report a minimum ten-year follow-up of a single-centre, pragmatic, randomised controlled trial (RCT) conducted in a tertiary care UK institution which compared the functional outcomes of dorsally displaced distal radius fractures in adults treated with either volar locking plate or percutaneous wire fixation.

Methods

Of the original trial cohort of 130 patients, 11 had not consented to further contact and 14 were deceased. Therefore 105 patients were sent the Patient Evaluation Measure (PEM), QuickDASH and EuroQol-5D-3L (EQ-5D-3L) questionnaires at a minimum follow-up of 10 years. They were also asked if they had received further treatment for their injured wrist and whether additional problems had developed in the hand/wrist after the original 1 year follow-up period. A complete case analysis, and sensitivity analysis via a mixed-effects model, were performed.

Results

Approximately 75% of the 105 participants responded. There were no significant differences between the scores of the two treatment groups in the PEM $p=0.651$ (95% CI, -4.8 to 3.0), QuickDASH $p=0.862$ (95% CI, -7.8 to 6.5) or the EQ-5D-3L index value $p=0.256$ (95% CI, -0.18 to 0.05) and health state $p=0.377$ (95% CI, -4.8 to 12.8). Results of mixed-effects model analysis were similar, suggesting that our findings were robust. One patient required plate removal 6 years after fixation. No major difference was found in the requirement for further treatments.

Conclusion

This study has a high follow-up rate considering the protracted follow-up period. It demonstrates that, as with the original 1-year functional outcomes, the 10-year outcomes of these two treatments are not significantly different. The original trial reported better anatomical reduction of fractures treated with volar plate fixation – our findings suggest that this does not make a difference to use of the hand or wrist in the long-term.



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0002

Assessing the Compliance of Senior House Officers in Documentation of the New Trauma and Orthopaedic Post-Take Ward Round Proforma and Measuring Allied Health Professionals Opinion of Documentation – A Full Audit Cycle

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Introduction:

Good Surgical Practice Guidelines 2014 (Royal College of Surgeons) state that 'surgeons must ensure that accurate, comprehensive legible and contemporaneous records are maintained of all their interactions with patients'. In June 2019, a retrospective study was performed at Broomfield Hospital (United Kingdom), assessing the quality of Post-Take Ward Round documentation in Trauma and Orthopaedic patients in a two week period. We aimed to evaluate the impact of a new Post-Take Ward Round (PTWR) proforma on Trauma and Orthopaedic documentation and the opinions of Allied Health Professionals (AHPs).

Methods:

By assessing notes of emergency patients and their adherence to the national Good Surgical Practice Guidelines 2014 (Royal College of Surgeons), areas for improvement were identified and a proforma created and implemented. Audit variables included documentation of the following: patient identifiers, date and time, consultant on-take, presenting complaint, discussion with patient/relatives, management plan and documenting clinician. After three months, this was re-audited with data collected from all admissions within a two week period alongside spot questionnaires completed by AHPs.

Results:

There was an improvement in recording the responsible clinician (48% to 100%) and documenting clinician (49% to 63%), history and examination (58% to 73%), initial diagnosis (68% to 92%) and management plan (35% to 98%). However, documentation of patient identifiers dropped (60% to 30%) alongside date and time (73% to 30%). 42% of AHPs agreed that documentation had improved since introduction of the proforma, whilst none of the respondents said that documentation had worsened.

Conclusion:

The proforma has led to improvements in both adherence to national guidelines and satisfaction amongst the AHPs thereby providing swift communication between the multidisciplinary team.

0015

Assessing the use of splints/walker boot for stable wrist and ankle fractures & cost implications of casts

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Background:

Royal Berkshire Hospital is a busy district general hospital of England. Our plaster room receive patients for casts application from emergency department and fracture clinics. Increase inflow of patients put sustained pressure on our plaster room and staff to meet demand. We lost some of our plaster room staff due to work load.

Aims:

We carried out an audit to look at if we can reduce the number of patients requiring input from the Plaster Room, the cost implications of doing this and how can we save time and work force?

Method:

We included data retrospectively of all patients seen in Plaster Room from plaster room records and targeted wrist and ankle fractures as potential injuries where reductions in Plaster Room input could be made. We included 1 month of wrist fractures and 3 months of ankle fractures included as numbers were relatively small.

Standard:

BOAST ankle guidelines¹ and wrist fracture guidelines².

Stable ankle fractures - Weber A Fractures and Weber B Fractures with no talar shift on weight bearing x-ray at 1 week.

Stable wrist fractures - Minimally displaced on x-ray. No volar displacement

Results:

Total number of patients treated in 1 month in our plaster room were 222, including 75 wrist fractures and 34 ankles (3 months).

Total wrist Fractures	Cast appropriate	Splint/boot appropriate	Total cost in cast (Time)	Total Cost in Splint/Boot (Time)	Potential Savings (Time)

75	66	9	£130.5 4hrs 30mins	£28.08 18 mins	£101.7 4hrs 12mins
Total ankle Fractures					
34	14	20	£580 20hrs	£219 1hr 40mins	£361 18hrs 20mins

Changes implemented:

We organised three teaching sessions on management of wrist and ankle fractures junior doctors assigned for fracture clinics. We also organised a workshop on plaster cast application for junior doctors.

Recommendations:

We recommend that undisplaced distal radius fractures can be managed in a futura splint. Also, Weber A and Stable Weber B ankle fractures can be managed in a walker boot.

References-

1. BOAST 12 British orthopaedic association standards for trauma August 2016
2. Blue book DRF - Published by British Orthopaedic Association and British Society for Surgery of the Hand, 2018. Page 9-10

0019

Does timing to fixation of unstable ankle fractures contribute to surgical site infection?

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Background

The literature about the influence of delayed surgery on surgical site infections following fixation of unstable ankle fractures is ambiguous. The aim of the present study was to investigate if the timing of surgery had any influence upon soft tissue complications.

Materials & Methods

All consecutive patients over a 1 year period between March 2019 to March 2020, who underwent operative fixation for closed unstable ankle fractures, were included to the study. The operations were performed by experienced orthopaedic consultants or carried out under their direct supervision. Data about surgical site infection (superficial, requiring dressing care and oral antibiotics and deep, requiring further surgical treatment) was collected. The relationship of complications to the timing of the surgery and patient factors including age, diabetes, smoking status and excess alcohol intake (>13 units per week) were studied.

Results

A total of 129 patients were included in the analysis. The mean age of the cohort was 51.3 ± 19.9 years. Most of the patients were female (62%), with 11.6% smokers, 7.8% diabetics and 7% with excess alcohol intake. The mean time to surgery was 3.9 ± 3.8 days and a total of 12 patients were identified with surgical site infection (9.8%). One of the patients had a deep infection, requiring removal of metalwork and long term antibiotic treatment. All the other patients had a superficial infection which settled with intermittent wound dressing and oral antibiotics.

In the mono-variant analysis, diabetes and age were the factors which significantly contributed to surgical site infection after ankle fracture operative fixation ($p=0.04$ and 0.02 consecutively). Infection did not correlate with smoking ($p=0.17$), alcohol ($p=0.19$), gender ($p=0.53$) and the time to surgery ($p=0.33$).

In the multivariable model (with independent variables age, gender, smoking, diabetes, alcohol & timing to surgery) the only variable with independent significant contribution to surgical site infection was the excess alcohol intake ($p=0.039$).

Conclusion

We did not identify a relationship between time to surgery and surgical site infections.

However in our review, we found that excess alcohol intake has unique significant contribution to surgical site infections.

0039

Management of Displaced Intra-articular Calcaneal Fractures: A Comparative Study of Open and Minimally Invasive Surgery

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Objective:

The ideal treatment of displaced intraarticular calcaneal fractures continues to be a subject of debate. The aim of the study was to compare the radiological outcome, cumulative radiation exposure, surgical time, time to surgery, wound healing times and cost involved in Minimally Invasive Surgery (MIS) and Open Reduction Internal Fixation (ORIF) for Calcaneal fractures.

Methods:

This was a retrospective study of 39 calcaneum operated in our unit during 2012 to 2019 of which 20 had undergone ORIF and 19 had been operated following MIS.

Results:

A total of 39 calcaneum (37 patients) were operated of which 20 had open procedure and 19 underwent MIS procedure including one bilateral surgery in each group. Mean age of the patient in MIS group was 42.18 (range: 15-68) years and that of open group was 43 (range:21-75) years. 53.84% (n=21) of the fracture was Sanders type III, 28.20% (n=11) type II and 17.94%(n=7) type IV. There was no statistically significant difference in mean correction of Bohler's angle and Gissane's angle between the groups. The mean cost for implant used for each open procedure was £ 882.79 and the implant cost for each MIS procedure was £ 142.89. Mean utilisation of cumulative X-ray dose was significantly higher in MIS (0.764 mGy) in comparison to the same in open surgery (0.392 mGy). Average surgical time for MIS group was 64.9 minutes and that of open surgery was 106.3 minutes. Average waiting time for MIS was 6.6 days and for ORIF was 9.8 days. Wound healing was quicker (average 13.4 days) in MIS than ORIF (average 17.2 days). All these differences were statistically significant.

Conclusion:

Minimally invasive calcaneal fracture surgery is quicker, cheaper and can be performed earlier. It is associated with early wound healing although requires higher cumulative radiation dose.

0043

Effect of COVID-19 Lockdown on trends of shoulder injuries presenting to Virtual Fracture Clinic (VFC) : Experience from a DGH

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Introduction:

Injuries around the shoulder are caused by multiple high and low velocity mechanisms. Those in elderly patients are generally caused by low velocity injuries like trips and falls, where as in younger patients high velocity mechanisms predominate. A nation-wide lockdown was announced in early 2020 due to the corona virus pandemic. Here we report the effects of the lockdown on trends in shoulder injuries presenting at our VFC.

Methods:

We retrospectively obtained data of all injuries around shoulder presenting to VFC during April-May 2019 and April-May 2020 from our data collection system (Bluespeir). Demographics, mechanism of injuries and management plans were collated and analyzed.

Results:

The total number of shoulder injuries decreased from 238 during April-May 2019 to 175 during April-May 2020 (26.47 % reduction). This drop was more significant from April 2019 to April 2020 (119 to 68, i.e. 42.85%) than from May 2019 to May 2020 (119 to 107, 10.08%). There were 80 high velocity injuries during April-May 2019(33 in April 2019, 47 in May 2019) , which reduced to 59 during April-May2020 (14 in April 2020, 45 in May). 22/238 (9.24%) patients were managed operatively in April-May 2019 whereas 6/175(3.42%) were managed operatively in April-May 2020.

Conclusions:

The overall incidence of shoulder injuries reduced significantly during COVID-19 lockdown. This reduction was more drastic during April 2020 than in May 2020. High velocity injuries reduced in April 2020 but increased again in May 2020. Overall need for operative intervention reduced during these 2 months. Our study reflects patterns of public behavior during the lockdown.

0044

Treatment of Fragility Ankle Fractures Using Hindfoot Nail, a Systematic Review

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Objectives

Fragility ankle fractures constitute about 20% to 30% of overall ankle fractures. Both conservative and conventional surgical treatments are associated with high complication rates. There is no consensus about the optimal treatment of such injuries but there is a recent trend to use intramedullary nails to treat this type of fractures. This systematic review aims to investigate the effectiveness of HFN in management of fragility ankle fractures.

Methods

An extensive literature review was conducted to locate previous studies that have addressed the same topic. Studies that investigate HFN utilization for other hind-foot disorders or other fractures were excluded. The included studies were appraised by applying a validated quality assessment tool.

Results

Six studies met the inclusion criteria. The total number of patients was 178 cases with a mean age of 76.7 years. More than 70% were females and the follow up period in some cases was more than 16 months. The mean Olerud and Molander Ankle Score was 54 (SD 6.3) compared to preoperative score of 60.2 (SD 7.6). Bony Union achieved in 90.3% to 100% of cases. Only 17% to 21.7% of cases have reported some complications.

Conclusion

This systematic review has proven that HFN have favourable outcomes, particularly regarding early rehabilitation and restoration of function, which are crucially important in the management of fragility ankle fracture in elderly patients. However, patients and surgeons should be aware of potential complications of HFN.

0045

Delays in NCEPOD class 2 Trauma Surgery during the first wave of the COVID-19 pandemic

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Introduction:

Theatre delays can be associated with increased mortality and morbidity in the field of surgery. The objective of the study is to assess the impact of the COVID-19 pandemic on theatre provision for general surgical patients requiring emergency general surgical procedures during the lockdown period, when compared to a pre-pandemic period. Specifically, we wished to assess the differences in the types of general surgical pathology, the types of operations that were performed and the delays to theatre. This may enable enhanced general surgical service planning in the event of a second peak.

Methodology:

We conducted a single centre retrospective study at a tertiary centre in London during the peak of COVID-19. Data was collected from patients undergoing surgery on the emergency theatre list under the general surgical team from 23/3/2020- 1/6/2020. Surgery booking date was then compared to the actual date of surgery. SARS-COV-2 DNA-PCR nasopharyngeal swab results were also recorded, as well as the COVID-19 bloods panel. Control data of general surgical cases conducted between 31/1/2020-1/3/2020 was also collected. Statistical analysis was conducted using the Shapiro Wilkes and Man Whitney U test.

Results:

A total of 69 operations were performed under the general surgical team during lockdown versus 60 in the control data. Thirty-seven general surgical patients were tested for COVID-19 with three positive cases. 50.7% of general surgical procedures on the emergency list during lockdown were due to infection/abscess (46.7% control period) $p>0.05$. This was followed by appendicitis 26.1% (21.6% control period). Open appendectomies were by far more common during lockdown; accounting for 76.5% of all appendectomies versus 7.7% control period, $p=0.0005$. 32.0% of urgent general surgical procedures during the lockdown period were delayed versus 35.0% in the control. During lockdown lack of theatre capacity was responsible for 76.2% of delays versus 71.4% in the control period. COVID-19 may have been responsible for delayed surgical presentations resulting in more invasive approaches.

Conclusions:

COVID-19 did not significantly impact on general surgical delays; it did however impact on theatre capacity. Tertiary centres could benefit from having extra emergency theatres in place in preparation for subsequent waves.

0054

Balloon tibioplasty as a novel surgical treatment option for depressed tibial plateau fractures

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Introduction

Tibial plateau fractures are complex intra-articular injuries. The aim of treatment is to restore joint congruity and alignment. Balloon tibioplasty is a novel, minimally invasive technique to reduce the fracture and restore the continuity of the articular surface. A systematic review was performed in order to assess the clinical and radiological outcomes from this procedure.

Methods

A systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The online databases of Pubmed, Google scholar, the Cochrane Library, EMBASE and CINAHL were searched in April 2020. The reference lists of all articles identified through the electronic search were hand searched to identify further appropriate literature which may have been missed. Articles of interest were retrieved and evaluated, including case series, randomised controlled trials and cadaver studies. Individual case reports were excluded. Further exclusion was performed if the studies were not explicitly assessing the outcomes from balloon tibioplasty. For the articles included, demographic characteristics of the study groups, method of assessment of reduction of tibial plateau fractures, clinical outcomes and any complications were extracted. Methodological quality of individual studies was assessed using the Coleman Methodology Score.

Results

The initial search of the electronic databases and reference lists yielded 60 articles. Following the exclusion of duplicates and irrelevant studies, 8 were included in the final review. These included 1 randomised controlled trial, 4 case series and 3 cadaver studies. The total number of fractures treated was 113. The mean Coleman Methodology score was 70.6 (maximum score 100). The studies demonstrated adequate fracture reduction with favourable clinical and imaging outcomes from balloon tibioplasty. Very few complications were described.

Conclusion

The current reported outcomes of balloon tibioplasty are very encouraging. However, a limitation is that the overall level of evidence is relatively low with only 1 randomised controlled trial and higher prevalence of case series. Further research is necessary, with adequately powered randomised controlled trials. Further areas of research include type of bone substitute and the use of arthroscopically assisted surgery.

0056

Surfing for shin guards: the accuracy of online information

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Introduction:

The internet is widely used by the public to look for health related information. The quality of information about shin guard characteristics and protective benefits is lacking.

Aim:

The objectives of this study are: 1) to summaries currently available knowledge on shin guards. 2) To assess the quality of websites presenting information pertinent to shin guards using previously validated scoring systems. 3) To develop a novel scoring system to assess the accuracy of the content available online on shin guards.

Material and Methods:

Firstly, Scientific knowledge about shin guards was developed by searching peer reviewed article. Secondly, websites containing information about shin guard were identified by searching the top 3 English search engines (Google, Yahoo! and Bing). Finally, To evaluate the websites, we performed a search in Pubmed , web of science and EMBASE, aiming to identify appropriate scoring systems to assess the quality of health information on the internet. Additionally, we performed a search for peer reviewed articles with similar objectives in order to identify related scoring systems to enhance comparability among similar studies.

Results:

Of the 1066 websites retrieved, 25 Web sites were included; the mean overall score was 17.4 out of 35 (49.7%). The average quality score was 5.3 out of 15 (35.3%) and the average reliability score was 12.2 out of 20 (61%). It was noted that 56.4% NPO websites and 66% of websites developed by private individuals had very good, good or fair ranking while 81% of commercial websites had poor ranking. Most of the websites retrieved are of poor quality with none of the websites total score reaching the “Excellent Category” and only one website was qualified to be added to the “very good category”.

Conclusion:

Our study suggests that there is paucity of websites available providing reliable and accurate information on shin guards. There is a need to promote the uptake of HON certificate to inform website developers about the ethical standards for presenting health related information, consequently, gaining the consumers trust in the presented website content.

0064

Treatment of off-ended distal radius fractures in children using a straight plaster

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Aims

The management of completely displaced fractures of the distal radius in children remains controversial. Many children with these injuries will be treated with operative manipulation and stabilisation. However, following the Montgomery ruling, all reasonable options should be discussed with parents and children including non-operative treatments. This study evaluates the outcomes of surgical and non-surgical management of “off ended” fractures in children with at least 2 years of potential growth.

Patients and Methods

Eighty-seven children aged 0-16 were included who presented with a completely displaced metaphyseal distal radius fracture between 1/11/2015 and 1/1/2020. After 2018, children aged ≤ 10 were offered treatment in a straight plaster or manipulation under anaesthesia with K-wire stabilisation. Case notes and radiographs were reviewed to evaluate outcomes.

Results

Sixteen children underwent treatment in a straight cast, 68 had manipulation under anaesthesia including 64 stabilised with K-wires. Of the children treated in straight cast, all were discharged with good range of motion 3 children were discharged at 6-12 weeks with no functional limitations at 6-month follow up. Seven children were discharged between 22 and 50 weeks with normal range of motion and radiographic evidence of remodelling.

Re-displacement with angulation greater than 10° occurred for 26 children who had manipulation under anaesthesia. 7 had a visible cosmetic deformity at discharge and 11 had a restriction of movement with 6 requiring physiotherapy. Three children with K-wires developed nerve symptoms and 3 experienced over-granulation at the pin sites. No children had pin site infections.

Use of two K-wires were protective against re-angulation with an adjusted odds ratio of 0.271 (95% CI 0.078-0.944).

Conclusion

Non-operative management of completely displaced distal radius fractures results in excellent outcomes without exposing the child to the risks of surgery. This study suggests that non-operative management of these injuries is a viable and potentially underutilised strategy that should be considered, particularly during pandemics where there is an additional advantage for outpatient treatment. This study has shown that there is reasonable equipoise to justify a randomised trial and where manipulation and K-wire stabilisation is performed, two K-wires should be used to prevent fracture displacement.

0066

Morbidity and Mortality in Chronic Prolonged Hyponatremia with Neck of Femur fractures.

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Aim:

We conducted a single-centre retrospective cohort study over 6 years for patients admitted with Neck of femur fracture. For the primary analysis, we compared patients with prolonged chronic hyponatremia, defined as two or more consecutive plasma sodium values <135 mmol/L for >90 days VS Controls (normonatremic patients, defined as two or more serum sodium values for >90 days who never had a sodium value <135 mmol or Patients with only one sodium value <135 mmol/L)

Materials and Methods:

Statistical significance was designated at $P < 0.05$. Univariate logistic regression was performed, with (i) in-hospital death and (ii) in-hospital falls as the dependent variable. Other variables (chronic hyponatremia status, age category, sex, type of fracture, shelter, Nottingham Hip Score, Charlson Comorbidity Index) were analysed as independent variables.

Results:

There is a tendency for a group with lower sodium levels to have a longer length of stay in the hospital, there were no significant differences between the groups with regards to baseline characteristics (shelter, delay in theatre, Nottingham Hip Score ($p=0.59$), and Charlson Comorbidity Index ($p=0.43$)).

Conclusion:

The presence of both chronic hyponatremia and moderate Nottingham Hip score increases the odds of death 4-fold (OR 4.26, 95CI% 1.46-12.41, $p=0.01$), whilst high Charlson Comorbidity Index increases the odds 8-fold (OR 8.652, 95CI% 1.125-66.56, $p=0.04$) and high Nottingham Hip Score increases the odds 53-fold (OR 52.9, 95CI% 11.6-241.1, $p=0.03$).

0069

Patient Experiences of a Virtual Thoracolumbar Fracture Clinic: Lessons Learned in Pandemic Times

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BACKGROUND

Virtual thoracolumbar spine fracture clinics (VTLFC) are a novel way of managing spine injuries that will only gain importance during the COVID-19 era. Our major trauma centre commenced their VTLFC in the months before the 2020 pandemic. In this study, we survey patients of the VTLFC to gain insight into their experiences. The objective is to identify areas patients find beneficial from systems of virtual management, as well as areas for improvement in this innovative style of remote management.

METHODOLOGY

Sequential sampling of patients for phone interviews was performed until achieving 20 feedback interviews. Patients were sampled from January to March 2020, before pandemic lockdown. A combination of closed and open questions' responses were collated and quantified; areas for improvement were identified and actioned during the pandemic.

RESULTS

65% of patients were satisfied with this mode of service provision. 50% of patients agreed that they received adequate information in relation to the VTLFC when they attended the emergency department. 70% agreed that their concerns were addressed and that they were given adequate education regarding their injury remotely. 60% of patients were discharged after first phone consultation; the remainder were invited for face-to-face clinics. 87% were satisfied with the management received. 75% encouraged the idea of VTLFC, nearly half gave reasons like reducing clinic attendances to avoid COVID-19, not needing to arrange transport or childcare, and avoiding missing work. 60% of patients suggested areas for improvement, including the provision of further written and online educational resources on how to manage their injuries. 45% requested video call consultations.

CONCLUSION

Patient satisfaction was observed in the majority of patients managed remotely via the VTLFC. Common positive themes identified included avoiding unnecessary hospital visits, saving patient expense and time, avoiding public transport, and these are all desirable during pandemic lockdowns. Areas for improvement identified from patients include the desire for more educational and self-management resources, both written and accessible online, as well as options for video consultations. These are being taken forward by our centre to continue improving our patient experiences of the VTLFC.

0072

Overview of Acute admissions in Trauma and Orthopedic Department during COVID-19 Pandemic - a DGH experience

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Introduction

COVID-19 has spread worldwide with WHO declaring a pandemic on March 11, 2020. On 24th of March 2020 the United Kingdom government declared a full lockdown

Aim

The aim of this study is to identify the impact of the full lockdown implemented in the UK as part of the COVID-19 pandemic response on musculoskeletal trauma volume and epidemiology in our DGH hospital

Methods

A retrospective review was undertaken using the hospital trauma database. All patients with musculoskeletal pathology referred and admitted as inpatients during the period of full lock down (24/3/20 – 12/5/20) to the orthopaedic trauma service at the study centre were included.

Results

During the 50-day period of the full lockdown COVID-19 pandemic analyzed, 134 patients were referred with musculoskeletal pathology to the orthopaedic trauma service. There were 93 females and 41 males. Majority of patients were over the age of 60 (73.85%).

There were 43 patients with neck of femur fractures , 14 patients with ankle fractures, 16 patients with soft tissue injuries, 13 patients with periprosthetic fractures /hip replacement dislocation,/distal femur fractures , 10 patients with humerus fractures and the rest with other musculoskeletal pathologies. Sixty seven patients (50%) needed surgery , 42.53% were treated conservatively and 6.7% were admitted for manipulation of dislocated joint/ fracture.

Majority of patients were discharged on the same day or in less than 5 days of inpatient stay (53.72%). 46.26% of patients still spent more than 5 days as in-patients.

Related to COVID- 19 tests, out of 134 patients only 38 were tested,1 was positive on admission and 17 became positive during admission or needed to be readmitted less than 5 days after discharge due to COVID 19 (44.7%).

Three patients died from COVID 19 during admission for trauma

Conclusion

During full lockdown, neck of femur fractures were the main admission diagnosis for musculoskeletal trauma. The majority of patients were elderly. Fifty percent of patients needed surgical management. A small proportion of patients than anticipated were tested for COVID-19 and relatively high number patients were infected with COVID 19 during hospitalisation.

0074

Plain Roentgenographic and CT scan based morphometric analysis of the Atlantodens interval in Indian population.

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Objective:

The anterior atlantodental interval (AADI) has been recognized as the most sensitive gauge of atlantoaxial displacement and is used as a measure of instability. The posterior atlantodental interval (PADI) contains nerve roots, the spinal cord and arteries and can be used as a gauge for assessing risk of neurological compression. This study will define a range of normal values for these spaces compared with the published data on plain radiographs.

Methods:

This retrospective observational study was conducted within the premises of a tertiary care centre. Patients with history of head injury thereby requiring CT scan and X- ray of the cervical spine were included.

Results:

On CT scan AADI ranged from 1.393 ± 0.47 and PADI ranged from 18.07 ± 2.43 . On X-ray AADI ranged from 1.36 ± 0.45 and PADI ranged from 18.04 ± 2.44 (all values in millimeters) . We found that 93.96% of the total subjects had AADI below 2mm and 6.8% subjects with no neurological symptoms had PADI below 14 mm.

Conclusion:

The values of AADI and PADI differed from previously described values based on standard plain radiographs. Measurements of AADI and PADI made on Xray and CT scan did not differ significantly. Hence X-ray is a reliable diagnostic tool to assess the anatomy of the craniovertebral junction in emergency setting. It is our opinion that the normal upper limit of AADI in sagittal CT scan reconstruction should be 2 mm as against the previously accepted upper limit of 3mm.

Key words: atlantodens interval; morphometry; cervical spine

0082

Paediatric Acetabular Fracture - An Easily Missed Injury

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Introduction:

Paediatric acetabular fracture is rare. While a challenging diagnosis, a high index of suspicion is required as disturbances in growth can occur despite optimal treatment, arising as secondary dysplasia. We present an isolated traumatic acetabular fracture occurring without dislocation in a skeletally immature teenager.

Case Report:

A 14 year old athletic male presented to emergency after being tackled playing football, landing on an extended left leg and feeling his left groin 'pop'. He complained of pain and inability to weight bear. Examination revealed reduced range of active and passive movement from left hip with reduced leg strength. Pelvic X-Ray was reported as showing no fracture. Diagnosis was of left rectus femoris injury and patient was booked for fracture clinic. Following next day consultant review, there was maximal tenderness from rectus femoris proximally and it's origin from the anterior / inferior iliac spine. He was unable to straight leg raise as a result. Passive movements were not painful. X-rays taken in A&E were again reviewed, with no fracture noted. Impression was of injury to the rectus femoris muscle and possibly an avulsion from the ASSI. Management was to continue non weight bearing until obtaining CT which was performed 6 days post injury. This confirmed fracture through acetabulum and tug injuries of rectus femori attachments.

Clinic follow up at 6 weeks showed the patient experienced no groin pain and had a full, pain free range of motion in his hip with consolidation of fracture lines on X-Ray. Patient commenced touch weight bearing with physio-therapy input.

Discussion:

This case highlights an unusual example of mechanism resulting in isolated acetabular fracture in a 14 year old athletic male. The subtle changes on X-ray are easily missed - as such, a high index of suspicion is required when evaluating patients presenting in a similar fashion. Be aware that acetabular fracture can present without hip dislocation. Where doubt as to the diagnosis exists, CT and MRI scan are invaluable in diagnosing injury and should be generously used.

0088

Setting A Standard For Post-operative Care Documentation In Orthopaedic Polytrauma At A Major Trauma Centre (MTC)

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Background:

All healthcare professionals (junior doctors, nurses, therapists) are involved in cross-covering teams to deliver patient care. No detailed audit standard has been established for post-operative care documentation, which is vital for patient safety and early rehabilitation.

Objectives:

1. To assess the quality and completeness of documentation in the post-operative notes of polytrauma patients with multiple orthopaedic injuries.
2. To evaluate staff experience and understanding of weight-bearing status in orthopaedic injuries and the perceived completeness of post-operative notes.

Methods:

1. Stakeholder analysis, consultation and consensus from the major trauma MDT for evidence-based auditable criteria.
2. Audit completeness of post-operative care documentation for the first 50 patients undergoing orthopaedic polytrauma surgery in 2020, identified using the TARN database.
3. Staff survey focussed on exploring the most significant deficiencies identified in the audit.
4. Stakeholder group to plan intervention.

Results:

MDT identified 13 mandatory criteria for complete post-operative documentation in orthopaedic polytrauma, including important negative fields.

Audit revealed the following compliance; need for VTE prophylaxis 72%, post-operative bloods 50%, check x-rays 69%, follow-up plans 74%, and weight-bearing status was documented in 91% of operated injuries, but only 42% of conservatively managed orthopaedic injuries. Trauma conference dictations detailed weight-bearing status of conservatively managed orthopaedic injuries in 35% of cases.

Survey received 87 responses, representative of the whole ward team at this MTC. Of the non-orthopaedic surgeons (n=67), 62% were less than confident in determining the weight-bearing status for patients with multiple orthopaedic injuries, when not explicitly documented. When weight-bearing status is unknown staff check the operation note first, followed by the ward round note and trauma conference dictation. When not documented, 15% of staff reported it took >24 hours or until the next day to ascertain a patient's weight-bearing status.

Conclusion and Implications:

Need for VTE prophylaxis following major trauma and weight-bearing status of non-operated polytrauma injuries are poorly documented, and the majority of healthcare professionals are uncertain in determining this independently. We are implementing a “delete as appropriate” style, suffixed electronic post-operative care template embedded within existing software, based on the 13 criteria established by MDT consensus.

0089

Near infrared spectroscopy & intramuscular PH use in Compartment Syndrome: systematic review and meta-analysis

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Acute Compartment Syndrome (ACS) is a serious clinical emergency in trauma and orthopaedic. The clinical signs and symptoms of the condition and measuring the Intramuscular Pressure (ImP) are the gold standards. However, pressure monitoring has its numerous weaknesses. Can Near Infrared Spectrometry (NIRS) and power of hydrogen/ hydrogen ion concentration (PH) measurements assist in the diagnosis of ACS?. Clinical studies investigating the application of NIRS and PH measurements for the diagnosis of ACS of the lower extremities from different search engines between from inception of data up until November 2020 were included. Eleven articles were included in this review (After application of the inclusion/exclusion criteria) (8 NIRS 3 PH articles). The means of five papers (NIRS) were pooled together in a meta-analysis., There was no heterogeneity between the five studies (I²=79.5%). The pooled effect size was 2.27 (95%CI: -1.02, 3.53) which indicated that there seemed to be considerable change in NIRS and this was statistically significant (p-value<.001). The pooled effect size for PH (effect size=0.724, 95%CI: 0.52 0.92). PH measurement found to be a statistically significant tool (p-value<0.001) in detecting the differences between injured legs with ACS/induced legs with ACS-similar model and the contra-lateral un-injured legs. Conclusion: This systematic review and meta-analysis has demonstrated clinical usefulness of both the near infrared and Intramuscular PH measurement in the diagnosis of ACS in patients with extremity trauma. The differences between injured/uninjured legs were both clinically and statistically significant for both devices

0090

Cattle-related Trauma: A 5-years Retrospective Review In An Adult Major Trauma Centre

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Background:

Bovine injuries are a common and significant cause of trauma, often requiring admission and operative treatment. We review all bovine related injuries over five years, both emergency and GP referrals at an adult major trauma centre in England.

Method:

Retrospective evaluation was undertaken using keywords through radiology referrals and hospital admissions speciality databases. By searching patient notes, demographics were collected as well as the mechanism and the situation of injury; trauma scores were calculated using: Injury Severity Score (ISS) and Probability of Survival (Ps19). Results were divided into emergency patients and GP referrals.

Results:

Sixty-seven patients were identified retrospectively over 5 years, 44 emergency patients (including 23 major traumas) and 23 GP referrals. Combined (Emergency & GP) mean age 52 years old. 67% male. Mean ISS 11. Most common combined mechanism of injury, kicked (n=23). In emergency patients, trampling injuries were most common. 86% of the trampled patients were major traumas and associated with increased ISS (mean 13). Indirect injuries mainly involved farm gates (92%). 73% of bull-related injuries were major traumas and had increased ISS scores (mean 17). Orthopaedics was the most common admitting speciality followed by cardiothoracic & neurosurgery. In emergency patients fractures were the most common primary injury (n=20), upper limb followed by spine. In GP, soft tissue injuries were the most common primary injury. 70% of the emergency referrals required admission and 50% operations. Fracture fixation was the most common operative procedure. Only one GP referral required an operation. There were significant delays in GP patients presenting. Two patients had a Ps19 score <90. There were two mortalities.

Conclusion:

Cattle related injuries are a significant cause of severe morbidity and mortality. They are under-reported. Patterns of injury are similar to high velocity road traffic collisions and bull-related injuries or trampling in particular, should alert the clinician to more significant trauma. Farm gates are a frequent cause of trauma associated with cattle. GP referrals with ongoing symptoms for more than two weeks seeking medical advice should alert the clinician to a more serious diagnosis.

0100

Analysis of risk factors and consequences of consecutive neck of femur fractures in elderly patients

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Background

Neck of femur fractures (NOFF) carry significant morbidity, mortality and cost implications to the health system. Subsequent contralateral fracture further decreases patient performance and increases the burden on healthcare. The aim of this study was to identify and evaluate potential risk factors for consecutive NOFF.

Methodology

The NOFF database in Pilgrim Hospital from 2012 to 2019 was retrospectively analyzed. Inclusion criteria was patients over 60 years with low energy fractures. Pathological and atypical fractures, and polytrauma were excluded.

Results

There were 114 patients (4.18%) with contralateral hip fractures out of a total of 2727 NOFF patients. 80% were female. Mean age was 82 years for the first hip fracture and 85 years for the second. Average time interval between fractures was 36 months. 74.3% of patients had the same fracture pattern on both sides ($P < 0.0001$). Out of 53 patients with cemented hip hemiarthroplasty (CHH) on one side, 31 patients (59%) had a second CHH for contralateral side. Likewise, out of 48 patients who had dynamic hip screw fixation during the first admission, 33 patients (69%) had the same procedure on the contralateral side too.

During the two consecutive admissions, the length of hospital stay was not significantly different ($P = 0.30$), median American society of Anesthesiologists (ASA) grades were 3, hyponatremia increased from 25% to 29% ($P = 0.5$), mean decline in Abbreviated Mental Test Score (AMTS) was 0.4, deterioration of Clinical Frailty Score and Charlson Morbidity Index were from 4.5 to 5.9 ($P < 0.0001$), and from 5.4 to 6.1 respectively and institutional residency was increased from 23 to 46 ($P > 0.0014$).

Conclusion

The similarity of fracture pattern bilaterally requiring similar surgical procedures are comparable with other literature. Even though there is minimal or no change in the ASA, AMTS and hospital stay between the two admissions, there is a drastic decline in clinical frailty, mobility status and an increase in residential dependency following a subsequent fracture. Our findings demonstrate the importance of emphasizing preventive measures.

0102

Comparison between cemented vs uncemented hip hemiarthroplasty following neck of femur fracture in elderly patients

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Introduction

The aim of this study was to evaluate any difference in mortality, morbidity and hospital stay between cemented (CH) and uncemented hip hemiarthroplasty (UCH).

Method

Retrospective database review of all patients who underwent hip hemiarthroplasty following displaced sub-capital hip fracture in 2019. The default implant was CH unless surgeon or anaesthetist had concern regarding cardiovascular morbidity of the patient on the day of surgery. All patients were optimised before surgery. Type of implants, American Society Association (ASA) grade, hospital stay, 30-day mortality, surgical complications were assessed.

Results

The cohort included 322 patients (227 CH, 95 UCH), mean age was 84 years (61-100). There were 266 (198 CH, 68 UCH) ASA 3 and 55 (28 CH, 27 UCH) ASA 4 patients. 30-day mortality was 22 (15 CH, 7 UCH) in ASA 3 and 15 (5 CH, 8 UCH) in ASA 4 patients. There was no difference in mortality between CH and UCH groups in ASA 3 and 4 patients (Chi-squared test, P=0.32).

Intra-operative fractures were higher in the UCH 10(10.5%) compared to the CH group 2(0.9%). There was no difference in post-operative complications, hospital stay or dislocation.

Conclusion

We found no difference in 30-day mortality, post-operative complications or hospital stay between CH and UCH, although intra-operative fracture was higher in the UCH group. Patients with cardiovascular co-morbidities can be successfully managed with CH without affecting 30-day mortality or other complications.

0107

Impact of lockdown on fracture patterns in acute paediatric orthopaedic admissions in a tertiary referral centre

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Abstract:

Lockdown periods due to COVID 19 have changed the activity patterns of children, especially with school closures and the suspension of group sporting activities, raising the question of how did this affect the demographics, causation, and morphologies of the fractures sustained by children.

Materials and Methods:

all acute orthopaedic trauma admissions presenting to the Royal Hospital for Children, Glasgow, during the period December 2020 to January 2021, when a nationwide lockdown was in effect, were assessed. Patient demographics, mechanism of injury, fracture patterns and need for surgery were investigated. This patient cohort was then compared to a control group of admissions over the period December 2019 and January 2020, when no lockdown was imposed.

Results:

The overall group sizes were comparable with 61 patients in the lockdown group and 63 in the pre-lockdown group. The percentage (%) of children requiring surgery between the groups was comparable, with 87% in the lockdown group and 81 % in the pre-lockdown group. Fracture sites were also comparable although supracondylar fractures of the distal humerus were more abundant in the lockdown group (19.6% vs 4.7%). Injuries related to road traffic accidents were more common in the pre lockdown group (1.6% vs 6.3%). Finally, there was no increased incidence of injuries related non-accidental injuries in the lockdown group.

Conclusions:

The bony injury patterns in our admissions have not shown a significant deviation with lockdown. It would be worthwhile to conduct further studies expanding the lockdown group to cover a lengthier period of time and with extension to the final periods of lockdown in order to gauge the impact of factors such as 'lockdown fatigue'. This will also increase cohorts size and permit statistical analysis.

0112

The Impact of COVID-19 on Neck of Femur fracture patients

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Introduction:

Neck of Femur fractures (#NOF) are the most common emergency surgery amongst patients >65 in the UK. These patients require longer in-patient stay and multidisciplinary input. Due to the impact of COVID-19 on the NHS, it is possible the virus impacted patient care. However existing literature is contradictory and inconclusive. Therefore, we aim to investigate COVID-19's impact on incidence, care and patient outcomes for #NOF patients.

Methods:

The national hip fracture audit was utilised to collect information for all 383 #NOF patients presenting to Wythenshawe hospital from March 2020 to March 2021. Primary outcomes including incidence, mortality, COVID +ve results, total mortality, delay in admission, surgery, mobilisation and discharge were measured. Secondary outcomes including demographics were also assessed. A cohort from March 2019 to March 2020 was used to control for certain parameters. These variables were plotted against National COVID-19 incidence and lockdowns to identify trends.

Results:

Periods of high national COVID-19 incidence were associated with increased patient age variation, delays in admission and an increase in Wythenshawe COVID-19 positive test results. A reduction in #NOF presentations occurred during the pandemic. During the first lockdown a decrease in positive COVID-19 tests on admission was seen, however this increased during the second lockdown. The first lockdown was associated with longer delay from presentation to: admission, discharge and theatre. However, during the second lockdown, these processes were managed more efficiently, with mean time from presentation to admission reduced by 42%. Furthermore, no COVID +ve results were seen following theatre and no deaths following discharge were recorded during this period.

Discussion:

COVID-19 appeared to reduce #NOF incidence, possibly due to patients engaging with less risk taking behaviours. However, an increase in lockdown fatigue could account for the increased positive tests on admission in the second lockdown. During the first lockdown, it is probable healthcare workers were not familiar with new local measures and patient pathways, resulting in delays. In contrast, during the second lockdown, familiarity and resources would increase, permitting enhanced management of patients. Improved hospital management and greater care-home restrictions during this period possibly contributed to fewer deaths witnessed after discharge.

0114

How has the COVID-19 pandemic impacted the incidence of hand trauma surgery in Wales?

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Purpose

To elicit the effects of the COVID-19 pandemic on the incidence of hand traumas requiring plastic surgery in Wales.

Activities undertaken

A retrospective observational study of 8 years' (April 2013 and March 2021) worth of statistics on hand traumas requiring surgery in Wales, was conducted. The data covered 178,439 cases of individual trauma. The period between March 2020 and March 2021 (which covered the COVID-19 pandemic) was scrutinised more closely with pivot tables and charts. Parallels were drawn with observational studies on hand trauma incidences over the last 12 months conducted around the world. Special attention was paid to work undertaken by the plastics and trauma and orthopaedic teams at Morriston Hospital, Swansea.

Results

The incidence of hand traumas requiring surgery by plastics and trauma and orthopaedics overall fell during lockdown 1 (23rd March – 1st June), but there was an increase in the number of cases caused by DIY accidents and a reduction in work-related injuries.

Conclusions

With the first lockdown many began to occupy themselves with DIY projects at home, which led to an increase in the number of injuries related to this behaviour. A reduction in work-related and social injury was also seen due to the 'stay at home' order. It is hoped that the observations made will stimulate further studies in the epidemiology of hand traumas in Wales, potentially alerting how we can predict the incidences of hand trauma in the future.

0116

The Choice of a Shoulder Reduction Technique for a Traumatic Anterior Shoulder Dislocation Following a Vehicle Accident.

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Objectives

Study the effectiveness of 3 shoulder reduction methods in 12 cases of traumatic anterior shoulder dislocation following a vehicle accident.

Methods

The 3 methods that were used are (Cunningham technique, external rotation technique, FARES technique) and they were used on 12 patient who sustained an anterior shoulder dislocation following a road traffic accident (RTA), this was diagnosed by an x-ray and all the cases had no previous history of shoulder dislocation. The technique selection was based on the patient age, pain threshold, cooperation and whether or not they had any other injuries. This study aims to compare these 3 methods in terms of the time required to achieve the reduction and their success rate.

Results

6 of the 12 (50%) patients were selected for the external rotation technique, patient age was the most decisive factor in choosing this method, it successfully reduced all of the 6 cases (first attempt) in an average time of 4.5 minutes. 4 cases (33.3%) were selected for the Cunningham technique, it successfully reduced 3 out of the 4 cases (in the first attempt except one which required a second attempt) in an average time of 8 minutes. The FARES technique was the choice for the 2 reminder cases (16%), the two of them required a second attempt to successfully reduce the shoulder with an average time of 7 minutes. All of the cases required some sort of sedation.

Conclusions

The choice of the reduction technique in the traumatic anterior shoulder dislocation is very important especially with the presence of other major injuries. This small study proves what many previous studies have shown so far, which is that the external rotation technique has a slight superiority over other reduction methods and this can be attributed to its simple and clear steps.

0119

Falls from heights greater than 2 metres: impact on services at a UK major trauma centre

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Introduction

Falls remain a significant cause of major trauma. Data from the Trauma Audit Research Network (TARN)¹ shows that falls from less than 2 metres represents the commonest mechanism of injury in older people in the UK. A service evaluation of our own institution found that 1% of such patients received an emergency operation and 8.5% died². However, there is a paucity of literature regarding falls from greater height. This service review seeks to evaluate the burden of such cases on trauma services, in particular emergency theatres.

Methods

A single-centre, retrospective service evaluation was undertaken using data from an adult major trauma centre in Merseyside from 1/1/2016 to 31/1/2020. Included were cases activating a trauma call with a recorded mechanism of injury of fall from height greater than 2 metres.

Results

A total of 6778 trauma patients presented during the assessed period, of which 789 (11.6%) had fallen from a height greater than 2 metres. 144 (18.3%) were female, and 645 (81.7%) were male. Mean age was 45.8 years. The most common age group was 31-40 years, followed by 51-60 years. 564 (71.5%) of patients were less than 60 years old.

83 (10.5%) patients required critical care admission, 51 patients (6.5%) needed emergency surgery within 4 hours of admission, and 22 patients (2.8%) died.

Of the 51 patients that needed an operation within 4 hours, 22 subsequently went to critical care straight from theatre. 5 of the 51 patients (9.4%) died, with their ages ranging from 16 years to 66 years and all with estimated Injury Severity Scores of greater than 16.

Conclusion

Falls from a height of greater than 2 metres overwhelmingly involve younger, male patients in our region. This patient group also comprises over 10% of all trauma patients presenting to the service and thus places a significant burden on emergency trauma and critical care resources. Ongoing audit should allow for continuous analysis and service planning.

References

1. Trauma Audit Research Network: TARN. 2017. TARN Research. Available at: <https://www.tarn.ac.uk/>
2. Callon J, Thomas D, Mercer SJ. Falls downstairs: The impact on a UK major trauma centre. *Trauma*. March 2021. doi:[10.1177/14604086211002989](https://doi.org/10.1177/14604086211002989)

0122

Literature review of triradiate cartilage fractures and case report of dual pelvic pathology of triradiate cartilage fracture and proximal hamstring avulsion fracture in an adolescent

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Background/Aim

Acetabular fractures occur in 1-15% of the paediatric population and triradiate cartilage (TRC) fractures are rarer. The literature surrounding the recognition and management of TRC fractures is scarce. We present a case of bilateral pelvic trauma and review of the literature.

Results

There are 38 reported cases of TRC fractures with majority being polytraumatic injuries (n=30). In 36.8% of the cases the diagnosis of TRC injury was made after the initial presentation. 5 cases were managed operatively and 33 managed non-operatively. 48.4% (n=16) of cases progressed to acetabular dysplasia in the non-operatively managed patients, of which 8 patients required surgical intervention with osteotomies or joint replacement. The average follow-up time was 6 years (range 2 months to 19 years).

Discussion

A 12 year old male presented after a cycling accident with a left ischium hamstring avulsion fracture and a right TRC fracture. Both injuries were managed conservatively following a tertiary MDT. The challenges in identifying the TRC fracture were multi-factorial including bilateral injuries, uncommon nature and delayed symptoms on the right side. At 18 week follow-up our patient had mild intermittent discomfort with no concerning features on x-rays.

There is no treatment algorithm for TRC injuries and 36.8% of reported TRC fractures in the literature were not identified at the initial presentation, highlighting the challenges in diagnosis. Critical factors to consider when deciding between surgical and non-surgical management are the age at injury, TRC displacement, congruity of the acetabulum and Salter-Harris classification of the injury. 87.5% (n=7) of patients who underwent salvage operations were under the age of 5 at the time of injury, emphasizing the need for long term follow-up. The average age of salvage operations was 17.5 years. The ultimate goal remains to maintain a stable hip joint in the child's development, in particular reducing the risk of further complications of acetabular dysplasia.

Conclusion

TRC fractures are rare and present a challenge in diagnosis and treatment. Non-operative treatment is an option, but patients need long term follow-up to identify complications related to growth arrest. Surgical treatment should be considered in young patients with incongruent joints.

0128

Mortality following Periprosthetic Fractures of the Femur: A Retrospective Analysis of the Risk Factors

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Background:

As the number of arthroplasty procedures being performed continues to escalate, due to the combined effect of the ageing population and expanding indications for arthroplasty procedures to the younger population, a concomitant rise in complications such as periprosthetic fractures could be observed in many countries, including the UK. Periprosthetic fractures are complex injuries, and their treatment is often physiologically demanding for the already frail and elderly patient, and thus, periprosthetic fractures are often associated with high mortality risks. Whilst the amount of research and data published have increased, following the noticeably rising number of periprosthetic fractures, there is still a general lack of research conducted on the elderly population of Scotland. Therefore, this retrospective cohort study aimed to investigate the mortality rates for patients sustaining periprosthetic fractures of the femur and to evaluate any associated risk factors.

Methods:

Routine clinical data were collected from a hospital located in Fife, Scotland, and analysed. Altogether, 35 patients with a periprosthetic femoral fracture around a total hip arthroplasty, or hip hemiarthroplasty, or total knee arthroplasty, were retrospectively analysed. Mortality rates and risk factors were tested for significance using chi-square tests and t-tests.

Results:

Between April 2017 and December 2019, the overall mortality for periprosthetic fractures of the femur was 34.29%. Advanced age, female gender, and shorter lengths of hospital stay were some of the risk factors identified in this study that could potentially contribute to higher post-fracture mortality risks.

Conclusion:

The findings of our study indicate that the mortality rates for periprosthetic fractures are significant, even when only data spanning over two years were collected. The risk factors for mortality identified and evaluated in this study should be carefully considered by orthopaedic surgeons during fracture management, so that patient outcome can be optimised, and mortality risks reduced.

0129

Delays in NCEPOD class 2 trauma surgery during the first wave of the COVID-19 pandemic

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Introduction:

Theatre delays can be associated with increased mortality and morbidity in the trauma setting. The objective of the study is to assess the impact of the COVID-19 pandemic on theatre provision for trauma patients requiring non-emergency operations NCEPOD class 2 during the lockdown period, when compared to an equivalent pre-pandemic period. Specifically, we wished to assess the differences in the types of injury that required surgery, the types of operations that were performed and the delays to theatre. This may enable enhanced service planning in the event of a second peak.

Methods:

We conducted a single centre retrospective study at a Major Trauma Centre in London during the peak of COVID-19. Data was collected from patients undergoing surgery on the emergency theatre list under the trauma team from 23/3/2020- 1/6/2020 (emergency cases were not included). Surgery booking date was then compared to the actual date of surgery. SARS-COV-2 DNA-PCR nasopharyngeal swab results were also recorded, as well as the COVID-19 bloods panel. Control data of trauma cases conducted between 23/3/2019 - 1/6/2019. Statistical analysis was conducted using the Shapiro Wilkes and Man Whitney U test.

Results:

A total of 20 non-emergency procedures had taken place under the trauma team during the lockdown (mean age 39 years; male 69%) and 20 procedures under the trauma team in the control data set (mean age 31 years; male 82%). Thirteen trauma patients were tested for COVID-19 with no positive results. 38.8% of non-emergency procedures under the trauma team during lockdown were knife crime victims, compared to 55% during the control period, $p=0.0245$. Wound exploration and washout remained the most common trauma procedure during lockdown (38.1% versus 50.0%), $p=0.0586$. 50% of non-emergency trauma operations during the lockdown period were delayed versus 38.2% in the control period, $p=0.6284$. Lack of theatre capacity was responsible for more delays during lockdown (90% versus 57.1%), $p=0.7316$.

Conclusions:

Lack of theatre capacity remained the most common reason for trauma surgery delays. In preparation for further possible waves of COVID-19, Major Trauma Centres should aim to increase emergency theatre number to cope with capacity.

0132

The Effect of COVID-19 Lockdowns on Paediatric Lower Limb Orthopaedic Presentations

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Introduction

As the COVID-19 pandemic was spreading in 2020 the government imposed national lockdowns. We considered the effects these lockdowns had on the paediatric population, with a specific focus on lower limb orthopaedic trauma. We hypothesise that these restrictions will have altered the mechanisms of injury and reduced the number of referrals.

Methods

We retrospectively analysed data from 28/08/19 to 01/04/21, considering the variations in referrals and operations during these times, and analysed this data using an online statistical calculator. We examined the rate of referrals, types of fractures referred to the centre, mechanism of injury, volume of operations performed, and average wait times to undergo an operation. The data were compared in pre-lockdown and lockdown times.

Results

Throughout the lockdown periods, the mean age of children referred was younger (6.9 from 11.1) and they were less likely to be injured as a result of sport ($p=0.0493$). They were more likely to fracture their lower leg ($p=0.0016$) when compared with other anatomical regions. The average weekly rate of referrals dropped (0.84 to 0.68), but the rate of operations almost quartered (0.39 to 0.16). The average wait times for operations dropped significantly, with patients waiting 80% less time from the date of their injury.

Conclusion

This study highlights the impact of the coronavirus pandemic on the prevalence and management of lower limb paediatric trauma. The demographics and mechanisms of injury which presented to the trust over the pandemic and associated national lockdowns was significantly different. There was a drop in the number of referrals and a preference to non-operative management when patients did present.

0133

The impact of the COVID-19 pandemic and lockdown on adult foot and ankle fractures – A retrospective cohort study

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Background:

The COVID-19 pandemic had a significant impact on the National Health Service (NHS). The UK entered lockdown and adjusted medical practice in an attempt to reduce transmission. The aim of this paper is to assess how the COVID-19 pandemic, lockdown and change in guidelines has impacted adult foot and ankle fractures.

Methods:

A retrospective observational study of prospectively collected data was conducted using Pathpoint™ eTrauma platform. The parameters evaluated were fracture incidence per-week (p/w), number of surgeries performed p/w, patient demographics and mean wait-time from injury presentation to surgery. All adults (18+), admitted within five time-periods were included; Pre-pandemic (29/09/19–23/01/20), National Lockdown 1 (24/03/20–01/06/20), Post-lockdown (15/06/20–14/10/20), National Lockdown 2 (15/10/20–2/12/20), National Lockdown 3 (06/01/21–12/04/21).

Results:

There were a total of 434 foot and ankle fractures evaluated. National Lockdown 1 displayed both the lowest incidence of fractures, 4.97 p/w [3.81-6.14], and surgeries performed, 4.77 p/w. In contrast, post-lockdown had the highest incidence of fractures, 7.46 p/w [6.39-8.54] and surgeries, 6.31 p/w. However, with each subsequent national lockdown, the incidence of fractures increased - National lockdown 2 with 6.27 fractures p/w [4.7-7.84] and National lockdown 3 with 6.78 p/w [5.63-7.93]. The pre-pandemic cohort displayed the highest mean age, 51.98 years, and mean wait-time of 8.74 days. The mean wait-time was reduced post-pandemic and lowest during National Lockdown 3 with a 5.79 day wait-time.

Conclusion:

The study demonstrates that the COVID-19 pandemic has impacted adult foot and ankle fractures. The incidence of fracture admissions decreased during all three national lockdowns when compared to pre-pandemic or post-lockdown. However, each national lockdown appeared less effective with a gradual increase in incidence during the second and third. The number of surgeries performed decreased significantly during the first national lockdown but showed a sharp rebound post-lockdown. The mean wait-time from injury presentation to surgery appeared to reduce following the emergence of COVID-19.

0134

Autologous Micro Fragmented Adipose Cells Therapy for End-Stage Ankle Osteoarthritis in Young Patients – Case series

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Introduction:

Ankle osteoarthritis (OA) in young patients is predominantly post-traumatic in aetiology. Most nonsurgical treatments only provide transient relief of symptoms, with patients having to resort to ankle fusion procedures. Intraarticular injections of adipose tissue have been successfully used in the management of hip and knee OA. There is a single case report published from our institution on the use of micro fragmented adipose cells therapy in ankle OA. The aim of this pilot study is to evaluate the efficacy of autologous micro fragmented adipose cell transplantation in the treatment of patients with end-stage ankle OA.

Materials and Methods:

Patients with post-traumatic, symptomatic Kellgren-Lawrence grade 3 to 4 ankle OA were treated with a single intra-articular injection of autologous micro fragmented fat cells. The cells were obtained through limited abdominal liposuction. Primary outcome measures were the Manchester-Oxford Foot Questionnaire (MOXFQ) score and the Foot and Ankle Ability Measure (FAAM) score. Scores were recorded preoperatively, and during clinic follow up at 2 weeks, 6 weeks, 6 months, and 12 months.

Results:

Five patients with severe post-traumatic ankle OA were included in the study. The mean age was 43 years. No perioperative complications relating to abdominal liposuction and intraarticular injection were recorded throughout the 12-month follow up period. The MOXFQ scores showed a statistically significant improvement, from an average score of 63 at baseline to 37.2 at 12 months ($p < 0.0001$). Similarly, there was a significant improvement in the mean FAAM scores, from 51.4 at baseline to 57 at 12 months ($p < 0.0001$).

Discussion:

This study demonstrates promising early results in the management of end-stage ankle OA in young patients using a single-dose autologous micro fragmented fat cells therapy. The improvement in patient-reported symptoms and function is demonstrated to be sustained over a period of 12 months. The findings confirm that this new treatment modality is a safe and effective alternative to other commonly available treatments in carefully selected patients.

0135

Patient Reported Outcomes (PRO) Research in Traumatic Brain Injury: testing the usability, feasibility and acceptability of an electronic PROs platform

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Background

Over 50 million people have a traumatic brain injury (TBI) each year and global incidence is rising. Improvements in clinical management of TBI have resulted in improved survival rates; however, this means that more people are living with life changing injuries and reduced quality of life. Electronic assessment of patient-reported outcomes (PROs) post-TBI may facilitate early identification of ongoing issues, shared-decision making and management of long-term outcomes. The PRIORiTy (Patient Reported Outcomes Research in Trauma) study aims to explore the feasibility and acceptability of using an electronic Patient Reported Outcome Measure (ePROM) system for patients with TBI.

Methods

The study consists of: (1) a qualitative study (semi-structured interviews) to explore patients' and clinicians' perceptions of an ePROM system; (2) the design of an ePROM system (Aparito Atom5™) and a usability study (cognitive interviews) to test its usability.

Results

(1) Qualitative study: All stakeholders interviewed (n=28) believed that an ePROM system was a flexible approach to identify, prioritise and evaluate ongoing issues and ensure that consultations focused on outcomes important to patients. Challenges included accurate description of patient symptoms and difficulties in completion by patients due to cognitive impairment or lack of insight. Key features of an ePROM system identified by participants (simple layout, use of lay language, opportunity to send/receive feedback, and use of validated tools) were incorporated into the design of the ePROM platform.

(2) Usability study: cognitive interviews with eight people with a TBI showed that it was easy for them to use the ePROM system and that only minor changes are required before further testing in a clinical setting.

(3) Feasibility study: Ongoing (awaiting ethical approval).

Conclusion

Positive attitudes towards ePROM systems and ease of use of the electronic platform demonstrate the potential to capture PROs electronically in routine clinical practice and research. The next and final stage of this study is to test the acceptability and feasibility of this ePROM system in a clinical setting. It is anticipated that the PRIORiTy study will increase capacity for trauma-specific knowledge and expertise in relation to PROMs and inform system development in other areas of trauma research.



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0140

Ilizarov Wire Tensioning - The Ring Deflection Phenomenon

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Background and Aims

Gavril Ilizarov pioneered the use of fine wire circular ring fixators within Soviet Russia in the early 1950's and require a wire tension in the range of 900-1200N. Ilizarov used a technique known as "Russian tensioning" whereby a wire is subtended around the fixation bolt in order to produce wire tension across the frame. This method requires significant experience to appreciate the appropriate tension. Italian tensioning was conceived to allow the use of a calibrated mechanical tensioner to elongate the wire and impart tension on the wire.

This biomechanical study compares these 2 techniques at achieving adequate tension and aims to quantify how initial wire tension is affected by the addition of a second wire.

Methods

In this *in vitro* series of experiments, a testing rig utilised an initial wire passed across a 160mm stainless-steel ring. A Russian tensioning method was employed to achieve 45°, 70° and 90° of wire deflection. Italian tensioning utilised a new and calibrated, spring-loaded tensioner to introduce 90, 110 and 130 KgF. A calibrated tensiometer was used to record spoke deflection which was then converted to Newtons of tension. Results were triplicated and standard deviations noted.

Results

With Russian tensioning, a 90° bolt rotation of the wire was required to achieve a mean of 1047N which is within the range of 900-1200N as deemed by Ilizarov. Notably the first wire tensioned did not achieve a suitable tension until the 2nd wire was added across all angles of bolt rotation. Italian tensioning revealed that actual tension achieved at lower settings is an underestimate compared to the proposed tension by the device. At higher settings (130 KgF) the device overestimates the wire tension.

Conclusion

Both methods are efficient for achieving wire tension. A 90° bolt rotation should be used to achieve adequate tension, and caution should be employed when tensioning with the Italian tensioner. A "ring deflection phenomenon" may account for this loss of tension, however the addition of an orthogonal wire neutralises the deflection and allows for an increase in construct stability.

0142

Improving the safety of nerve blocks in fractured neck of femur patients in Bristol Royal Infirmary

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Following an RCEM safety bulletin in 2018, which stated use of opiates with fascia iliaca blocks had lead to unrecognised apnoea and highlighted the importance of monitoring post block, I conducted a project. The quality improvement project looked at improving the safety of the nerve blocks that we use in the department by improving prescriptions of anaesthetic drugs used for the block, and by improving monitoring of patients after their nerve block. These intern would be used as surrogate markers of improving safety of the blocks.

Methods

The project consisted of PDSA cycles. The baseline data showed that drug prescriptions were around 53% in the department. The college has a standard that patients should receive observations at a minimum of 5, 10, 15 and 30 mins post procedure. Baseline observations performed were as low as 8% of patients receiving one single set of observations during the 30 minutes post block.

PDSA cycle 1 was a teaching session during August induction which was designed to highlight the importance of the nerve blocks and consequence. PDSA cycle 2 was reminder bulletins at handover and “messages of the week”. PDSA cycle 3 was a simulation session that was ran for around 20-25 members of medical and nursing staff showing the consequence of opiates plus nerve block on patients and also covered local anaesthetic toxicity and the importance of monitoring patients.

Results

Overall the drug prescriptions dropped over the first PDSA cycle to 29.3% but then improved to 66% then after the 3rd cycle improved to 76%.

The baseline observations gradually improved through each cycle resulting with 23% of patients having all 4 sets of observations documented.

Conclusions

Although the project did show a great improvement after the third cycle, after August changeover of staff the prescriptions dropped significantly from the baseline. This re-enforces how teaching and simulation can be used to highlight important safety messages to new staff groups and how it can be effective in improving safety. The project also highlighted how important communication between medical and nursing staff is, and that was a key factor in the success of the project.

0146

Optimising pre-operative intravenous fluids in hip fracture patients to reduce the incidence of AKI in Victoria Hospital Kirkcaldy

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Background:

Acute kidney injury (AKI) in hip fracture patients is associated with increased morbidity, mortality, and length of stay. Local policy recommends 500ml of Plasmalyte immediately on admission to the Emergency Department (ED), followed by another 500ml at 100ml/hr. Subsequently, patients without AKI should receive maintenance fluids on the wards until their oral fluid intake is adequate post-operatively. Plasmalyte is an isotonic fluid consisting of 140 mmol/L sodium, 5 mmol/L potassium, 1.5 mmol/L magnesium, 98 mmol/L chloride, and 27 mmol/L and 23 mmol/L of acetate and gluconate, respectively. IV fluid (IVF) prescriptions following local policy were defined as 'adequate'.

Methods:

Three prospective audits were undertaken with interventional measures deployed between cycles. Data collected included blood results, IVF received, past medical history, and the pre/post-operative incidence of AKI. Data from the first cycle was collected over two weeks, while the second and third cycle data were collected over four weeks. There was a two-month gap between the first and second cycle, and a five-month gap between the second and third cycle. Interventions include an ED proforma used as an admission checklist and educating ward doctors with a narrated video and posters.

Results:

None of the twelve patients included in the first cycle received adequate IVF. The second cycle included twenty-seven patients and the third cycle included twenty-eight patients. Between these cycles, ED's IVF prescription adherence improved from 37.0%(10/27) to 46.4%(13/28). On the wards, IVF prescription adherence significantly improved from 33.3%(9/27) to 78.5%(22/27). Pre-operative AKI incidence: 3.7%(1/27) in the second cycle, 0%(0/28) in the third cycle. Post-operative AKI incidence: 3.7%(1/27) in the second cycle, 7.1%(2/28) in the third cycle. None of the post-operative AKI patients received adequate IVF. Third cycle showed that the primary Plasmalyte and secondary Plasmalyte were prescribed appropriately in 57% and 50% of patients, respectively.

Conclusion:

Our interventions successfully improved IVF prescriptions on the wards. However, further work is required to encourage adherence to local policy to reduce the incidence of AKIs.

0149

Surgical Site Infections & Theatre Timings: Hip Fractures and COVID-19 in a district general hospital

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Background

The SARS-CoV-2 (Covid-19) pandemic in 2020 led to an increase in the vigilance and stricter guidelines regarding the use of PPE (Personal Protective Equipment) and hand hygiene practices both within and outside of clinical areas. This study was completed to establish if heightened awareness and implementation of new infection control procedures resulted in lower SSI (surgical site infection) rates and caused longer theatre times.

Methods

All surgically treated hip fractures in Altnagelvin Area Hospital from the 16th March to the 16th June in both 2019 and 2020 were included. This allowed comparison of the outcomes between pre-covid surgery in 2019 to the outcomes during the height of the first wave of Covid-19 in 2020. A minimum of 90 day follow-up was established in order to capture all associated deep surgical site infections.

Results

The results demonstrated a 37% reduction in the number of hip fractures presenting to the unit from 126 in 2019 to 79 in 2020. SSI rates were statistically similar with 1.59% in 2019 compared to 1.26% in 2020. Both of these results are lower than the published national averages of 2.3-4.4%. The theatre timings were statistically similar, in 2019 the mean surgical time for all hip fracture surgeries was 72 minutes compared to 73 minutes in 2020.

Conclusion

There was no statistically significant change in SSI rates even with the heightened awareness of infection control measures and PPE use. The similar surgical times demonstrated may be explained because experienced surgeons operated during the pandemic which allowed for improved efficiency in theatres.

Implication

Even with heightened infection control measures and PPE there is no demonstrated benefit in SSI rates. During pandemic waves it may be beneficial to encourage more senior operating in order to allow for efficient theatre utilisation.

0150

The relationship between the COVID-19 pandemic and the incidence and management of upper limb fractures in Manchester Foundation Trust

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Introduction

The COVID-19 pandemic brought about the placement of severe social restrictions in the United Kingdom, limiting activity and impacting public behaviour. Limited studies have been published on the effect of the coronavirus pandemic on the presentation and management of upper limb fractures. The aims of this study were to assess the change in incidence of upper limb fractures at key points during the COVID-19 pandemic and establish the effect of pandemic severity on measures of service efficiency such as time to theatre and length of stay for admitted patients across Manchester Foundation Trust (MFT).

Materials and Methods

We undertook a retrospective analysis of all upper limb fracture referrals, admissions, and surgical procedures from 1st of March 2020 to the 28th of February 2021. Changes in upper limb fracture incidence were mapped to changes in social restrictions. Measurements of service efficiency were mapped to local COVID-19 burden. Subgroup analysis was undertaken to compare the domains in age groups, including paediatric population, adults, and elderly.

Results

The study involved 1251 referrals, 659 admissions, and 641 procedures across MFT. Referrals and admissions demonstrated a relationship with the relaxing of social restrictions, particularly in patients under 16 years of age. Length of stay was reduced during times of peak COVID-19 burden during the first wave, and time to theatre increased during winter.

Conclusions

There appears to be a relationship between changes in social restrictions and the incidence of upper limb fractures. The orthopaedic service remained robust in spite of the pandemic, although more research is needed to determine the effect of changes to service delivery on patient outcomes.

0155

Does preinjury clopidogrel use increase the risk of intracranial haemorrhage post head injury in adult patients?

A systematic review and meta analysis.

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Background

The primary objective of this systematic review and meta-analysis was to assess if clopidogrel monotherapy was associated with traumatic intracranial haemorrhage (tICH) on computed tomography (CT) of the head within 24 hours of presentation following head trauma compared to none antithrombotic controls.

Methods

Eligible studies were non-randomised studies of the effects of interventions (NRSI) with human participants aged ≥ 18 years old with head injury. Studies had to have conducted CT head within 24 hours of presentation and contain a none antithrombotic control group and a clopidogrel monotherapy group. Medline, Embase, Web of Science, Google Scholar, Cochrane Central, OpenGrey, SCOPUS and ClinicalTrials.gov were searched from inception to the 13th December 2020. Identified studies were assessed against inclusion criteria independently and in duplicate by two authors. Data extraction was also conducted independently and in duplicate by two authors. Quality assessment and risk of bias were assessed the Newcastle – Ottawa Quality Assessment (NOS) tool and Risk Of Bias In Non-randomised Studies of Interventions (ROBINS-I) tool. Meta-analysis was conducted using a random effects model with the measure of effect being reported as an odds ratio (OR) and 95% confidence interval (CI) and displayed in a forest plot. The review was registered on the PROSPERO register (CRD42020223541).

Results

Seven studies were eligible for inclusion with a total of 21898 participants that were incorporated into the meta-analysis. Of the included studies five were retrospective studies and two were prospective. Clopidogrel monotherapy was not significantly associated with an increase in risk of tICH compared with none antithrombotic controls – OR 0.97, 95% CI 0.54 – 1.75. Heterogeneity was high with an I^2 of 75%. Sensitivity analysis removing one study produced an I^2 of 21% and showed no significant association between clopidogrel monotherapy and risk of tICH. OR 1.16, 95% CI 0.87 – 1.55.

Conclusion

All included studies were vulnerable to confounding and several were small scale studies so the results should be interpreted with caution. This systematic review and meta-analysis does not provide any evidence that clopidogrel monotherapy patients are at increased risk of tICH post head injury compared with no antithrombotic controls.

0161

An Audit on the Management of Displaced Supracondylar Fractures at a District General Hospital: Do We Follow BOAST Guidelines?

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Introduction:

Supracondylar fractures are the most common traumatic fractures seen in children. Neurovascular complications are reported in 5–19 % of all displaced cases. Therefore the British Orthopaedic Association issued a set of standards as to how these injuries are managed.

Method:

All patients with coded '*supracondylar fracture*' were retrospectively gathered from January – December 2020. Of those patients; only displaced supracondylar fractures were selected. Clinical notes were then reviewed along with use of Winscribe (for clinic letters) and PACS to gather relevant data.

Results:

There were 11 displaced supracondylar fracture patients, with an age of 4-7 years. Neurovascular status was documented as per BOAST guidelines in 0% of cases at presentation. Of these patients 1 out of 11 was operated on the same day, but all within a 24-hour period. In 25% of cases, where a medial wire was used, ulnar nerve protection was not recorded. Use of 1.6mm wires vs 2mm were split equally across patients. Bi-cortical wire fixation was used in all patients, with 9 patients having crossed wires and 100% of cases using at least 2 wires. Follow up check X-rays were obtained within 4-10 days in 9 out of 11 (82%) patients with wire removal within 3-4 weeks in 9 out of 11 patients (82%).

Conclusion:

Standards with regards to documentation of neurovascular status at presentation or of intra-operative ulnar nerve protection are not being met. All patients were operated on within 24 hours of admission, with no nighttime operating required. Intraoperative techniques followed standards set by the BOAST guidelines. For follow up, post-operative x-rays and wire removal were mostly within the standards' timeframe. We will aim to introduce standardised admission documents to ensure that we follow BOAST guidelines and re-audit after implementation.

0162

The Impact on Orthopaedic Departments and Common Injury Patterns from Standing Electronic Scooter Users: The Bristol Experience

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In the drive towards carbon neutrality, E-scooter UK-wide trials have been introduced by the Department of Transport, including a 12-month trial in Bristol from October 2020. The increasing usage of E-scooters has resulted in a surge of traumatic injuries associated with this new mode of transportation. The demographics and trends of injury patterns within the UK are yet to be reported. We report an overview of the experience from our Trauma and Orthopaedics (T+O) Department, set in a Trauma Unit in Bristol, from January 2021 to June 2021.

During this period, we were referred 53 patients with E-scooter related injuries. Typically, patients were between 20 to 40 years old, with an average age of 31. Alcohol was a notable risk factor for injury, 26% of those referred to our department being under the influence of alcohol at the time of their accident. 73% of the injuries sustained were to the upper limbs, 62% being right sided, with hand and elbow trauma being the most common. 20% of all patients referred required operative management, with an average length of stay in hospital of 2.5 days.

We conclude that the economic burden of E-scooter related injuries to a T+O Department can be significant. Most patients require imaging, splints and multiple follow up appointments, in addition to those requiring hospital admission and operative management. Our findings highlight the impact this novel form of transport has upon T+O Departments and the injury patterns sustained, informing future service provision and public health awareness.

0167

The Impact of COVID-19 on Virtual Fracture Clinics at a Manchester teaching hospital

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Introduction

The virtual fracture clinic (VFC) offers an alternative means to deliver care to patients and help reduce the overwhelming pressure on trauma services and traditional fracture clinics. The coronavirus pandemic placed a tremendous strain on many NHS services, as well as an emphasis on avoiding face-to-face appointments to curb the risk of spread of COVID-19 infection. The aim of this study was to evaluate VFC services at Wythenshawe Hospital during the coronavirus pandemic through measuring 4 dependant variables: number of patients referred to VFC, discharge rate, clinic follow-up rate and referrals for treatment.

Materials and Methods

VFC data was retrospectively analysed, encompassing a one-year period between March 2020 and March 2021. Data collected included the number of patients referred to VFC and the outcome of each patient: discharged, followed-up in clinic, referred to treatment room. Regional data on numbers of COVID-19 cases were mapped against VFC data to determine a relationship and statistical analysis performed.

Results

2,955 patients referred to VFC were included in the study. The number of patients referred to VFC and VFC discharge rate both showed a weak negative correlation (-0.136 and -0.149, respectively) with the number of regional coronavirus cases ($p=0.0195$ and $p=0.0108$, respectively). VFC follow-up rate in clinic demonstrated a weakly positive correlation (0.150) with COVID-19 cases ($p=0.0104$). The correlation between referrals for treatment from VFC and coronavirus cases was weakly negative (-0.0360) and not statistically significant. The VFC discharge rate during the study period was 36.6%; clinic follow-up rate was 61.0%; this compared to rates of 30.4% and 64.0%, respectively, during a one-year period in 2017-2018.

Conclusion

Overall, the impact of the coronavirus pandemic on the local VFC service was minimal. The VFC model managed to maintain good levels of performance despite challenges imposed by COVID-19. Further study is required to assess whether the COVID-19 pandemic affected the quality of care of VFC patients.

0168

Patient satisfaction of the Virtual Fracture Clinic delivered via Pathpoint™ eTrauma system

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Introduction

The Virtual Fracture Clinic (VFC) model, first introduced in Glasgow in 2011, has had significant effect on managing demand, cost-effectiveness, and patient experience of the fracture clinic. In March 2021, a new VFC model was introduced in our orthopaedic department, delivered via the Pathpoint™ eTrauma (Open Medical, UK) platform, allowing for paperless referrals, communication, and delivery of electronic information to patients through text messaging or email. The aim of this study was to evaluate patient satisfaction of the eTrauma VFC experience through a telephone feedback questionnaire.

Materials and Methods

152 adult patients referred to the eTrauma VFC were identified between 17th of March 2021 and 8th of April 2021. A random sample of 50 patients was selected from this cohort and telephoned. 24 patients answered the phone and consented to completing the telephone questionnaire. A list of 14 questions was utilised as part of the feedback questionnaire pertaining to satisfaction with VFC follow up process.

Results

50% of patients reported receiving a text message from VFC; all reported the highest satisfaction level in ease of access and level of information provided. Only 17% of patients received an email from VFC. 92% of patients received a phone call from VFC within 48 hours. 63% of patients found the phone call necessary in addition to the electronic information sent out. 50% of patients reported they would prefer the service to be delivered completely electronically, while 33% would have preferred to be seen in a face-to-face appointment. All patients reported high levels of satisfaction with the VFC experience.

Conclusion

The utilisation of a cloud-based system such as eTrauma in the delivery of VFC, with a focus on providing patients with electronic information, could increase cost-effectiveness and management of resources. Based on responses gathered from patients, satisfaction levels with our VFC model are high. At present, electronic delivery of VFC follow up seems to be effective as a supplementation to the telephone phone calls. Replacing phone calls entirely with electronic VFC could be a safe option for selected patients but more study is required into this.

0170

Comparison of materials used for splenic artery angioembolisation (SAE) in blunt splenic trauma

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Purpose:

Splenic Artery Angioembolisation (SAE) is a preferred method of management of blunt splenic trauma in haemodynamically stable patients with a high-grade injury. The purpose of this study is to compare the SAE outcomes and any procedure-related complications using different embolisation agents.

Methods:

A systematic search identified 143 titles from Pubmed (51) and Medline (82) databases relevant to the study topic. Nine abstracts were assessed based on inclusion and exclusion criteria and only seven used for the full text review. All studies were retrospective and contained data from patients' medical records or trauma registry.

Results:

Amplatzer vascular plug (AVP), ArtVentine endoluminal occlusion system (EOS) plug and Penumbra occlusion device (POD) showed a higher success rates than coils and gelfoam. Procedure time was shorter in gelatin sponge and POD groups than with coils and AVP. Fluoroscopy time was the shortest in gelatin sponge, ArtVentine EOS and POD groups. Time to vessel occlusion was shorter with AVP4 than AVP device. Most studies reported complications such as coil migration, abscess formation and infection. An average of two patients in each study required splenectomy or re-embolization post-SAE.

Conclusion:

The available literature is inconclusive regarding which agent is superior in SAE use in blunt splenic trauma. A single prospective study with a large sample size and a variety of measures is required to compare effectiveness of all available agents. A new design of an embolic agent should focus on a simple delivery system and short vessel occlusion time.

0171

Pacemaker Lead Dislodgment Secondary To Chronic Reverse Polarity Arthroplasty Dislocation: A Case Report

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We present a case of an 86 year old woman with a non functioning permanent pacemaker right ventricular lead that has retracted and migrated superiorly following a history of long standing left prosthetic shoulder dislocation. To our knowledge this is the first documented case of pacemaker dislodgement and fracture related to a chronically displaced prosthetic shoulder replacement.

0174

Whole body MDCT – the gold standard for imaging in the severely injured patient?

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Background:

Trauma is the commonest cause of death in the UK in those aged under 45⁽¹⁾. In 2010, over 20,000 major trauma cases were reported, 5,400 of which resulted in deaths⁽²⁾. Early identification of those at risk of death or permanent disability, and their subsequent immediate management, is therefore paramount to improving survival. Standard 9 of the current guidance, issued by the Royal College of Radiologists (RCR), states that whole body contrast enhanced multi-detector computed tomography (MDCT) is the default imaging modality of choice in the severely injured patient⁽³⁾. It also states that imaging protocols should be clearly defined and uniform across a regional trauma network⁽³⁾. Use of whole body MDCT has been shown to reduce the overall and 24 hour mortality rates in the severely injured patient (SIP) as compared to those who received selective CT imaging as part of the secondary survey.

Aim:

To assess whether all SIPs admitted to QEHB Major Trauma Centre (MTC) received a whole-body contrast enhanced MDCT as per standard 9 of the RCR guidance.

Method:

Through The Trauma Audit & Research Network, we retrospectively identified all patients admitted to QEHB MTC with an injury severity score >15. We assessed if an MDCT was received as per the guidance, and determined if adherence can be improved. Following the implementation of potential recommendations, we will re-audit the data to determine if there has been an improvement in adherence to the guidelines.

Results:

Only 151/280 (54%) patients had a whole body MDCT performed.

Discussion and Conclusion:

Whole body MDCT not performed – possible explanations include: mechanism of injury, referrals, clinical judgement and limited guideline awareness.

Definite room for improvement in adherence to guidance. Re-audit annually to assess improvements. Quantification of ‘further imaging’ required. Update guidance – clarify the role of MDCT in SIPs with differing mechanisms of injury. Further research should be conducted into the accuracy of a patient’s ISS in assessing the need for whole body MDCT.

0176

Outcomes of periprosthetic hip and knee fractures at a Major Trauma Centre (MTC)

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Background

The incidence of Periprosthetic fractures (PPF) after total knee (TKA) and hip arthroplasty (THA) is on the rise. The aim of our study was to assess the functional outcomes, morbidity and mortality following surgery for PPF of the hip and knee.

Patients and Methods

49 patients (mean age 84 years; 1:2.6 male to female ratio) with PPF of the hip ($n=35$) and knee ($n=14$), from March 2020-March 2021 at a MTC were included. Risk factors impacting postoperative morbidity, mobility and function (using Western Ontario and McMaster Universities Arthritis Index or WOMAC scores from telephone follow-up at 1 year post-operatively) were assessed.

Results

The most common PPF were Vancouver B1 ($n=15$; 42.9%), B2 ($n=10$; 28.6%) and Su II ($n=9$; 64.3%). Most B1 ($n=12$; 80.0%) and B2 ($n=9$; 90.0%) fractures were managed operatively. All B1 fractures were managed with Open Reduction Internal Fixation (ORIF) and most B2 fractures with revision surgery ($n=8$; 88.9%). The greatest blood loss was noted in the B2 group with 5 patients (62.5%) requiring blood transfusions post-operatively. The rate of post-operative delirium (POD) in both B1 and B2 groups was the same (33.3%). B2 group had worse mobility on discharge and at 1-year post-operatively: lower average WOMAC score (77.9) with fewer returning to baseline function ($n=3$; 42.9%). Time to surgery was greater in the B2 group but on average was 2.4 days for all PPF.

85.7% of knee PPF were managed operatively ($n=12$). In the Su II fractures ($n=8$; 66.7%): 75.0% ($n=6$) were managed with ORIF, 25.0% ($n=2$) with revision surgery. 37.5% ($n=3$) of patients developed POD and 50.0% ($n=4$) had significant blood loss- 75.0% ($n=3$) required post-operative blood transfusions. One-year mortality was 17.0% (PPF hip) and 21.4% (PPF knee) and this was higher in both groups following operative intervention.

Conclusion

A more pragmatic approach to managing PPF such as ORIF for B2 fractures, may be appropriate and avoid complications of revision surgery. PPF patients are high-risk with multiple comorbidities: they should be managed holistically with multidisciplinary team input and clinicians should remain vigilant in detecting complications early.

0177

Mortality in hip fracture patients during the pandemic - a meta-analysis and metaregression of risk factors

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Background:

Incidence of hip fractures has remained unchanged during the pandemic with overlapping vulnerabilities observed in patients with hip fractures and those infected with COVID-19. We aimed to investigate the independent impact of COVID-19 infection on the mortality of these patients.

Methods:

Healthcare databases were systematically searched over 2-weeks from 1st-14th November 2020 to identify eligible studies assessing the impact of COVID-19 on hip fracture patients. Meta-analysis of proportion was performed to obtain pooled values of prevalence, incidence and case fatality rate of hip fracture patients with COVID-19 infection. 30-day mortality, excess mortality and all-cause mortality were analysed using a mixed-effects model.

Results:

22 studies reporting 4,015 patients were identified out of which 2,651 (66%) were assessed during the pandemic. An excess mortality of 10% was seen for hip fractures treated during the pandemic (OR=2.00, p=0.007), in comparison to the pre-pandemic controls (5%). Estimated mortality of COVID-19 positive hip fracture patients was four-fold (RR=4.59, p<0.0001) and 30-day mortality was 38.0% (HR=4.73, p<0.0001). The case fatality rate for COVID-19 positive patients was 34.74%. Between-study heterogeneity for the pooled analysis was minimal (I²=0.00) whereas, random effects metaregression identified subgroup heterogeneity for male gender (p<0.001), diabetes (p=0.002), dementia (p=0.001) and extracapsular fractures (p=0.01) increased risk of mortality in COVID-19 positive patients.

Conclusions:

Our study has shown an increased overall and 30-day mortality of hip fracture patients treated during the COVID-19 pandemic with concomitant COVID-19 infection being an independent risk factor of mortality. We highlight the impact prevalence and hospital occupancy has had on mortality as surrogate markers of overburdened healthcare systems. We believe the vulnerability of hip fracture patients increases with peak incidence of COVID-19. Thus, their care must be prioritised during this crisis through means of a comprehensive care pathway.

0178

Evaluating the impact of the cardiac chair position for day 1 mobilisation following hip fracture surgery. A single-centre 281 patient cohort study.

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Introduction

The National Institute for Clinical Excellence (NICE) and Chartered Society of Physiotherapists recommend all patients should be mobilised on the day of or day following hip fracture surgery, as early ambulation prevents morbidity and mortality. The cardiac chair position (CCP) has been used to aid mobilisation of patients in medicine by counteracting the effects of orthostatic hypotension.

Aims

Our primary aim was to assess the effect of the CCP prior to physiotherapy on day 1 mobilisation (bum off bed). The secondary aim was to ascertain causes of immobility.

Method

Consecutive patients ≥ 65 years with a fragility hip fracture admitted to one institution were studied between July to October in 2019 and 2020. In our institution the CCP was introduced as part of routine hip fracture care in 2020. Routine audit personnel prospectively collected patient demographic data. Medical records were observed retrospectively for day 1 mobilisation data.

Results

The 2019 (control) group had 104 patients. The 2020 CCP group included 177 eligible patients; however only 114 had CCP pre-mobilisation (representing 64.4%). There was no statistically significant difference in gender, NHFS and surgery types in both groups ($p > 0.05$). There was a statistical difference ($p < 0.05$) in average age (mean age 90 in 2019 v 82 in 2020) which may have been due to Covid-19 pandemic.

Our data demonstrates CCP does not improve day 1 mobilisation (control 64.4% of patients v CCP 69.9%) (OR 0.781; $p = 0.389$). The main causes for non-mobilisation were patients being medically unwell or cognitive impairment.

Conclusion

This is the first study which evaluates the impact of CCP on early ambulation following hip fracture surgery. Early mobilisation is important as it improves patient outcomes and reduces complications. Our study was limited since not all patients were placed into CCP due to staffing issues and the effect of Covid-19 may have also played a role in preventing mobilisation in this vulnerable group. A further prospective audit during a non-pandemic period could investigate predictors and barriers for non-mobilisation.

0180

The impact of COVID-19 restrictions and changes in guidelines on adult wrist fracture management

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Background:

The Covid-19 pandemic had an unprecedented impact on the healthcare service of the United Kingdom. This study aims to evaluate the effect on wrist fracture care as a result of the Covid-19 pandemic, changes in management guidelines, and introduction of lockdown restrictions.

Methods:

This is a retrospective observational study with data collected using the Pathpoint™ eTrauma platform (Open Medical, UK). All adults (18 years+) admitted with wrist fractures within the study phases to Manchester University NHS Foundation Trust were included. Each phase of the study period represents a change in lockdown restrictions, including lockdown 1, period of eased restrictions after lockdown 1, lockdown 2, and lockdown 3. These phases were then compared to a pre-pandemic period. A total of 608 referrals were included for analysis.

Results:

The number of referrals per week decreased from 9.94 pre-pandemic to as low as 8.12 during lockdown 2. Falls remained the most common mechanism of injury, followed by cycling which saw an increase by more than threefold from 2.42% pre-pandemic to 8.17% ($p=0.500$) during lockdown 1 and 8.77% ($p=0.0164$) during the easing of lockdown 1. Sports-related injuries and occupational injuries decreased throughout. Assaults and altercations, road traffic accidents, scooter, roller-skate, and skateboard-related injuries decreased throughout. Surgical procedures per week decreased from 5.06 pre-pandemic to as low as 4.55 during lockdown 1. Procedure cancellations remained steady apart from an increase during lockdown 2. Referrals managed operatively increased from 50.9% pre-pandemic to 58.9% in lockdown 2, before dropping to 49.2% in lockdown 3. Mean time from presentation to surgery increased from 9.08 days pre-pandemic to 16.27 days in lockdown 1 but decreased to just below the pre-pandemic baseline thereafter.

Conclusion:

Overall, there was a decrease in the number of wrist fracture referrals and surgical procedures compared to before the pandemic. There was also an increased wait-time to surgery and an increased rate of cancellations. Statistical analyses fail to find significance in changes other than mechanisms of injury; which resulted from lockdown restrictions. Therefore service provision, delivery, and efficiency not affected significantly by changes in guidelines and lockdown restrictions.

0181

Does a Protocol for Hip Fracture Surgery in Patients Taking a Direct Oral Anticoagulant Unnecessarily Delay Time to Theatre?

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Background

Best practice tariff for hip fracture surgery includes operating within 36 hours. There is increasing use of Direct Oral Anticoagulants (DOACs) in the demographic of patients admitted with hip fractures. Whilst reversal agents are limited, a decision must be made between delaying surgery until the DOAC has worn off, or proceeding with early surgery whilst acknowledging the risk of bleeding. The aim of this audit was to assess the impact of a local protocol on time to surgery – the protocol delays patients for 24, 36, or 48 hours from last dose based on renal function and agent.

Methods

A retrospective audit was completed from 1/1/19-31/12/19. Patients were identified from the National Hip Fracture Database and were refined to those with a delayed time to surgery due to DOAC. Data was collected for agent, time of last dose, type of operation, and compliance with local guidelines.

Results

19 patients were identified, 13 taking Apixaban, 4 Dabigatran, and 2 Rivaroxiban. AF was the commonest indication. Time of last dose was available for 9 patients, and time period (AM/PM) available for 9. There were 8 hemiarthroplasties, 9 Dynamic Hip Screws, and 2 Intramedullary Nails. According to guidelines, there was a recommended delay to theatre of 24 hours for 9 patients, 36 hours for 2 patients, and 48 hours for 8 patients. There was 100% compliance with guidelines for minimum delay to theatre. However, 8/18 patients were delayed for too long, and could have been managed according to protocol and still been operated on a planned trauma list within 36 hours.

Conclusions

This audit shows that by following a protocol designed to avoid bleeding by delaying surgery, there is a risk of unnecessary delay of over 36 hours, so careful planning must be used for these patients to operate in the optimum window.

0187

The role of ultrasonography in the assessment of the ulnar collateral ligament injury of the thumb: A diagnostic test accuracy meta-analysis

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Introduction and aim:

The accurate diagnosis of Ulnar Collateral Ligament (UCL) injuries of the thumb is important in identifying patients requiring surgery. Stener lesion, the most severe form of such injuries, is debilitating if misdiagnosed, leading to chronic instability and arthritis. Our aim was to evaluate the diagnostic accuracy of ultrasonography (USS) in UCL injuries.

Materials and methods:

We conducted a systematic review of existing literature and performed a meta-analysis using a bivariate mixed-effects logistic regression model to estimate summary sensitivity and specificity. A hierarchical model was used to analyse heterogeneity amongst included studies and generate hierarchical summary receiver operating characteristic (HSROC) curves.

Results:

We identified 18 studies reporting a total of 593 UCL injuries. Of these, 358 underwent surgical exploration, 20 were compared to Magnetic Resonance Imaging and 215 had conservative management. The pooled estimates for sensitivity and specificity were 0.96 (95% CI 0.89 to 0.99) and 0.90 (95% CI 0.81 to 0.94), respectively for the diagnosis of Stener lesions; 0.81 (95% CI 0.66 to 0.93) and 0.87 (95% CI 0.67 to 0.96), respectively for non-displaced complete ruptures and 0.82 (95% CI 0.66 to 0.92) and 0.94 (95% CI 0.85 to 0.98), respectively for complete ruptures without Stener lesion. The area under the curve(AUC) for Stener diagnosis using USS was 0.98, suggesting excellent diagnostic accuracy.

Conclusion:

Our meta-analysis suggests that USS is a reliable and accurate method of diagnosis for UCL injuries. Moreover, it has an excellent diagnostic accuracy for Stener lesions and may be a useful adjunct alongside clinical examination and radiographic assessment.

0188

The use of Cone-Beam Computed Tomography (CBCT) Arthrography for wrist ligamentous injuries – A diagnostic test accuracy meta-analysis

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Objectives:

Diagnosis of ligamentous wrist injuries can be challenging with the absence of dynamic instability on radiographs. Our aim was to evaluate the accuracy of Cone-beam CT(CBCT) arthrography in diagnosing scapholunate ligament(SLL), lunotriquetral ligament(LTL) and triangular fibrocartilage complex(TFCC) injuries.

Materials and method:

A systematic review and literature search were conducted in compliance with Preferred Reporting Items for a Systematic Review and Meta-analysis(PRISMA). A mixed-effects logistic regression bivariate model was used to estimate summary sensitivity and specificity and hierarchical summary receiver operating characteristic(HSROC) curves were constructed to determine diagnostic accuracy of CBCT arthrography.

Results:

We identified 5 studies assessing the accuracy of CBCT arthrography against wrist arthrography or intraoperative findings as reference standard. The pooled estimates for sensitivity and specificity of CBCT arthrography was 93%(95%CI 40-100) and 91%(95%CI 81-96) for SLL injuries, 83%(95%CI 37-98) and 64%(95%CI 42-81) for LTL injuries and 78%(95%CI 57-91) and 80%(95%CI 54-93) for TFCC injuries. The area under the curve was 0.91(95%CI 0.89-0.94), showing an excellent diagnostic accuracy of CBCT arthrography in SLL injuries. CBCT arthrography had an estimated mean effective dose of 3.2 mSv (2.0 to 4.8).

Conclusion:

Our study confirms that CBCT arthroscopy has an excellent diagnostic accuracy for wrist ligamentous injuries with comparably high sensitivity to conventional arthrography and a better specificity. Moreover, it may provide additional information on cartilage and cortical injuries. Whilst further studies with more robust methodology are required to support its implementation in clinical practice, our analysis shows that it is a reliable option and has a promising future.

0192

Delayed presentation of septic arthritis in the Glenohumeral joint caused by Streptobacillus Moniliformis

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Streptobacillus moniliformis is a zoonotic microorganism identified in the oral cavities and respiratory tracts of rodents. Rat-bite fever is a systemic illness characterized by fever, rash, sore throat, headache, vomiting, myalgia, and reactive arthritis of major joints. However, some patients may present with septic arthritis of a joint as a primary manifestation.

We report a case of pyogenic arthritis of the Glenohumeral joint in a young active 32 years old female two weeks after a rat bite with presenting complaints of shoulder pain and loss of movement. Radiological investigations identified inflammatory fluid in the Glenohumeral joint and blood infection markers were raised. She underwent arthroscopic washout of the Glenohumeral joint and sub-acromial space followed by intravenous and oral antibiotics. She made full recovery in 8 weeks and regained a full range of movements with no residual sequela.

0194

Effects of COVID-19 on the Trauma and Orthopaedic Fracture Clinic at Wythenshawe Hospital

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The SARS CoV-2 (COVID-19) pandemic has significantly impacted the healthcare system in the UK. We herein aim to provide an analysis of the specific effect of COVID-19 on the Trauma and Orthopaedic Fracture Clinic service at Wythenshawe Hospital of the Manchester University NHS Foundation Trust (MFT). Data over a total of three years and five months was split into one of three groups: pre-COVID, COVID and post-COVID. Our results show that on average, fewer patients were admitted to the clinic in the COVID period, which is consistent with previous reports that fewer non-COVID related cases were seen in the hospital during the pandemic. We also found that compared to the COVID period, post-COVID admissions increased by 76.5%, perhaps owing to a combination of late presentations secondary to non-attendance from fear of contracting coronavirus in hospital, and an increased likelihood of trauma as a result of the lifting of lockdown measures. Indeed, interesting correlations were seen between national lockdowns and clinic admission rates, which were shown to consistently increase directly after each lockdown was eased. In conclusion this retrospective study demonstrates an increased demand on the fracture clinic after the COVID-19 period, correlating with the easing of lockdowns, and it forms a strong basis on which future multifactorial auditing and analysis can be conducted.

0197

Total hip replacements for neck of femur fractures during the COVID-19 pandemic: a review of outcomes

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Background

COVID-19 is associated with significant peri and post-operative morbidity and mortality in patients undergoing hip fracture surgery. NICE guidelines advocate for total hip replacements in patients who are fit and have a good pre-operative functional status. We aimed to assess if undertaking a THR is safe for these patients during the COVID-19 pandemic.

Methods

Single site, retrospective review of all patients undergoing THR for hip fractures between March and December 2020. All patients were PCR tested on admission and segregated according to COVID status where possible. All patients had at least 3 months follow up and data were reviewed for COVID-19 status along with post-operative complications.

Results

Seventy patients underwent THR with a mean age of 71 years, 73% were female. Four patients (6%) contracted COVID within 30 days of their admission. Two patients died (3%) of causes other than COVID. Six patients (9%) received antibiotics during their admission and one patient (1%) returned to theatre for a dislocation. Median length of stay was 7.5 days for all patients (range 2.5 to 49.8) as compared to 10.2 days for those patients who contracted COVID (range 5.2 to 14.1).

Conclusion

Undertaking total hip replacements for neck of femur fracture patients appears to be safe despite the COVID-19 pandemic. Morbidity and mortality are in keeping with expected levels in this cohort of patients and do not appear to be significantly elevated, despite the high community prevalence of COVID-19.

Implications

This is the largest observational study to date demonstrating positive outcomes for total hip replacements performed during the COVID-19 pandemic in a 'hot site'. This suggests safety of the procedure and can add confidence to surgeons wishing to undertake total hip replacements for both trauma and elective purposes.

0198

Reporting trauma CTs – Are we keeping to time?

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Introduction

NICE guidelines are clear that patients who have CT or MRI imaging for major trauma should have a written radiology report within 60minutes of the scan to allow early diagnosis and, if needed, intervention. With local changes in regional practice during the COVID pandemic, more trauma is being directed to local district general hospitals which would normally be directly routed to major trauma centres highlighting the timely need for CT scans and their reports

Method

This audit looked at the performance of 1 district general hospital. All CT trauma scans conducted in the Emergency Department (ED) were reviewed from over 3 months, October to December 2020 with data collected on time of request, imaging time, report time, injuries and additional imaging requirements. It was also noted if the reports were done in-house or outsourced.

Results

A total of 124 scans were conducted. 40 scans were outsourced for reporting with 28 (70%) reported within 1 hour. The remaining 84 were reported in-house and 65 (77%) were reported within 1 hour. Of the total 124 scans, 93 (75%) were reported within the 1-hour timeframe, with the maximum reporting time being 17 hours and 24 minutes. 63 scans identified no injuries.

58 patients went for additional x-ray imaging after CT scan with 13 patients having additionally identified injuries

Stages of the CT process were broken down with an average request time to imaging acquisition time of 91 minutes.

Conclusion

This study has identified a need for change in the management of the trauma patient, from the initial diagnosis of injuries to flow through the emergency department. Whilst optimisation of reporting to ensure all patients receive a report within 1 hour of imaging is needed, the largest area for process change identified was request to imaging acquisition time, with a multifaceted approach needed to implement system change for the optimisation of care of the trauma patient.

0199

Does Perioperative Tranexamic Acid administration reduce the need for post-operative blood transfusion in patients undergoing pelvic and acetabular fracture fixation? A Systematic Review

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Introduction

Traumatic fractures of the pelvis and acetabulum requiring surgical intervention are associated with significant peri-operative blood loss. Tranexamic acid, an antifibrinolytic agent, can be used perioperatively to reduce bleeding. The aim of this review was to evaluate whether TXA administration in patients undergoing pelvic or acetabular fracture fixation reduces the rate of peri-operative blood transfusion.

Methods

A systematic review was conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines and the Cochrane Handbook for Systematic Reviews. TXA application was directly compared to placebo or routine care. The primary outcome measure of interest was the rate of perioperative blood transfusion.

Results

4 studies were included in this systematic review. Due to the small number of studies and inherent study heterogeneity, a qualitative synthesis was adopted. One trial demonstrated a decreased rate of perioperative transfusion in comparison with placebo, with 3 trials demonstrating equivalence. There was no association between administration of TXA and an increased rate of post-operative VTE amongst included studies.

Conclusion

Owing to the small number of studies, methodology of included studies and limited analysis performed; clinical recommendations cannot be made on the evidence of this review. Large-scale, well designed randomised trials are required to fully evaluate this research question. Currently, clinicians do not have evidence-based recommendations on which to base treatment decisions regarding TXA in patients undergoing pelvic and acetabular fracture fixation.

0204

Short term outcomes following periprosthetic hip fractures managed in a Level 1 Major Trauma Center

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Introduction

The Incidence of Periprosthetic hip fractures (PPF) is increasing due to the relative increase in hip arthroplasty. These injuries are associated with a high morbidity and mortality. The aim of the study was to identify the morbidity and mortality of PPF treated in a level 1 Trauma centre.

Methods

All patients with PPF between January 2018 – December 2019 were included for analysis. Two years systematic review of outcome of periprosthetic hip fractures management. Fractures involving the acetabular components were excluded

Results

A total of 55 patients were reviewed, more than half of the them were females (52.7%). Majority of the patients fell within the age range of 80-89 (40%). Followed by 70-79 years (25.5%). 47 patients had mechanical/ simple fall (85.5%), 5 of them had traumatic or high energy fall (9.0%) while 3 had pathologic fractures (5.5%).

Right sided fractures were more – 32 (58.2%)

Vancouver type B fractures had the highest incidence 65.5% (n=36) followed by Type A at 29.1% (n=16) and the least is Type C at 5.5% (n=3).

100% of Type A, n=16 were managed conservatively.

15 patients had B1 fracture and all were managed with ORIF (open reduction and Internal Fixation using NCB plates)

20 patients had B2 Fractures most of which were managed with revision (60% n=12)

Only 1 patient had B3 type fracture and was managed conservatively.

All the patients (n=3) with Type C were managed with ORIF

Just over half of all fractures were healed/healing at 54.5%, 1.8% had non union following ORIF, 3.6% Had revision surgery (infection & failed conservative management).

We recorded 20% mortality rate (n=11) at >90 days mortality, 90 days mortality at 16.4% and 30 days mortality at 7.3% 3.6% were inpatient death.

Conclusion

Unfortunately, our mortality rate is quite high at 20%. Just over half of the fractures were healed/healing at 54.5% , 1.8% had non union following ORIF , 3.6% Had revision surgery (infection & failed conservative management)

14.5% did not have any follow up booked . , 30 days mortality at 7.3%, 3.6% were inpatient death.

0207

Was trauma operating safe during the COVID-19 phase one lockdown?

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Aims:

To evaluate the safety and transmission of COVID-19 in trauma patients during the coronavirus pandemic at a time of rapid reorganisation of hospital health services.

Methods:

All patients sustaining trauma requiring surgery treated in our institution during the lockdown period were included. Retrospective data for all admissions were collected, including outcomes, length of stay and complications. Telephone interviews were performed with all patients, families or their carers to assess COVID-19 transmission at minimum of 6 week post-discharge.

Results:

161 patients underwent surgery, 107 females and 54 males with average age of 56 (2–99). There were lower limb related procedures, upper limb related respectively. 13 people died during this period, of these one was directly attributed to COVID-19 related morbidity. 75% responded to telephone interviews and found no cases of symptomatic spread to any patient or household members.

Conclusion:

Following reorganization, our experience has shown that trauma services can be safely resumed with little to no significant adverse effect to patient or spread into community, especially as concerns of second wave risk overwhelming the NHS. We advocate that rigorous testing of COVID pre-operatively and with development of local COVID-19 standard operating protocols will also reduce and prevent the spread of COVID-19

0209

Establishment Of Virtual Fracture Clinic In Princess Royal Hospital Telford ; Progress And Recommendations During The First 9 Months

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Introduction

Virtual fracture clinics (VFC) have been shown to be a safe and cost-effective way of managing outpatient referrals to the orthopaedic department. During the coronavirus pandemic there has been a push to reduce unnecessary patient contact whilst maintaining patient safety.

Materials and Methods

A protocol was developed by the clinical team in collaboration with Advanced Physiotherapy Practitioners (APP) on how to manage common musculoskeletal presentations to A&E prior to COVID as part of routine service development. Patients broadly triaged into 4 categories; discharge with advice, referral to VFC, referral to face to face clinic or discussion with on call team. The first 9 months of data were analysed to assess types of injury seen and outcomes.

Results

In total 2489 patients were referred to VFC from internal and external sources. 734 patients were discharged without follow-up and 182 patients were discharged for physiotherapy review. Only 3 patients required admission. Regarding follow-ups, 431 patients had a virtual follow-up while 1036 of patients required further face to face follow up. 87 patients were triaged into subspecialty clinics. 37 patients were felt to have been referred inappropriately.

Discussion

BOA guidelines suggest all patients need to be reviewed within 72 hours of their orthopaedic injury. Implementation of a VFC allows this target to be achieved and at the same time reduce patient contact. Almost half the patients were discharged following VFC review, the remaining patients were appropriately followed up. This is especially relevant in the current pandemic where reducing unnecessary trips to hospital will benefit the patient as well as make the most of the resources available.

Key words: Virtual Fracture Clinic, Trauma and Orthopaedics, Covid-19

0213

Review of the ‘Code Red and Code Crimson’ protocols at the Queen Elizabeth Hospital Birmingham

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Aim:

To review the ‘Code Red’ Major Haemorrhage Protocol at QEHB against local and national guidelines, and to conduct an early audit of a new protocol for patients receiving pre-hospital blood, ‘Code Crimson’.

Methods:

Data was collected from the Trauma Audit and Research Network (TARN) and electronic hospital records. Demographic and clinical data were collected retrospectively including mechanism of injury, ICU admission, length of stay and survival to discharge. The blood components in resuscitation and the times they were administered were also collected retrospectively. Cases of adverse events and component wastage were logged during the data collection process.

Results:

From January to June 2021, there were 29 Code Red activations and 8 of these were also Code Crimson. The mechanism of injury varied across the cohort with 41% related to road traffic collisions (RTC), 34% due to stab wounds, 10% due to gunshot wounds (GSW) and 7% due to fall from height. Of the patients in our cohort, 59% survived to discharge and 31% died within 24hrs of admission with a further 3% dying in the subsequent days after admission. 55% of Code Crimson patients died in hospital versus 25% of Code Red patients. One of the criteria for code activation is systolic blood pressure <90mmHg, this was met for 48% of patients, but for 24% this was not recorded. The average ratio of FFP:RBC received by patients was 1:1.35. Platelets were given to 14% patients. For 55% of patients, the timings for blood product administration were not recorded.

Conclusion:

The Code Red protocols failed to meet the national guidelines set by the BCSH regarding the recommended FFP:RBC ratio and the early use of platelets. The audit also highlighted issues in documentation of the timing of blood products and the criteria met for the activation of this protocol. However, there were no adverse effects recorded and there was minimal wastage of blood products. Further audit and review will be required to assess the effects of implementing the Code Crimson protocol on patient care and patient outcomes.

Key words: Trauma, Massive Haemorrhage, Pre-Hospital Care, Critical Care, Transfusion

0217

Incidence of traumatic deliberate self harm presenting to the Emergency Department during the COVID-19 lockdown

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Objective:

The World Health Organization declared COVID-19 a pandemic on 11th March 2020. The UK government introduced strict social distancing measures on 23rd March 2020, with the country put into a full lockdown to further halt the spread of the virus. The aims of this article are to ascertain whether there was a rise in the incidence of deliberate self-harm (DSH) presentations to the emergency department at a level one trauma center associated with the introduction of lockdown measures.

Method:

An observational study from a level one trauma center was carried out. Retrospective data from 23rd March 2020 to 1st May 2020 was collected and compared to the same time period in 2019. Data was collected from coded electronic patient records.

Results:

Total attendances to the Emergency Department (ED) reduced from 2019 to 2020 (5198 and 3059 respectively). There was a significant increase in the total number of self-harm presentations between 2019 and 2020 (103 vs 113, p-value <0.001) with more cases requiring hospital admission in 2020 vs 2019.

Conclusions:

Societal lockdown measures secondary to the COVID-19 pandemic have had a significant effect on the mental health of patients. One way this can be detected is through an increased incidence and severity of deliberate self-harm injuries presenting to the ED. These findings, in conjunction with the available literature provide valuable implications for community and emergency physicians and psychiatrists for any future wave of disease or pandemic.

0219

Efficacy of tracheal tube introducers and stylets for endotracheal intubation in the prehospital setting: a systematic review and meta-analysis

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Purpose

Tracheal tube introducers and stylets remain some of the most widely used devices for aiding practitioners in performing endotracheal intubation (ETI). The purpose of this systematic review is to evaluate the efficacy of tracheal tube introducers and stylets for ETI in the prehospital setting.

Methods

A literature search was conducted on the 2nd of March 2021 across PubMed, Embase (Ovid) and the Cochrane Central Register of Controlled Trials (CENTRAL) to identify relevant studies. Included studies had their data extracted and both a quality assessment and statistical analysis were performed.

Results

The summary estimate of prehospital studies with video technology showed a statistically significant increase in first pass ETI success in favour of bougies (RR 1.15, CI 1.10-1.21, $p < 0.0001$). The summary estimates of prehospital studies without video technology and simulation studies with and without video technology showed no statistical difference between methods for first pass or overall ETI success. Some of the highest success rates were recorded by devices that incorporated video technology. Stylets lead to a shorter time to ETI while bougies were easier to use. Neither device was associated with a higher rate of ETI complications than the other.

Conclusion

Both tracheal tube introducers and stylets function as efficacious aids to intubation in the prehospital environment. Where video technology is available, bougies could offer a statistically significant advantage in terms of first pass ETI success. Where video technology is unavailable, a combination of clinical scenario, practitioner expertise and personal preference might ultimately guide the choice of device.

0220

Ventilating the blast lung: exploring ventilation strategies in primary blast lung injury

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Purpose

Primary blast lung injury (PBLI) is the most common and fatal of all primary blast injuries. As many as 76% of those with PBLI will require early intubation and mechanical ventilation and thus ventilation strategy forms a crucial part of any management plan. Though the concept of a “lung protective ventilation” strategy has been coined, discussions over how best to achieve this evolve as new technologies and considerations emerge. This article seeks to explore some of the key options available to the clinician faced with ventilating the blast lung.

Methods

A literature review was conducted across PubMed and Google Scholar databases in order to identify articles that contribute to our current understanding of PBLI and the ventilation strategies available. Titles and abstracts were screened, followed by a thorough assessment of full-text articles to identify widely accepted and recurring theories. These were collated and discussed to produce a comprehensive overview of the options available to the clinician, including their respective advantages and limitations.

Results

Thirty-three articles were assessed and included for discussion in this review. These covered a range of aspects of ventilation strategy including PBLI pathophysiology, conventional low tidal volume (LTV) ventilation, high frequency oscillatory ventilation (HFOV), airway pressure release ventilation (APRV), prone positioning, inhaled nitric oxide (NO) and extracorporeal membrane oxygenation (ECMO).

Conclusion

The optimal “lung protective ventilation” strategy in PBLI remains under contention, yet should address ventilator associated lung injury, volutrauma, barotrauma and biotrauma. For now, PBLI should principally be managed with conventional LTV ventilation that has demonstrated reduced inflammation and mortality with a greater number of ventilator-free days. HFOV and APRV should be reserved as alternative rescue strategies for where conventional LTV ventilation fails. Clinicians should also consider supplementing their strategy with adjunctive therapies such as prone positioning, inhaled NO and ECMO that may further reduce mortality and combat severe respiratory and/or cardiac failure.

0223

Are UHB trauma patients receiving care at the right place first time?

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Introduction

The West Midlands Ambulance Service Major Trauma Triage Tool was developed in line with NICE guidelines to optimise first-time admission of trauma patients to either a major trauma centre (MTC) or a trauma unit (TU). Within this network lies the University Hospitals Birmingham NHS Foundation Trust, consisting of the Queen Elizabeth Hospital MTC (QEHB) and Heartlands Hospital TU.

Preliminary data shows increased trauma admissions to QEHB in July 2020, compared to July 2019. The relocation of Heartlands' orthopaedic resources to QEHB in June 2020 in response to COVID-19 was suggested as a probable cause.

Methods

A retrospective case review was conducted, analysing all QEHB trauma admissions in July 2020 after the relocation, to identify potential drivers behind the increased QEHB trauma admissions. Files were evaluated for secondary transfers from Heartlands, appropriate use of the triage tool and patient outcomes.

Results

26.5% of all transfers were orthopaedic transfers from Heartlands, occurring as a direct result of the relocation of orthopaedic services to QEHB. However, this only comprises 18% of the total increase in patients between July 2019 and July 2020.

Secondly, triage tool adherence was 79.9%, indicating scope for improvement. This is noteworthy when considering preceding years' evaluation of the pathway, where a 91.5% adherence was found.

Finally, all patients who were transferred survived, compared to 8.0% overall mortality, suggesting that the triage tool may be effective in stratifying injury severity. However, 29.4% of those transferred to QEHB were transferred again for further rehabilitation compared to 24.0% overall. Multiple transfers may have implications on patients' continuity of care.

Conclusions

Non-adherence to the triage tool seems a likely cause for increased admissions, rather than the orthopaedics relocation as previously suspected. However, an increase in general trauma admissions is also a probable cause, so re-evaluation is necessary. Analysis of service and patient outcomes following the introduction of a daytime orthopaedic team at Birmingham Heartlands Hospital should also be conducted. Suspected causes for non-adherence should be evaluated.

0224

Is there a role for empirical treatment of orthopaedic patients with suspected, but not confirmed, VTE in the post-operative period?

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Background

Major surgery, including major orthopaedic surgery, is a key risk factor for developing venous thromboembolism (VTE). This poses a challenge in the post-operative phase when considering initiation of therapeutic-dose anticoagulation for suspected VTE due to the risk of major bleeding.

Aim

To review the available evidence to outline whether there is a role for starting empirical treatment for suspected VTE in post-operative orthopaedic patients, prior to a confirmed diagnosis, who are at increased risk of morbidity and adverse events.

Methods

A search strategy was developed with inclusion criteria involving all studies relating to the treatment of suspected VTE in the post-operative orthopaedic patient. Journal articles predating 3rd June 2021 were searched for in Medline, Embase and Pubmed. Systematic reviews and clinical trials were searched for in the Cochrane library and CENTRAL clinical trials database respectively. Titles and abstracts were reviewed based on clinical relevance. Full papers of any shortlisted abstracts were to be obtained for full-text review.

Results

56 articles were generated using this search strategy. 22 results were excluded as conference papers and/or case reports. Title and abstract review of the remaining 34 studies did not identify any relevant articles reporting outcomes.

Conclusion

No evidence is currently available to guide recommendations for the empirical treatment of suspected VTE in the post-operative orthopaedic patient prior to a confirmed VTE diagnosis. This is therefore a risk-benefit clinical decision to be undertaken based on individual patient factors. Current American College of Chest Physicians guidelines advise initiation of anticoagulation for suspected acute VTE in cases with a high clinical suspicion, or intermediate clinical suspicion with expected delay in diagnostic imaging for at least 4 hours. In patients with low clinical suspicion, where diagnostic imaging is available within 24 hours, initiation of anticoagulation is not advised prior to obtaining a definitive diagnosis. However, this does not apply to patients following recent surgery who are at increased risk of bleeding post-operatively. The authors would therefore advocate that empirical systemic treatment dose anticoagulation for VTE in the post-operative period should only be initiated when timely image-based diagnosis cannot be achieved.

0225

Long-term functional limitations following non-surgical management of displaced adolescent clavicle fractures

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Introduction

There is evidence that fixation of clavicle fractures is advantageous for young adults with displaced fractures whereas children are typically treated conservatively. However, there is disagreement about the optimum treatments for adolescents with this injury.

Aims

To evaluate the long-term outcomes following treatment of displaced clavicle fractures in adolescents.

Method

This is a long-term follow-up study on patients aged 11-16 who sustained a closed, shortened or off-ended clavicle fracture seen at a single institution in 2008-2018. Evaluation included the Simple Shoulder Test (SST), Global Rating of Change (GROC) score, abbreviated Patient Scar Assessment Questionnaire (PSAQ), and quick Disabilities of the Arm Shoulder and Hand (qDASH) score completed via telephone interview.

Results

55 adolescents sustained a displaced clavicle fracture during the study window. Mean follow-up was 7.1 years [range 3.3-13.2]. Four were initially treated with surgery. Of the 49 treated non-surgically, one required delayed fixation for persistent pain and one required delayed corrective osteotomy. Two surgically-managed patients had subsequent removal of metalwork. Follow-up outcome scores were completed by 26 patients (47.3%). Adolescents treated conservatively had better average outcomes in all scores however there was no significant difference for SST, GROC or PSAQ. Mean SST was 11.57 (SD=0.95) conservative, 11.6 (SD=0.8) operative (p=0.47). Mean GROC was -0.57 (SD=0.66) conservative, -0.80 (SD=1.16) operative (p=0.29). Mean PSAQ (scored 3 best to 14 worst) was 5.33 (SD=1.36) conservative, 6.4 (SD=2.87) operative (p=0.13). Mean qDASH (scored 0 best to 100 worst) was significantly better (p=0.04) in the conservative group (mean 2.82, SD=4.70) versus the operative group (mean 9.1, SD=11.75).

Conclusion

The non-operative management of displaced, adolescent clavicle fractures are associated with excellent functional outcomes at long-term follow-up. Few children require corrective osteotomies for symptomatic mal-union, and outcomes following surgery are limited by complications. This study is limited as a retrospective evaluation of outcomes, with patients receiving treatments at the discretion of the admitting surgeons. While not statistically significant, the most common limitation reported was with throwing and catching. This outcome may benefit from further in-depth study, possibly with a randomised trial to identify if there are any adolescent groups who benefit from surgery.

0228

The Litigation Burden of Paediatric Trauma and Orthopaedics in comparison to Paediatric and General Surgery: A 15 year trend analysis

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Background:

Surgical management of the paediatric patient is challenging and complex with many factors to consider. Trauma and Orthopaedic surgery is currently in the top 3 specialties with the highest number of negligence claims per year. This study looks at litigation trends in the Orthopaedic paediatric population in comparison to Paediatric and General surgery to ascertain the burden of negligence on the NHS budget. Much work has been published looking at litigation trends in the adult patient, however we believe this to be the first study to scrutinise the paediatric litigation figures in this way.

Methods:

Data was obtained from the NHS Resolution, via the Freedom of Information Act 2000, for a 15 year time frame 2003-2018. All paediatric claims (aged 16 and under) who had received care under the subspecialties of Trauma and Orthopaedics, Paediatric surgery and General surgery, were collated. To ascertain a comparable group to T&O we grouped together the General surgery and Paediatric Surgery data.

Results:

A combined total of 3025 claims were found, of these 1186 were closed claims with damages paid resulting in just over £198 million of costs. Just under £111million was paid out for closed T&O claims and just over £87million for combined paediatric and general surgery claims.

728 closed claims were for T&O vs 458 closed claims for Paediatrics and General surgery combined. Over 30% of costs occurred in these claims were due to legal costs.

The most common cause for claims were due to delay in treatment or diagnosis with only ten percent due to intraoperative complications.

Conclusion:

T&O as a specialty has higher claims and cost burden in comparison to Paediatric and General Surgery. Delays in diagnosis and treatment were the biggest cause for litigation in the paediatric orthopaedic population which is in keeping with previous studies in the adult population. These claims can be deemed avoidable with further investment in education and reflection within this aspect of Surgery. Collaboration across the subspecialties to scrutinise and learn from litigation claims will help to reduce the overall burden on the NHS budget.

0229

Major Trauma in Nonagenarians: Mortality and Outcomes

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Introduction

With an ageing population trauma in the elderly is becoming more common. It is important to understand the demographics of this population, the mechanism and mortality to have an understanding in the treatment of these patients. The aim of this cohort study was to analyse the mechanisms of injury and outcomes in nonagenarians

Methods

A prospective review of all patients presenting to a single major trauma centre from (2010-2020). Data was collected on age, sex, mechanism of injury, ISS, Glasgow coma score, and predicted survival. Statistical analysis was undertaken using Stat (Version 15) using logistic regression to determine significant predictors of mortality

Results

There were 687 patients over a 10 year period. There were 463 (67.39%) were female and 224 (32.61%) males.

640 were presentations were due to a fall of less than 2m, 26 a fall of greater than 2, 16 due to a motor vehicle collision, and 5 due to other causes. The mean ISS was 12.7 (SD 7.95), mean GCS was 14.35 (SD 1.77) and predicted survival score 86.19% (SD 15.55). 82 (11.94%) were admitted with shock

The most severely injured region was limbs in 308 (44.83%), head in 184 (26.78%), chest in 84 (12.23%), spine (60%), multiple injuries in 44 (6.40%), face 5 (0.73%), abdominal 2 (0.29%)

Mean length of stay was 20.6 days (SD 18.99)

The Glasgow Outcome in those that survived was 39.5% had a moderate disability and 60.5% no disability

The 30 day mortality was 17.0% (117 patients)

Undertaking logistic regression injury severity score (Odds ratio 1.06) and GCS (OR 0.70) on admission was significantly associated with 30 day mortality. Age, injury mechanism, injured region, shock, gender and age were not significantly associated with mortality

Conclusions

Mortality following major trauma in nonagenarians has a high 30 day mortality. The majority are due to falls from standing height. Injury severity score and GCS are significantly associated with mortality.

0231

The Golden Patient – Can we identify the first trauma patient on the list, the night before?

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Background

Covid has changed our medical practices, many which are now mandatory. One such practice is that all patients must have PCR Covid test on admission to hospital. These tests aren't processed overnight, meaning that selection of the first patient on the following mornings trauma list was required in order to avoid delays waiting for a covid result. This pre-planned patient was termed 'The Golden Patient'. Without a covid result, patients would be treated as covid positive, even if they weren't, adding unnecessary extra time to theatre cases.

Can this 'Golden Patient' consistently be identified in a district general hospital. We hypothesised that we can identify the first patient on next morning's trauma, the evening before.

Methods

Between September and October 2020, we prospectively collected data comparing theatre lists prior to and after morning trauma conference to assess whether the identified 'golden patient' changed.

Results

100% of the patients identified as the Golden patient remained first on the list after the morning's trauma conference.

Conclusion

In a district general hospital, identification of the first patient on the trauma list the evening before is possible. This allows them to be seen by the on-call anaesthetist and optimisation of the patient overnight or selection of a more suitable patient rather than these decisions having to be made in the morning and delaying theatre start times.