



MSK POSTER PRESENTATIONS

P042 The effects of vertebroplasty on pain and quality quality-of-life for patients with back pain and disability due to vertebral fractures

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Background: NICE recommends vertebroplasty for refractory vertebral fracture pain despite two double-blind randomised controlled trials finding no benefit vs. placebo or alternative^[1,2,3]. One of few UK centres performing vertebroplasty, we have recorded outcome data since 2007. We aim to contribute to the body of existing studies supporting its efficacy.

Methods: A single centre retrospective analysis of qualitative data collected prospectively for patients undergoing vertebroplasty, 2007-2012. Data was collected using the EQD5 and EQVAS clinician-led questionnaire pre-procedure, and at one week, one month, 6 months and 1 year post-procedure. Patients self-score subjective quality of mobility, self-care, usual activities, pain/discomfort and anxiety/depression from 1-5 for the EQD5 and overall quality of health from 1-100 for the EQVAS. Scores for each domain at each interval were compared. Data was excluded if collected at <2 intervals.

Results: Responses from 115 patients were included. Participation rates were variable; 88%; 64%; 79%; 43% and 61% at pre-procedure, 1 week, 1 month, 6 months and 1 year respectively. There was a sustained reduction in average score for pain; 2.46 1.93; 2.01; 1.89; 1.81 at pre-procedure, 1 week, 1 month, 6 months, 1 year respectively. There was similar sustained improvement in EQVAS score; 46.9; 59.7; 61.9; 59.3; 59.6 at pre-assessment, 1 week, 1 month, 6 months and 1 year respectively.

Conclusion: Vertebroplasty leads to a significant and sustained improvement in pain and subjective health ratings both short and long-term.

1. National Institute for Health and Clinical Excellence (2013) Occupational therapy interventions and physical activity interventions to promote the mental wellbeing of older people in primary care and residential care. Technology appraisal guidance [TA279]. 2. Buchbinder R, Osborne R, Ebeling P, et al. A randomized trial of vertebroplasty for painful osteoporotic vertebral fractures. *N Engl J Med* 2009; 361: 557-568. 3. Kallmes D, Comstock B, Heagerty P, et al. A randomized trial of vertebroplasty for osteoporotic spinal fractures. *N Engl J Med* 2009; 361: 569-579.

P043 Cervical spine fractures in the elderly: how can radiology aid in their prevention?

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Background: Cervical spine fractures, particularly odontoid process fractures, result predominantly from ground level falls in the elderly; osteoporosis has been identified as an important predisposing risk factor. Bisphosphonates and other treatments for osteoporosis are effective at reducing fracture incidence in people with osteoporosis.

Methods: A service evaluation was undertaken utilising a retrospective review of electronic hospital records for patients aged 65 and over who sustained a cervical spine fracture over a 3 year period.

Results: 53 patients aged 65 and over (mean age: 81.91y, SD±9.88) with cervical spine fractures were identified. 74% sustained fractures from low level trauma. Mortality at 30 days and 1 year were 6% and 23% respectively. 9% had a prior DXA scan and 32% of patients had sustained at least one previous fracture, of these 35% had a diagnosis of osteoporosis and 18% had bisphosphonate use recorded. None of the patients without a prior fracture had a diagnosis of osteoporosis. A suspicion of osteoporosis or osteopenia had been mentioned in imaging reports prior to, or on the day of the cervical spine fracture, in 15% of patients.

Conclusion: The one year mortality rate is similar to that published for cervical spine fractures in this population^[1]. There were missed opportunities for fracture prevention in more than two thirds of patients who had sustained a previous fracture. Clinical risk factors for osteoporosis from radiology reports need to be highlighted and actioned by the wider healthcare teams to reduce the risk of future cervical spine and other fractures.

1. Radovanovic I et al. Patterns of C-2 fracture in the elderly: comparison of etiology, treatment, and mortality among specific fracture types. *Journal of neurosurgery Spine*. 27(5): 494-500.

P044 The trauma spine - what radiologists need to know

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Background: Radiologists frequently interpret cross-sectional imaging of the spine in the setting of trauma. Mechanical stability of the traumatised spine is the single most important factor which guides further management. Several classification systems have been developed over the past to assist radiologists to judge the potentially unstable injuries. The radiologists are arguably most familiar with the Denis system of classification which is based on injury morphology and mechanism. This system has been criticised for being too simple, not prognostically valuable and lack of consideration of patients' neurological status. AO (Arbeitsgemeinschaft für Osteosynthesefragen) and TLICS (Thoracolumbar Injury Classification and Severity Score) classification



systems are the next major evolutions which highlight the importance of the posterior ligamentous complex (PLC) and neurological status of the patients in predicting the potentially unstable fracture requiring surgical fixation.

Purpose: The proposed pictorial review (containing approximately 15 images) aims to familiarise radiologists with newer classification systems to improve their image interpretation skills and promote efficient communication with spinal surgeons. Ultimately, this will improve patient care in such settings.

Summary: The poster will provide an overview of the AO and TLICS classifications for spinal injuries with the aid of relevant diagrams. Additionally, pictorial examples from real cases will illustrate the various injury types and how to classify them according to the aforementioned classification systems.

P045 The role of protocols and imaging in the diagnosis of blunt trauma cervical spine injury in adults

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Background: The aims of this review are to evaluate the current guidelines and protocols and to determine which imaging modality is superior in the diagnosis of cervical spine injury (CSI), in low severity patients and high severity, non-evaluable patients. Two clinical decision rules (CDR) -

The National Emergency X-radiography Utilisation Study (NEXUS) and the Canadian Cervical Spine Rule (CCR) will be compared to show which CDR is most effective in clinical practice.

Methods: Scopus was used to search for worldwide publications between the years of 2010 and 2017. The literature from this search was categorised into themes of; guidelines and protocols, imaging modalities, sensitivity & specificity, risk and cost.

Results: NEXUS had a sensitivity range of 81.2%-100% and specificity ranging from 12.7%-46%. CCR had a sensitivity range of 90%-100% with a specificity of 0.62%-43%. CCR is superior in detecting CSI. CT has the highest radiation dose of 2.2 mSv however MRI carries the most risk for severely injured patients.

Conclusion: An adequate primary imaging examination is sufficient for low severity CSI. The use of CT is appropriate in high severity cases, as it is the most cost effective and accurate imaging for diagnosis, with the risk of missed CSI greater than the risk of radiation induced cancer. MRI is recommended for the stable and alert patient to assess the resultant damage to the soft tissue and spinal cord.

1. McCutcheon, L., Schmocker, N., Blanksby, K., Bhandary, K., Deacon, B. and Reed, W., 2015. Best practice in diagnostic imaging after blunt force trauma injury to the cervical spine: A systematic review. *Journal of Medical Imaging and Radiation Sciences*, 46(2), pp. 231-240. 2. National Institute for Health and Care Excellence (NICE). Spinal injury: Assessment and initial management. 2016 [Cited 2017 Jan 10] Available from: <http://www.nice.org.uk/guidance/ng41/chapter/recommendations#diagnostic-imaging>

P046 Manubriosternal dislocation - an uncommon traumatic injury

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Background: We report a case of manubriosternal dislocation, an uncommon and easily overlooked injury usually encountered with high-energy chest trauma. The findings may not be visible on initial imaging in case of a subtle dislocation. Computed Tomography (CT) is the imaging modality of choice in trauma which provides optimal visualization of bony injury, also shedding light on any concurrent injuries.

Method: Retrospective review of case notes, X-ray and Computed Tomography (CT) scans of the chest was performed.

Result: An adult male patient presented to the accident and emergency department (A&E) after a road traffic accident and was investigated with CT scan as part of the trauma protocol. Manubriosternal injury sustained at the time was not picked up on initial imaging because of its subtlety and was only detected when he presented two weeks later with obvious chest deformity and pain around the manubriosternal joint; dislocation was confirmed on a plain radiograph. A retrospective review of the chest CT scan demonstrated minimal soft tissue swelling around the manubriosternal joint but no significant mal-alignment.

Conclusion: An uncomplicated and asymptomatic manubriosternal injury can easily be missed on early imaging and can result in instability of the joint. Lateral chest radiographs and sternal reconstruction of CT scans should be included as part of routine trauma protocol. Timely detection of the injury aids in apt patient management.

1. Van Hise ML, Primack SL, Israel RS, Muller NL. CT in blunt chest trauma: indications and limitations. *RadioGraphics* 1998;18:1071-1084

2. Schwagten V, Beaucourt L, Van Schil PV. Traumatic manubriosternal joint disruption: case report. *J Trauma* 1994;36:747-748

3. Buckman R., Trooskin S. Z., Flancbaum L. & Chandler J.: The significance of stable patients with sternal fractures. *Surg. Gynecol. Obstet.* 164 (1987), 261.

P047 MR arthrography: A pictorial review of comparative techniques

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InHealth

Background: MR Arthrography is a well-established technique for the assessment of internal joint structures not easily seen on standard MRI. It involves the use of some form of contrast media within the joint cavity to better delineate internal structures and any associated damage. There are two approaches used in clinical practice; direct into the joint or indirect using the leakage of contrast media from intravenous administration into the joint space. Direct is the most commonly applied technique; predominantly using gadolinium based contrast media for visualisation on T1 images, although saline is used in some centres with more fluid based sequences such as PD or T2.



Purpose: Using clinical images from various sites across the business, the three main techniques for MR arthrography will be demonstrated and critiqued, highlighting the application and merits of each.

Summary: Through a pictorial presentation, the different techniques applied to MR arthrography of either the hip and shoulder joints will be presented. Examples of pathology will be provided, with comparison in detection between the differing techniques. The pros and cons of the discussed approaches will also be summarised, along with any related considerations when applying the techniques.

P048 An audit of efficacy of MR arthrogram for labral tears

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Background: MR hip arthrograms are used to investigate structural defects in the hip joint, particularly labral tear. There is a wide range in efficacy of MR hip arthrograms in published literature^[1]. This study compares the efficacy of MR hip arthrograms performed in our Trust against previous similar studies.

Method: A retrospective study comparing hip arthroscopy and MR arthrogram detection of labral tear. 38 patients underwent hip arthroscopy from year 2014-2016. 24 of those patients had MR arthrogram before arthroscopy. MR images were examined separately by a post-FRCR qualified MSK fellow and MSK consultant. Contributing factors to finding discrepancies were identified. 3 cases were excluded due to images obtained at a different site and poor joint distension secondary to extravasation. Remaining cases were subdivided into two groups centred on median time interval between MR and hip arthroscopy. Referrer source and efficacy of both subgroups were analysed.

Results: Overall sensitivity for labral tear detection from MR arthrogram was 93.75%; whilst specificity was 40%. This is within expected range from published literature. Median time interval between MR and arthroscopy in this study was 266 days. Sensitivity for both subgroups were 85.7% and 100%. All but one case were referred by a consultant.

Conclusion: Referrer source and time interval between MR and arthroscopy did not influence efficacy in this study. The high sensitivity for both subgroups suggest that many positive MRs, initially ignored, proved to be true positive when arthroscopy was eventually done irrespective of time lapse. Further study into MR arthrograms without arthroscopy.

1. Naraghi, AN, 2015. MRI of Labral and Chondral Lesions of the Hip. American Journal of Roentgenology, [Online]. 205, 479-490. Available at: <http://www.ajronline.org/doi/pdf/10.2214/AJR.14.12581> [Accessed 10 December 2017].

P049 Clavicular lesions - a quick reference guide!

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Background: Clavicle, a long bone which has some interesting developmental facts, is affected by various pathological processes. Even though it is one of the review areas on the chest radiograph, it still poses a diagnostic challenge. Thus, it is important for every radiologist to be aware of the imaging appearances and have an approach to diagnosing these lesions, in order to guide patient management.

Purpose: Discuss the common pathologies affecting the clavicle. We will demonstrate imaging findings of various pathologies affecting the clavicle, encompassing degenerative change, infection and primary and secondary bone lesions. Furthermore, we will discuss imaging findings of lesions specific to the clavicle, such as Chronic Recurrent Multifocal Osteomyelitis.

Summary: With our pictorial review we aim to give the reader a comprehensive multimodality approach to diagnosing clavicular lesions. We will highlight the individual characteristics of these bone lesions to aid radiological diagnosis, thus helping our clinical colleagues in management of these patients.

P050 Validation of a novel grading system to assess bone response around suture anchors following shoulder labral reconstruction

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Background: Suture anchors are routinely used for shoulder labral reconstruction procedures. There is paucity of literature on how the response of bone to suture anchor should be measured following labral reconstruction. A new grading system, based on the use of magnetic resonance (MR) imaging, has been developed which grades bone signal changes around suture anchors using a five-point scale. We tested the reliability of the grading system in an independent dataset.

Methods: Postoperative T1-weighted and T2 fat-saturated MR images of 10 patients who underwent labral reconstruction were retrospectively analysed. Out of the 10 patients there were in total 31 suture anchors selected for independent senior review (2 consultant shoulder surgeons and 4 consultant musculoskeletal radiologists) using the grading system. Four raters re-scored all the suture anchors after a week. Inter-rater and intra-rater agreement was calculated using weighted kappa statistics.

Results: Ten patients with a mean age of 25.6 years (range 19--32 years) were included in this study. The average duration of follow-up MR scan after surgery was 331 days (range 21--1393 days). Inter-rater reliability in the first scoring exercise was fair to substantial ($k=0.300-0.693$) and in the second scoring exercise was fair to moderate ($k=0.353-0.562$). The intra-rater percentage agreement ranged from 55%--74%, with kappa values of $k=0.569-0.790$.

Conclusion: We describe a validated new grading system for scoring bone response around shoulder suture anchors.



P051 Turning the wrist: A multicentre interventional study examining radiographic technique

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Introduction: The accepted technique for musculoskeletal radiographs is two projections obtained at 90 degrees^[1]. In the wrist this requires rotation of the whole limb to avoid isolated radioulnar pronation/supination^[2]. Anecdotal evidence suggests that this principle is not being universally applied. This multicentre study aimed to evaluate practice before and after an educational intervention to assess impact.

Method: We retrospectively reviewed wrist and scaphoid radiographs performed on 3 randomly selected days over a 3 month period across 8 sites. Exclusion criteria were recent surgical intervention or cast in situ. Radiographs were reviewed for ulna position on the dorsipalmar (DP) and lateral projections. Based upon this an educational poster was developed. The evaluation was then repeated after 2 weeks and 3 months to assess the longitudinal impact of the intervention.

Results: In the initial phase 301 examinations were reviewed, trauma referrals predominated (249/301; 82.7%) although only half of these were abnormal (130/249; 52.2%). 62 examinations were excluded due to cast, surgery or poor visualisation of the ulna. When the remaining 239 examinations were scrutinised for change in ulna orientation, only 41 (17.2%) demonstrated a difference in position between the DP and lateral projections. Following the implementation of the educational poster in departments, an improvement in the rate of appropriate technique was demonstrated.

Conclusion: Wrist technique is poor, but educational interventions such as posters can provide a simple and effective way to impact on technique and image quality. It is feasible to initiate and coordinate multicentre quality improvement programmes.

1. Touquet R, Driscoll P, Nicholson D. Teaching in accident and emergency medicine: 10 commandments of accident and emergency radiology. *BMJ* 1995; 310: 642-5.

2. Glick Y, Murphy A, et al. Effect of isolated pronation-supination (lateral wrist radiograph). Available at: <https://radiopaedia.org/articles/effect-of-isolated-pronation-supination-lateral-wrist-radiograph> [accessed 15 December 2017].

P052 Comparison of pre-revision and post-operation patients bone mineral density in total knee replacement compared to their contralateral knees

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Background: The association between total knee replacements (TKR) and post-operative bone mineral density (BMD) reductions are well reported, as is the increase in fracture risk (Gundry et al 2017). This research investigated the potential impact of knee replacement and revisions on knee BMD.

Method: 19 patients 18 months post TKR and 8 patients who were awaiting a total knee revision (rTKR) had bilateral dual energy X-ray absorptiometry (DXA) scans of their knees. All DXA scans were divided into 8 regions for posteroanterior (PA) and 6 regions for lateral scans. Each ipsilateral region was compared to the contralateral knee. A t-test was used to compare the ipsi-contralateral differences between the two groups using STATA 15.

Results: In post-operative patients the average PA BMD difference was -0.01416g/cm² when compared to the contralateral knee, the lateral BMD showed an average difference of -0.00991g/cm², with the average across both demonstrating a difference of -0.01240g/cm². For the pre-revision patients, the scores were a difference of -0.01522g/cm² for PA scans, -0.00784g/cm² for lateral, and -0.01206g/cm² for all regions. There were no significant differences between the two groups.

Conclusion: The negative difference post TKR and pre rTKR is comparable in this study suggesting that patients have reduced BMD on the ipsilateral knee following primary TKR and prior to their next surgery. It is unclear whether the BMD improves after the 18-month period and then declined again as the patient offloads due to the need for a rTKR, or whether bone is never fully regained.

Gundry M, Hopkins S, Knapp K (2017). A review on bone mineral density loss in total knee replacements leading to increased fracture risk. *Clinical reviews in bone and mineral metabolism*. 15(4),162-174.

P053 Use of dual energy computed tomography (DECT) in diagnosis of knee gout

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Background: The use of DECT is becoming more prevalent as a non-invasive tool for the diagnosis of gout. This is especially important in cases with atypical and complicated presentations where DECT can help in resolving the diagnostic challenge.

Aim: This pictorial presentation aims to show some complicated cases where DECT has been useful in establishing the diagnosis of gout. The aim is to make readers aware of it's usefulness.

Discussion: DECT is based on the principle of differential absorption of X-rays by tissues at different photon energy level. Several studies have reported it's diagnostic accuracy in evaluation of gout. It can be helpful in both acute as well as chronic cases. It is of particular use in atypical disease with unusual symptoms or sites as well as excluding gout mimics. It can also be used to evaluate response to treatment.



Conclusion: Despite all of its benefits, it is underutilized as a diagnostic aid in the workup of gout and should be used more frequently.

1. Carr A, Doyle AJ, Dalbeth N, Aati O, McQueen FM. Dual-energy CT of urate deposits in costal cartilage and intervertebral disks of patients with tophaceous gout and age-matched controls. *Am J Roentgenol* 2016; 206: 1063–7 2. Bongartz T, Glazebrook KN, Kavros SJ, et al. Dual-energy CT for the diagnosis of gout: An accuracy and diagnostic yield study. *Ann Rheum Dis* 2015; 74: 1072–7 3. Choi HK, Burns LC, Shojania K, et al. Dual energy CT in gout: A prospective validation study. *Ann Rheum Dis* 2012; 71: 1466–71 4. Chou H, Chin TY, Peh WC. *J Med Radiat Sci.* 2017 Mar;64(1):41-51

P054 Use of classification systems and grading descriptors in radiographic reporting of knee osteoarthritis: Implications for effective management in the community

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Background: There are a number of classification systems for standardising the description of radiological appearances of osteoarthritis (OA) on plain films, including the IKDC system and the Kellgren and Lawrence system. These classifications are used in combination with clinical symptoms by GPs to guide management. Radiographic reports often do not describe the appearances of OA using classifications and there can be divergence between the plain film findings and the subsequent interpretation of the report by the GP (Lespasio MJ et al, 2017). This qualitative study aimed to examine if GPs valued the use of classification systems and simple grading descriptors in guiding their management of patients.

Method: GPs were emailed a brief survey on the current usefulness of radiographic reports for OA management. The survey included direct questions to establish the GPs' opinions and culminated with a selection of genuine radiographic reports where some reports utilised grading scales and some did not. The participants were asked what severity of OA was suggested by the reports and these assessments were directly compared with the plain films to assess correlation.

Results: GPs preferred reports that adopted a classification system in conjunction with grading descriptors such as "mild", "moderate" and "severe" when there remained ambiguities. The use of a grading scale increased the accuracy of GPs' interpretation of reports compared to the findings of the plain films.

Conclusion: Routine use of standardised grading scales for OA in radiographic reports is valued by GPs and increases the accuracy of report interpretations in the community.

1. Lespasio MJ et al. (2017) *Knee Osteoarthritis: A Primer.* *Perm J.* 2017; 21, 16-183

P055 ACL imaging - from derangement to reconstruction - what every radiologist should know!

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Background: The anterior cruciate ligament is one of the commonest ligaments to be injured, occurring predominantly by a non-contact mechanism. If left untreated, these injuries can be debilitating and alters the kinematics of the knee predisposing to early osteo-arthritis. With the relentless increase in the number of knee MRI examinations performed, it is imperative that the reporting radiologists are aware of the radiological appearances of various pathologies affecting the native ACL, as well as the imaging appearances of the ACL graft, thus helping our orthopaedic colleagues in their clinical management.

Purpose: Briefly discuss the normal anatomy and imaging appearances of the anterior cruciate ligament. Discuss the imaging findings of various pathologies ranging from mucoid degeneration to various grades of tear, whilst also making the reader aware of the ancillary/concurrent findings. Discuss the various treatment options and imaging appearances of the ACL graft reconstruction, along with the possible complications such as re-tear, arthrofibrosis etc.

Summary: Our pictorial essay would help the reader identify the various pathological processes affecting the ACL from degeneration to trauma using imaging. Furthermore, it would help them identify the normal findings and various pathologies encountered in a reconstructed ACL graft, which in turn would translate into formulation of a more structured report, helping their clinical colleagues in patient management.

P056 Between a rock and a hard place: Pictorial review of unusual calcification

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Background: Calcium is fundamental to the interpretation of the musculoskeletal system with X-ray guided imaging. However, calcium is not limited to the skeleton and is frequently found at non-skeletal sites. Understanding sites of benign calcification is vital for the radiologist to prevent misdiagnosis. We are exposed to benign pathologies on a daily basis whether it be that calcified pineal gland, a calcified lymph node or chronic pancreatitis. Extra skeletal calcification is not limited to benign disease with more sinister and malignant pathologies being involved.

Purpose: We present a pictorial review of unusual extra-skeletal calcification across plain film and computed tomography of less common disease but nonetheless important for radiographic and radiological diagnoses providing an education resource for radiologists and radiographers.

Summary: Cases archived at Great Western Hospital were reviewed for unusual causes and sites of calcification and their clinicoradiological importance for the general radiologist in everyday acute and routine reporting. A variety of cases are presented in this review that include abnormal calcium deposition in autoimmune disease: dermatomyositis; infectious disease:



schistosomiasis, cystercosis and guinea worm; vascular disease: haemangioma; trauma: hydroxyappetite deposition and Rider's bone; and idiopathic causes: paralysis. Unusual sites of calcium deposition span across an array of organ systems. In most cases the aetiology can be derived from pattern recognition. How we as imaging specialists interpret and generate a differential diagnosis of more abstract sites and morphologies relies heavily on a sufficient clinical history that must include chronic disease, social habits and foreign travel.

P057 Prediction of manipulation under anaesthesia success using local binary pattern features

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Background: Distal forearm fractures account for 16% of all skeletal fractures and the Colles' presentation is the most common deformity, associated with a fall on an outstretched hand. Colles' fractures regularly require manipulation under anaesthesia (MUA) to reduce the displacement of the distal fragment. In a recent audit up to a third of patients required internal fixation of their fracture following re-displacement up to two weeks post MUA.

Method: A dataset of 48 patients with Colles' fractures was reviewed using a random forest machine learning approach for predictors of MUA success using local binary pattern analysis. Each patient had a pre-MUA lateral view radiographic image, from which a 5mmx5mm image patch in a homogeneous region of the radial bone was extracted. A random forest classifier was trained on the patches' LBP features, and evaluated using leave-one-out cross-validation.

Results: The dataset was balanced with 24/48 (50%) successful MUA procedures and 24/48 (50%) unsuccessful procedures. The random forest classifier had an accuracy of 64%, which outperforms the baseline accuracy of 50% produced by random guessing.

Conclusion: Local binary pattern may be a weak predictor of the success of an MUA. Further research is required before this could be developed to assist as a clinical decision making tool.

1. Jantzen, C. et al. (2016) Colles' fractures and osteoporosis - A new role for the Emergency Department. *Injury* 47(4), 930-933. 2. Meena, S. et al. (2014) Fractures of distal radius: an overview. *J. Family Med Prim Care* 3(4), 325-332. 3. Bruce, K.K. et al. (2016) Lack of agreement on distal radius fracture treatment. *J. Amer. Board of Fam. Med.*, 29(2), 218-225.

P058 Many faces of calcaneal insufficiency fractures

Jessica Gunn; Elizabeth Price; David Collins; Hyeladzira Thahal; **Nicholas Ridley**

Great Western Hospital

Background: Insufficiency fractures occur due to normal stressors on abnormal bone, secondary to a range of pathologies. They occur in a variety of locations, most commonly the spine and pelvis. Fracture of the calcaneus under any circumstance is rare, accounting for only two per cent of all fractures and insufficiency fractures are even more uncommon.

Purpose: Calcaneal insufficiency fractures are uncommon and can sometimes have very subtle findings on X-ray. Importantly, these fractures can typically be present in patients with inflammatory arthritis, diabetes, anorexia nervosa, and methotrexate osteopathy. We report a case series of calcaneal insufficiency fracture, common radiographic appearances and review the literature on secondary causes of such fractures. **Summary:** A description of pertinent features of calcaneal insufficiency fractures on x-ray and MRI. Case series of patients with calcaneal insufficiency fractures secondary to a variety of causes including inflammatory arthritis, all presenting with subacute, atraumatic ankle pain. The take home message: In addition to osteoporosis other secondary causes of calcaneal insufficiency fracture are diabetes, anorexia nervosa, coeliac disease and methotrexate osteopathy. An underlying insufficiency fracture should be considered by both the radiologist and clinician when such patients present with atraumatic ankle pain.

P059 Reporting accuracy

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Background: Monitoring reporting accuracy through peer review and identifying learning needs/opportunities. This is relevant in current diagnostic imaging departments because diagnostic accuracy is closely linked with patient management and outcome. It ensures consistent high standards of reporting and minimises potential harm to patients.

Purpose: To provide a clear definition of reporting radiographer peer review (reporting accuracy) and benefits to stakeholders. To share a current working example of a peer review methodology and subsequent learning and discrepancy (L&D) meeting that is transferable to UKRC participants' own practise. **Summary:** The poster will have five sections, and will be displayed in accordance with UKRC Guidance.

Aim: Provide a review of quality assurance (QA) practices employed by reporting radiographers in North Wales.

Background: Reporting radiographers, like their radiologist colleagues, need to demonstrate objective assessment and reflection of their practice.

Methodology: Proactive review, adhering to key principals of reporting QA established by the RCR.

Results: A sample of reporting radiographers' performance demonstrated, which provides encouraging evidence supporting radiographer reporting accuracy.



Observations: Peer review encompasses a wealth of practices, with collaborative working being central to this. Peer review is a supportive process through which learning and development are encouraged to improve standards, facilitated through dedicated reporting radiographer L&D meetings.

Conclusion: Peer review acts as a valid and effective estimate of reporting radiographer performance. The process also serves as a continuing education tool, supporting the growth and development of the team.

A sample of current references include: Harvey, H.B. et al. (2016) Key performance indicators in Radiology: You can't manage what you can't measure. *Current problems in Diagnostic Radiology*, 45(2):115-121. Harvey, H.B. et al. (2016) Radiologist peer review by group consensus. *Journal of the American College of Radiology*, 13(6): 656-662. Stephenson, P. et al. (2012) An evidence based protocol for peer review of radiographer musculoskeletal plain film reporting. *Radiography*, 18(3):172-178. The Royal College of Radiologists. Quality assurance in radiology reporting: peer feedback 2014

P060 Sonographers' experiences of work-related musculoskeletal disorder: The everyday consequences of physiological stress and injury in contemporary ultrasound

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Background: By 2013, the UK government's Migration Advisory Committee had listed sonography as an official 'shortage specialty'^[3,6]. As a consequence of the working stresses allied to this shortage, British sonographers have increasingly been reducing hours or leaving clinical practice entirely^[7]. Moreover, among those who remain, incidences of reported chronic pain and active injury are also on the increase within a profession that was already synonymous with high rates of work-related musculoskeletal disorder (WRMSD)^[2]. While contemporary research has described the rates of WRMSD among ultrasound practitioners^[1], none has to date extensively explored its personal and professional impacts.

Methods: Using a model of Interpretative Phenomenological Analysis with proven facility in medical imaging research^[4,5], extended semi-structured interviews with N=10 experienced sonographers were analysed. **Results:** Participants routinely reported a sensation of guilt and depleted self-efficacy that not only permeated any working absence resultant of their own WRMSD, but also to taking legitimate leave when colleagues were suffering from WRMSD. An upshot of this was to recurrently "take one for the team" and work through excessive pain, even when this would likely result in greater prospective physical damage. While the basic shortage of sonographers was the core attribution for such behaviours, participants also cited (a) increasingly obese patients, (b) increasingly unhelpful (i.e. profiteering) equipment manufacturers, and (c) their own paternalism regarding healthcare.

Conclusions: The present situation in ultrasound mirrors a culture of potentially dangerous pain acceptance that been noted in the psychology of sport for some time^[8], albeit for largely altruistic, rather than egotistic, reasons.

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HEAD & NECK/NEURO

P061 Skull lesions on CT head

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Background: The skull should be reviewed on bone windows for every CT head to look for potential skeletal abnormalities. 300 consecutive CT head scans were reviewed to evaluate the prevalence of skeletal lesions in an elderly population. We present common and important skull lesions with which every reporter of CT heads should be aware, with case examples.

Purpose: We present the frequency of skeletal findings on CT heads in an elderly population, alongside a pictorial review of important and common bony lesions, including benign and malignant lesions.

Summary: 13/300 cases (4%) had a suspicious lesion on CT head. On clinical review of these 13 cases, 4 were found to have definite myeloma, 3 had possible myeloma, and myeloma could not be excluded in the remaining 6 cases. We summarise that the referring clinician should be alerted to suspicious lesions seen on CT heads. We also include a pictorial review of common and important lesions, including: venous lakes, vascular channels, arachnoid granulations, myeloma lesions, lytic metastatic lesions, and sclerotic metastatic lesions.