Relevance/impact: We present two different cases of heterotaxy syndrome in order to demonstrate many of the radiological findings accompanied by tables explaining potential radiological findings.

Outcomes: This presentation will make you more clear about the nomenclature used and give an overview of the radiological appearances as well as the identification of patients at risk of fatal complications from the related cardiac, immune and gastrointestinal pathology.

Discussion: Although complex heterotaxy syndromes can be related to high mortality and mobility. It is the radiologists duty and also of paramount importance to be aware of the heterotaxy presentations and the increased risk of congenital heart disease, immune deficiency (due to splenic absence) and catastrophic volvulus with malrotation.

P118 **Paget disease: A pictorial review of its typical imaging characteristics and potential complications in our practice**

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Introduction: Paget disease of the bone is a chronic bone disorder characterised by excessive abnormal bone remodelling. It is a common disorder affecting approximately 4% of patients over 40 years of age and 11% over the age of 80. The radiologist plays a pivitol role in the identification of disease, monitoring of progression, and early recognition of its complications.

Objectives: Our aim is to review imaging findings, natural history and complications of Paget disease. As only one-fourth of the patients are symptomatic at the time of detection of the disease, this is usually diagnosed incidentally. Polyostotic disease is more common than the monostotic type. The most frequent sites of involvement are spine, pelvis, skull and proximal long bones. We expect the radiologists to identify the disease and assess its stage-wise progression including complications.

Presentation and and imaging findings: Plain films, CT, MRI, and bone scintigraphy images demonstrating varying manifestations of Paget disease will be provided. Cases showing lytic (incipient or osteoclastic activity), mixed (active osteoblastic and osteoclastic activity) and sclerotic/blastic (late inactive) will be demonstrated. We endeveour to illustrate typical appearances such as osteoporosis circumscripta, cotton wool appearance, diploic widening, picture frame and squaring of vertebra, and asymmetric enlargement of the bones. Different radiographic examples of potential complications will include osseous deformity, bowing deformities, kyphosis, spinal stenosis, pathologic fractures, basilar impression, and sarcomatous degeneration.

Conclusion: Knowledge of the key imaging findings including potential complications is important to providing an accurate interpretation of patients with Paget disease.

Clinical: Intervention and trauma

P119 **The utility of CT scanning for hip fractures from the Emergency Department**

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Introduction: CT is frequently used as follow up imaging to further investigate radiologically occult hip and pelvic fractures. The aim of this study is determine the value of Computed Tomography (CT) of the hips and pelvis in assessing for the presence of these occult fractures.

Methods: Retrospective data was collected from the scans and reports of CTs and X-ray of the hips and pelvises requested by the Emergency Department between 20/01/2013 and 19/11/2014. A total of 100 cases were reviewed.

Results: 44 CTs were positive, the most common fractures identified were those of the pubic rami (17), acetabulum (8), neck of femur (8) and greater trochanter (7). Out of the 44 patients with fractures, 27 (61%) had an X-ray

reported as normal. 12 patients had plain films reported as normal but had fractures visible in retrospect. The missed fractures were: 8 pubic rami fractures, 3 isolated greater trochanter fractures and 1 periprosthetic fracture.

Of the 56 negative CTs, only 4 (7.1%) had a fracture erroneously reported on their X-rays.

Conclusion: X-rays should remain the initial investigation of choice for possible hip fractures. However, CT is a good option for follow up imaging when there is a high index of suspicion and a normal X-ray.

P120 **Pain in my hips! Pictorial review of complex pelvic and acetabular injuries and surgical management options from a trauma centre's perspective**

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Aims/objectives: We present a pictorial educational journey of complex pelvic and acetabular injury from our experience at a major trauma center who were admitted after significant blunt trauma. We particularly highlight the importance of pre and postoperative imaging capabilities and various surgical fixation options.

Content: This is a comprehensive retrospective case review from a major trauma centre, which has vast experience and expertise in diagnoses and management of complex pelvic injuries with a multidisciplinary team approach with Radiologists and Orthopaedic Surgeons.

Relevance/impact: Pelvic injuries can be divided into anterior posterior compression, lateral compression, and vertical shear and combined mechanism of injuries. The pelvis is considered as the crossroads of the lower body and in order to treat injuries successfully, identification and management of bony, soft tissue, visceral and neurovascular injuries are necessary.

Outcomes: We concentrate on the importance of an accurate radiological diagnosis in identifying these significant injuries. so that surgical fixation can be successfully completed. The purpose of this exhibit is also to illustrate the value of joint Radiological and Orthopaedic management imperative for high quality patient care.

Discussion: Trauma imaging capabilities has dramatically improved with computed tomography (CT) and three-dimensional (3D) volume rendered images clearly demonstrating the complexity of pelvic injuries, which in turn aids surgical planning. We hope to empower the reader by presenting unique trauma cases which illustrate pertinent imaging points and surgical management review of complex pelvic and acetabular injuries.

P121 **I've injured my ribs! A major trauma centre's experience of flail chest and multiple displaced rib fractures and the benefits of surgical fixation**

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Objectives: We present a pictorial synopsis of a cohort of cases admitted to our major trauma centre following blunt thoracic trauma resulting in either a flail chest or multiple displaced rib fractures which are subsequently managed surgically.

Content: We will highlight cases of both flail chest and multiple displaced rib fractures pre and post-operatively using plain radiographs, computed tomography and three-dimensional (3D) volume rendered images. We also consider the clinical implications of such injuries alongside the indications for surgical stabilisation.

Relevance: As the number of rib fractures increases, there is a significant increase in mortality and morbidity. Flail chest can represent a life-threatening condition resulting in respiratory compromise. These injuries have previously been managed non-operatively using analgesia and mechanical ventilatory support. Recent studies have however indicated that surgical fixation substantially improves pulmonary function, reduces acute complications and ultimately improves critical care outcomes.

Outcomes: We hope to engage the readers to accurately recognise flail segments and multiple displaced rib fractures across various imaging modalities. We also concentrate on the importance of reporting these injuries so that surgical fixation can be appropriately implemented.

Discussion: The ambition of this pictorial educational exhibit is to facilitate the observer in better recognising complex chest wall injuries following trauma and their surgical management from a major trauma centre's perspective. We emphasise the crucial role that radiological imaging plays in both the prompt diagnosis and the surgical planning for these patients.

P122 **The Trauma Multidisciplinary Team Meeting (MDTM) and the introduction of radiology input: How well is it working?**

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Objectives: The Trauma Multidisciplinary Team (MDT) Meeting has been an integral part of patient management since the formation of the Major Trauma Centre (MTC). These meetings are held on a daily basis and are attended by various members of the Trauma MDT. We report the results of our survey of how well the Trauma MDTM is working in general and, more specifically, evaluate the regular contributions of Radiologists to the MDTMs.

Content: A prospective survey was conducted over a three-week period at our MTC which questioned the structure, scheduling, and attendance of the meetings and their subsequent impact on patient care. We also present respondent proposals for enhancing the service offered.

Relevance: Since July 2014, Radiology input has been introduced and is now provided daily during the week with the aim of contributing to the decision making process and arranging timely scans for patients where necessary.

Outcomes: The overall contribution of the Radiology department has been highly commended with 96% satisfied with the current set-up of Diagnostic and Interventional Radiologists in attendance. 92% thought discussion at the meeting influences patient management and 96% felt that the introduction of the MDTM has improved patient outcomes.

Discussion: The results of the survey are very encouraging and instrumental to the invaluable contribution that the Trauma MDTM makes to ensure that the highest quality of patient care takes place. Furthermore, this survey demonstrates that the Radiology department's regular presence in the meetings has an extremely positive impact on the work of the MTC.

P123 **Traumatic injuries of the neck: Role of split bolus single phase in blunt injuries - experience of a level I major trauma centre in London**

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With more and more major trauma centres, imaging the patient with major trauma has been transformed. CT imaging of the neck, chest, abdomen and pelvis with or without imaging the brain is an accepted norm and most CT examination protocols are now done with IV contrast.

Whilst images are obtained with IV contrast, imaging is not particularly done in the arterial phase. Whilst obvious vascular injuries in the neck following a trauma (either penetrating or non-penetrating) may be picked up on these protocols either based on a high index of clinical suspicion or severity of the injury, less conspicuous injuries (eg arterial dissection, pseudoaneurysms) may not be picked up in the immediate setting in view of the less than optimum sequences obtained to identify these abnormalities. However, most of these conditions can be identified if there is higher index of suspicion maintained by the radiologists and we illustrate a few cases in this regard. Identifying these abnormalities, which are usually silent at presentation and which may not affect immediate management in patients with more severe injuries is vital in terms of follow up and preventing delayed potentially life threatening/fatal events (eg stroke).

P124 **A small-scale study comparing radiation dose of fluoroscopy to radiation free, electromagnetic navigation during the insertion of distal locking screws of intramedullary nails**

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Background: Intramedullary nailing is the standard surgical treatment for mid-diaphyseal fractures of long bones; however, is also a high radiation dose procedure. Distal locking is regularly cited as a demanding element of the procedure and there remains a reliance on X-ray fluoroscopy to locate the distal holes. A recently developed electromagnetic navigation (EMN) system allows radiation free distal locking, with a virtual on-screen image.

Objective: To compare operative duration, fluoroscopy time and radiation dose when using EMN over fluoroscopy, for the distal locking of intramedullary nails.

Method: Consecutive patients with mid-diaphyseal fractures of the tibia and femur, treatable with intramedullary nails, were prospectively enrolled during a 9-month period. The sample consisted of 29 individuals, 19 under fluoroscopic guidance and 10 utilising EMN. Participants were allocated depending on the type of intramedullary nail used and surgeon's preference. These were further divided into tibial and femoral subcategories.

Results: EMN reduced fluoroscopy time by 49(p=0.038) and 28 seconds during tibial and femoral nailings. Radiation dose was reduced by 18cGy/cm2(p=0.046) during tibial, and 181cGy/cm2 during femoral nailings when utilising EMN. Operative duration was 11 minutes slower during tibial nailings using EMN, but 38 minutes faster in respect of femoral nailings.

Conclusions: We have evidenced statistically significant reductions both in fluoroscopy time and radiation dose when using EMN for the distal locking of intramedullary nails. We expect that overall operative duration would decrease in line with similar studies, with increased usage and a larger sample.

Errors and discrepancies

P125 **An audit of reporting of incidental vertebral fractures on CT imaging of the thorax, abdomen and pelvis**

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Purpose: Vertebral fractures are often the first sign of osteoporosis to be recognised. It is important that they are identified so that the risk of further fractures can be reduced, by anti-osteoporotic agents e.g. bisphosphonates. Incidental vertebral fractures may be identified on CT performed for unrelated reasons. This audit investigated whether vertebral fractures are being sought on CT, whether fractures are being missed and whether sagittal reformatted images have a role.

Methods: The hospital electronic database was used to audit CT reports of patients aged >50yrs. It was noted whether the report commented on the bones and whether a fracture was unambiguously reported. The images were reviewed to see whether a sagittal reformat had been saved and whether a vertebral fracture had been missed, using Genant criteria.

Results: A pilot audit of 50 reports (January 2014) revealed that 20% of patients had vertebral fractures. Only 10% of these fractures were reported. A single sagittal reformatted image enabled identification of vertebral fractures in 98% of the patients, however this image had only been saved in 4% of cases.

After an educational campaign, 300 reports (April-May 2014) were audited. 11% of patients had vertebral fractures. 35% of these were unambiguously reported.

Conclusion: Incidental vertebral fractures detected by CT are rarely reported. Departmental awareness was raised at meetings and by posters, which slightly improved the percentage of fractures reported. Sagittal reformatted images are now being saved by the radiographers at the time of image acquisition - re-audit is planned in April-May 2015.