P033 **Intracranial pseudoaneurysm due to non-traumatic ruptured aneurysm: A multimodal pictorial review**

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Background: Intracranial pseudoaneurysm due to ruptured non-traumatic aneurysm is rare, but may be misdiagnosed for mass lesions, with potentially devastating consequences for the patient.
Purpose: Using a case-based approach, this educational presentation aims to improve awareness by reviewing aetiology of intracranial aneurysms and pseudoaneurysms. Describing the radiological approach and imaging pitfalls in pseudoaneurysms, comparing appearances on unenhanced and contrast CT, CT angiography and MRI. Discussing the emerging role of advanced dual-energy CT (DECT) in improving delineation of lesions. Providing an overview of endovascular management.
Summary: Example cases include: A 69-year-old male admitted after a tonic-clonic seizure, who underwent unenhanced CT, dual-energy CTA and MRI -displayed side-by-side. Unenhanced CT revealed a large right temporal lobe soft tissue mass with associated white-matter oedema. Contrast-enhanced DECT was performed. This enables generation of iodine maps to assess intravascular contrast content. The patient later had an MRI brain with time-of flight MRA. Delayed CE-CT demonstrated typical 'snowman' appearances of an aneurysm at the right M1/M2 bifurcation (the 'head') with surrounding peripherally calcified pseudoaneurysm (the 'body'). Both were seen as a heterogenous low signal temporal lobe mass on T2-weighted MRI.
Iodine maps from the DE-CTA delineated the aneurysm sac. The patient underwent further management from the local endovascular neuroradiology centre. While this entity is rare, pseudoaneurysm from an underlying aneurysm is an important differential in apparent mass lesions. DECT may have advantages over MRI in delineating vessel and aneurysmal sac from surrounding pseudoaneurysm. This may improve interventional planning.

1. Nomura M, Mori K, Tamase A, et al. Pseudoaneurysm formation due to rupture of intracranial aneurysms: Case series and literature review. Neuroradiol J. 2017;30(2):129-137.

P034 **Chordoid glioma – A rare third ventricular entity**

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Background: Chordoid glioma is a rare, slow-growing glial tumour of the anterior third ventricle which, to date, has been reported in approximately 100 patients worldwide[2]. It shows a 3:1 female preponderance and a mean age of presentation of 46 years old[4] with its presenting clinical features being non-specific[1-3]. Early diagnosis is important because tumour excision is a viable curative option although there are important differentials to consider for a tumour at this particular location[1] which has implications for management.
Objectives: Description of the clinical, histological and radiological aspects of a case seen at our institution. Discuss important considerations relating to diagnosis and management. To gain an insight into the clinical, imaging, oncological aspects of this rare entity as well as diagnostic dilemmas and considerations for management. All professionals involved with neuro-oncology MDTs should find this useful.
Summary: We will present the case of a 45-year-old patient who attended with visual disturbance in a poster format. In depth clinical history, together with key CT and MRI (including post op MRI) imaging will be displayed. Many of the imaging features of our case are characteristic of what has been described for this entity and will hence be helpful to radiologists. We will also highlight any other features that were not seen in our case but are described in the literature for completeness. Important differential diagnoses to consider will be highlighted together with the impact of these on informing initial investigation.

1. Cunha, P., Rebelo, O. and Barbosa, M. (2017). Chordoid Glioma of the Third Ventricle, a Rare Tumor with an Unexpected Outcome. Arquivos Brasileiros de Neurocirurgia: Brazilian Neurosurgery, 36(01), pp.32-37.
2. Danilowicz, K., Abbati, S., Sosa, S., Witis, F. and Sevlever, G. (2018). Suprasellar chordoid glioma: a report of two cases. Archives of Endocrinology and Metabolism, 62(6), pp.648-654.
3. Pomper, M., Passe, T., Burger, P., Scheithauer, B. and Brat, D. (2001). Chordoid Glioma: A Neoplasm Unique to the Hypothalamus and Anterior Third Ventricle. American Journal of Neuroradiology, 22(3), pp.464-469.
4. Smith, A., Smirniotopoulos, J. and Horkanyne-Szakaly, I. (2013). From the Radiologic Pathology Archives: Intraventricular Neoplasms: Radiologic-Pathologic Correlation. RadioGraphics, 33(1), pp.21-43.

BREAST

P035 **A randomised clinical feasibility trial of a breast immobilisation device: The SuPPORT 4 All (S4A) Project**

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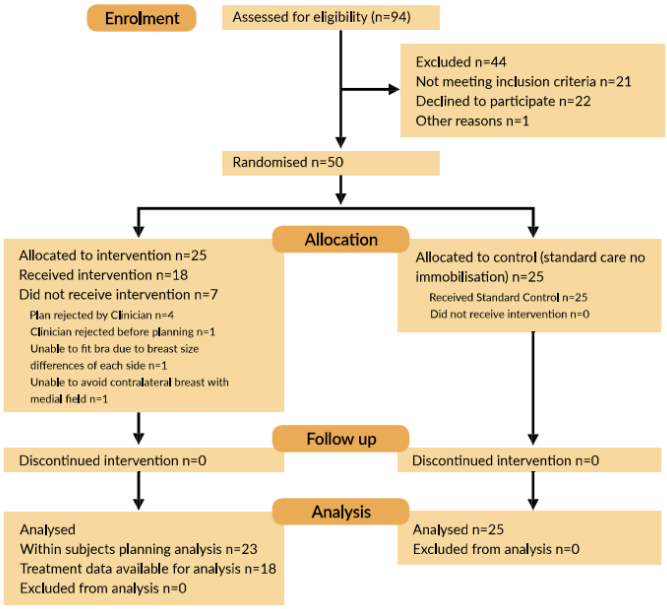
Background: Improvements in cancer survival for women with early breast cancer have led to more focus on long-term toxicities of treatment. We have developed a novel support bra (S4A bra) to lift the breast away from the chest wall to reduce the dose to OAR, particularly suited for women with larger breast size.

Method: A single centre randomised feasibility trial. Eligible patients were randomised via a remote computer-generated process to S4A bra (group A) or standard positioning without immobilisation (group B); randomisation was stratified by breast size. All patients received 40Gy in 15 fractions (3 weeks). Patients in group A received two planning CT scans; one wearing the S4A bra and one without the bra. Data on set up reproducibility were measured using 2D on treatment images (5 images per patient). Other outcome measures included assessment of acute skin reactions, moist desquamation in the inframammary fold, mean lung and heart doses, patient comfort and modesty, patient empowerment.
Results: Figure 1 shows recruitment and allocation. Population systematic errors for central lung depth was 0.9mm for the S4A arm, -1.5mm for the control (difference 2.4mm CI 0.9-3.9). Differences in random errors between the groups were all below 1mm except for superior-inferior movement where there was a small difference in favour of the control arm (2.4mm difference). RTOG scores were comparable between the groups. Table 1 shows an improvement in mean ipsilateral lung dose when using the S4A bra. There was improved modesty and dignity, and improved empowerment in the S4A arm.

Allocation	With or Without Bra	Side Treated	Ipsilateral mean (Gy)	Combined lungs mean (Gy)	Number (n=)
A	No Bra	Right	4.851	2.636	10
A	With Bra	Right	3.720	2.017	10
A	No Bra	Left	3.622	1.704	13
A	With Bra	Left	3.231	1.539	13

Figure 1 Consort Diagram:



1. Andrews CS. Developing a Measure of Cultural-, Maturity-, or Esteem-Driven Modesty Among Jewish Women. Research and theory for nursing practice. 2014;28(1):9-37.
2. Bulsara CE, Styles I. Development of a Cancer Related Patient Empowerment Scale Using the Polytomous Rasch Measurement Model. 2013. 2013;2(1).
3. Radiation Therapy Oncology Group. Acute Radiation Morbidity Scoring Criteria 2014. http://www.rtog.org/ResearchAssociates/AdverseEventReporting/AcuteRadiationMorbidityScoringCriteria.aspx.

P036 **Evaluating the tumour bed PTV margin for IMAT breast boost delivered in DIBH: A service evaluation**

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Background: Whole left breast radiotherapy (RT) is delivered in deep inspiration breath hold (DIBH) to reduce heart and lung dose. The ability to deliver intensity modulated arc therapy (IMAT) boost in DIBH became technically possible following upgrade to TrueBeam treatment machines. The reproducibility of the tumour excision cavity [TB] (as defined by surgical clips), during DIBH delivery was unknown. Translating the 0.5 cm free-breathing (FB) planning target margin (PTV) to the DIBH technique may be inadequate. The aim of this pilot study was to determine an appropriate TB PTV margin when delivering IMAT boost in DIBH.
Method: Patients with outer quadrant tumours requiring boost had a 1.0 cm TB PTV margin. In addition to the standard daily corrective image protocol, post-treatment kV images of the TB clips were acquired to quantify inter-breath hold error. The Van Herk margin formula was used to confirm the TB PTV for the DIBH technique.

n11		Population mean Error (cm)	Population Systematic Error (cm)	Population Random Error (cm)	TB PTV Margin (VanHerk) (cm)
Post-Treatment kV Clip-Match	Vert	-0.06	0.08	0.17	0.32
	Long	-0.07	0.08	0.13	0.29
	Lat	-0.06	0.09	0.11	0.3

Results: 11 patients. Post-treatment kV clip match: Population mean error (cm); -0.06, -0.07, -0.06 (vert, long, lat). Population systematic error (cm); 0.08, 0.08, 0.09 (vert,

long, lat). Population mean error (cm); 0.17, 0.13, 0.11 (vert, long,lat). TB PTV margin (Van Herk) (cm); 0.32, 0.29, 0.3 (vert, long, lat).
Conclusion: This pilot study has supported using the current FB TB PTV margin of 0.5 cm for the new DIBH boost IMAT technique. This technique has been clinically implemented for all left breast boost referrals, and is subject to on-going audit using the pilot study methodology.

P037 **Breast carcinoma: An educational review of image-guided pre-operative localisation pathways**
Caroline Parkin; Mayada Haydar; Trupti Kulkarni; Emma Hall
Manchester University NHS Foundation Trust
Breast screening programmes and current breast imaging techniques facilitate the detection of small breast carcinomas. They are often non-palpable and require image-guided localisation prior to surgery. This is usually guided by ultrasound, mammography (stereotaxis) or digital breast tomosynthesis (DBT). Accurate preoperative localisation is a fundamental role of the breast imaging team and is crucial for successful surgical outcomes. This poster provides an overview of current localisation techniques including skin marks, wire localisations, Magseed and Radioguided Occult Lesion Localisation (ROLL). The advantages and disadvantages of each technique are discussed and compared. This poster educates the reader in relation to what techniques are currently available and clarifies the differences, benefits and drawbacks associated with the different pathways.

P038 **More than just dilated ducts – Think about the pituitary**
Arwa Jaly; Leena Chagla; Jane Harrison; Olga Harris
St Helens and Knowsley Teaching Hospitals NHS Trust
Educational pictorial case reports of 2 young male patients presenting to the breast clinic with milky nipple discharge in one case and unusual duct ectasia in the other who were subsequently found to have prolactinomas. Learning objectives: Demonstrate the imaging findings (breast and cranial) and discuss patient presentation and sequence of investigations that lead to diagnosis. illustrate the importance of considering diagnoses outside the breast in patients presenting with breast complaints Highlight the importance of the radiologist in alerting clinicians to such diagnoses.

P039 **A qualitative study of the attitudes of radiographers and radiologists in Kuwait towards radiographers' role extension in mammography**
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Cardiff University
Background: Extending radiographers' roles has provided opportunities for them to develop their function, help with issues around a shortage of radiologists and increase job satisfaction. In the UK, radiographers' role extension in mammography has made progress compared to other modalities, showing a significant improvement in quality of the service provided. In other areas of the world, the use of role extension has been limited. Aim This research focused on the attitudes of radiographers and radiologists towards radiographers' role extension in mammography in Kuwait, especially in reporting mammography, performing breast ultrasound and biopsies. The research also aimed to understand radiographers' current scope of practice in the field of mammography.
Method: A qualitative case study research using semi-structured interviews assessed radiographers' and radiologists' attitude to radiographers' role extension in mammography. Purposive sampling was used to recruit the participants by multiple visits to governmental hospitals in Kuwait. The data was analysed using a thematic analysis method to highlight perceptions.
Results: 20 semi-structured interviews were completed with 10 radiologists and 10 radiographers. Both radiologists and radiographers showed intertest in extending radiographers' role in performing ultrasound in breast imaging, however both groups showed doubts about giving radiographers responsibilities to report images and perform biopsies. Discussion The radiographers' limited knowledge compared to radiologists has been highlighted as the main barrier in extending the radiographers' role in Kuwait. Other reasons are lack of training courses, a lack of confidence by radiographers and radiologists' resistance to role extension.
Conclusion: Overall, participants demonstrated negative attitudes towards radiographers' role extension.
1. Cowling, C. 2008. A Global Overview of the Changing Roles of Radiographers. The Society and College of Radiographers.14, e28-e32
2. Probst, H.and Griffiths, S. 2009. 'Job satisfaction of therapy radiographers in the UK: Results of a phase I qualitative study', Radiography, 15 (2), pp. 146-157.
3. Thom, S.E. 2018. Does advanced practice in radiography benefit the healthcare system? A literature review. Radiography. 24(1):84-89. doi: 10.1016/j.radi.2017.08.002 4- Yin, R.K (2014). Case Study Research Design and Methods (5th ed.). Thousand Oaks, CA: Sage. 282 pages.

P040 **Standardised mediolateral oblique mammographic positioning and compression protocol for use within breast screening and symptomatic services**

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Background: Mammography is associated with pain/discomfort and this is mainly due to the positioning and compression applied to the breast (Papas & Klassen, 2005). The aim of the research is to develop an evidence-based protocol that may help reduce pain/discomfort. The angle of image receptor (IR) on the mediolateral oblique (MLO) projection plays a vital role in the distribution of pressure through the breast. When the IR angle is perpendicular to the sternum during compression, there should be an even pressure balance and increased breast contact area (Hogg et al., 2015).
Method: A phantom study was conducted on a model torso with breast attachment. A digital inclinometer was used to take the angle of model's sternum before it was positioned for MLO. Xsensor pressure mat was secured to the surfaces of the compression paddle and IR to read and record pressure distribution applied on the breast phantom. Compression of 10daN was applied to breast phantom and pressure readings and breast footprint were recorded with the IR at various angles in the multiples of 5 from 400 to 750. Numerical pressure data recorded on the mat was transferred onto excel and analysed.
Results: IR angles at 550 to 650 produced a more even pressure and area balance. The recorded sternal angle of model was 600.
Conclusion: When the IR angle is parallel or close to the angle of the sternum, there is an even distribution of pressure and area balance.

1. Hogg, P. P. e., Kelly, J. e., & Mercer, C. e. (2015). Digital mammography: a holistic approach. In: Cham, Switzerland: Springer.
2. Papas, M. A., & Klassen, A. C. (2005). Pain and discomfort associated with mammography among urban low-income African-American women. Journal of Community Health, 30(4), 253-267. doi:10.1007/s10900-005-3704-5.

P041 **Therapeutic mammoplasty: Need for pre-operative MRI prior to complex oncoplastic reconstruction?**

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Background: Therapeutic Mammoplasty (TM) is an effective oncologically safe breast conservation technique to facilitate wider resection margins in larger tumours and ptotic breasts with good aesthetic outcomes. There are no national guidelines as regards the need for preoperative MRI, our aim was to evaluate its effectiveness prior to complex oncoplastic reconstructions.
Method: We performed a retrospective study of all patients who underwent TM at our centre over a 4 year period (Jan 2016-Dec 2019), the data was retrieved from the electronic surgical diary. All imaging and histology was reviewed for possible upgrades with particular attention to breast density and tumour subtype.
Result: 52 patients underwent TM over this period, average patient age was 58 years and mean tumour size was 53 mm. 79% of the cancers were diagnosed on screening mammograms, 63% patients underwent a preoperative MRI. Non-performance of MRI was related to calcified DCIS in non-invasive tumours and involuted parenchyma. 3 patients upgraded on MRI with more extensive disease leading to significant impact on tumour assessment, surgical planning and outcomes; all of these patients had dense breasts category C/D. 13% patients underwent completion mastectomy.
Conclusion: The local policy at our high-volume teaching hospital centre mandates an MRI prior to TM. However, based on our study, in patients undergoing complex reconstructions, we recommend a pre-operative MRI only in patients with dense breasts, unexpected tumour histology (i.e. presence of invasive disease in calcified DCIS) and certain lobular histology. Careful planning can identify those most likely to benefit.

1.The role of MRI in preoperative planning for patients undergoing Therapeutic Mammoplasty. ISRN Oncol. 2013:260260. doi:10.1155/2013/260260 G Hicks, N Sharma.
2. Preoperative Breast MRI for patients undergoing mammoplasty ClinicalTrials.gov Identifier: NCT03173469.

P042 **PROSPECTS trial: Impact on routine breast screening clinics**

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NHS

Background: PROSPECTS is a national trial to evaluate the cost effectiveness of a Tomossynthesis in the breast screening programme. This trial has an impact on Mammographers daily routine and efficiency of running static and mobile clinics. From the pilot PROSPECTS trial best practice learned for running successful breast screening PROSPECTS clinics.
Purpose: Synopsis of experience to date of radiographic team in PROSPECTS trial implementation.
Summary: Staff engagement with PROSPECTS delivery. Standing operating procedures: developed to provide guidance to the Radiographers. Risk/Governance: outline assessments undertaken to prevent any adverse incidents and safeguard quality standards. These are reviewed as the trial has progressed. Training requirements: Mammographers, CRN and Admin. Protocols amendments. QA processes. Workforce: Role extension for Assistant Practitioners to allow their participation in the trial through extended scope of practice. This is in terms of screening and consenting. Problem solving. Challenges: Having the Radiographers consenting prior to perform the exam and the impact on clinic running times where was not given any extra time during the

clinics. Variation in demographics and correlation to uptake. Variation in the process of consenting in static and mobile clinics. Reflections: Lessons learned, frequent asked questions, most common errors and what happens after the first round?

CARDIAC / VASCULAR INTERVENTION / CHEST & LUNG

P043 Pulmonary artery dissection: CT findings of fatal acute vascular emergency

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Background: Pulmonary artery (PA) dissection is a rare complication of pulmonary hypertension that has been sporadically reported. This condition usually progresses rapidly to death due to bleeding before any surgical intervention is attempted.
Purpose: We discuss the clinical-imaging presentations of PA dissection to call attention to this vascular emergency. In most cases, dissection of PA is associated with chronic pulmonary hypertension secondary to congenital cardiovascular abnormalities or mitral stenosis. Other conditions that may be seen in association with PA dissection include endocarditis, trauma, amyloidosis, and atherosclerosis. Most dissections affect the PA trunk. Patients typically present with acute onset of severe chest pain, dyspnoea, and haemodynamic decompensation demanding admittance to the emergency room. This is usually followed by sudden death as the dissection transects into the pericardium causing cardiac tamponade, or the mediastinum. Radiographic findings may include pleural and pericardial effusion, and mediastinal widening, in addition to marked widening of the PA and increased cardiac size due to the co-existent pulmonary hypertension. Chest CT supplemented with CT-angiography (CTA), is well suited for demonstrating the presence and extent of PA dissection. CTA with multiplanar reconstruction is extremely helpful in the accurate, direct and quick display of the dissection that is crucial for supportive or surgical management of these patients. If there is indication for immediate thoracic intervention, that may include placement of a vascular prosthesis or aneurysmorrhaphy.
Summary: Radiologists play a key role in early, correct and definitive diagnosis of life-threatening PA dissection that may enable immediate treatment.

1. Neimatallah MA, Hassan W, Moursi M, Al Kadhi Y. (2007) CT findings of pulmonary artery dissection. Br J Radiol 80(951):e61-63.
2. Khattar RS, Fox DJ, Alty JE, Arora A. (2005) Pulmonary artery dissection: an emerging cardiovascular complication in surviving patients with chronic pulmonary hypertension. Heart. 91(2):142-145.
3. Song EK, Kolecki P. (2002) A case of pulmonary artery dissection diagnosed in the Emergency Department. J Emerg Med. 23(2):155-159.

P044 Are we adequately labelling angiograms in interventional radiology?

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Introduction: It is essential for radiographs to be adequately labelled with key information; however, no national guidelines exist for labelling angiographic images in Interventional Radiology. The aim of this study is to evaluate how consistently angiographic examinations are labelled and to develop a mechanism to improve labelling rates.
Methods: All angiographic images were assessed to determine whether they were labelled with the following parameters: laterality, post-procedure (if applicable) and type of devices deployed (if applicable). All annotations were assessed for legibility. Data were collected retrospectively for 100 consecutive lower limb angiograms performed over a 12-month period (June 2018 - May 2019). A reassessment was performed four months after implementation of improvements (June to September 2019). A total of 32 cases were examined post-implementation.
Results: In the first cycle, only 15% of angiograms were labelled for laterality; this was 38% for post-procedure and 0% for devices deployed. Significant improvement was noted in the second cycle, 69% of images were labelled for laterality; this was 66% for post-procedure and 50% for devices deployed. In both cycles, all image labelling were considered legible.
Conclusion: Prior to the implementation of the recommendations, angiographic labelling was poor. After implementation, there was a significant improvement in labelling rates. The inclusion of a reminder in the WHO checklist and raising awareness among radiographers have been important factors contributing to this improvement. Regular departmental meetings and a reassessment in 6 months is proposed to ensure 100% angiographic labelling is achieved.

P045 Manifestations of COVID-19 on plain film radiograph: A pictorial review

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Background: Coronavirus-induced disease 2019 is a highly infectious disease caused by severe acute respiratory syndrome coronavirus. As the prevalence of COVID-19 increases, it is crucial for radiologists and clinicians to recognise the manifestations of the infection on a chest radiograph that may be performed for a suspected case, or for other purposes. The British Society of Thoracic Imaging (BSTI) has advised imaging is not appropriate to screen for, and diagnose COVID-19, but chest radiography may be useful as a first-line imaging modality when polymerase chain reaction (PCR) is unavailable, or the patient is seriously ill.