



URORADIOLOGY GI AND HEPTOBILIARY POSTER PRESENTATIONS

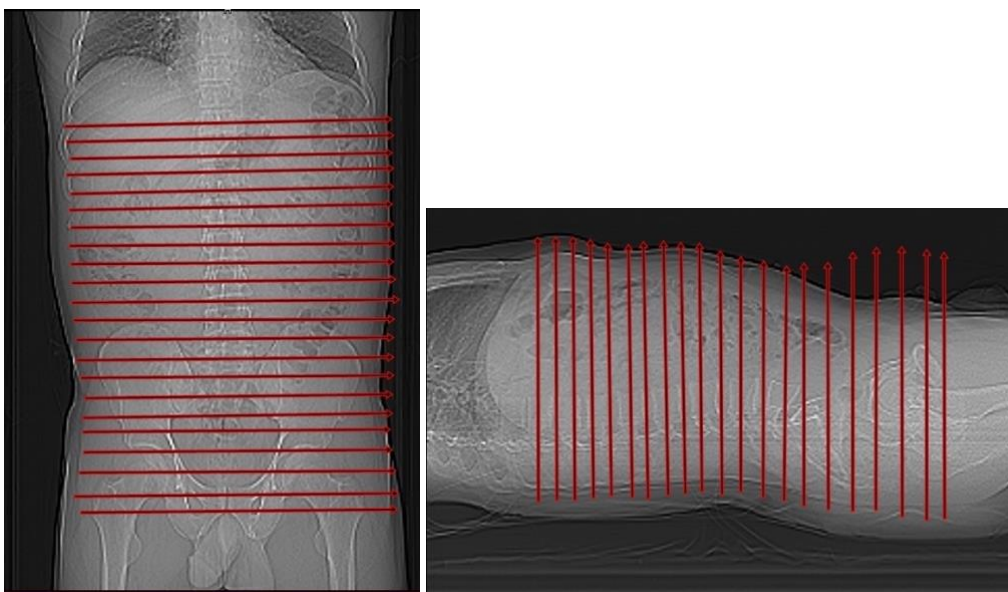
P044 Audit on CT KUB done for Acute renal colic

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Background: CT-KUB is the gold standard for the investigation of Acute renal colic. Standardisation is needed to ensure quality and safety.

Method: A retrospective analysis of 50 CT KUB scans referred from A&E department was done. Parameters of details in request forms, time interval between presentation and scan, result outcome, acquisition area of scan images, scan quality and dose involved were analysed.



Results: Inadequate clinical details seen in 38% cases. 100% of scans were completed within 24 hours of presentation which is within national guidelines. Detection rate for calculi was 52% and alternative acute conditions was in 10%; which again was within national standards. In 88% scans, kidneys were fully imaged when starting scan at T11 level; 100% imaged when starting at T10-11. All the scans had slices below the pubic symphysis unnecessarily. 20% of radiation can be reduced if scan field is optimised by imaging between T10 vertebra and pubic symphysis. 12% scans did not have scanogram. A scanogram gives a chance to see if a stone is visible on it. If visible, follow up can be done by radiographs instead of CTs. 22% scans had no MPR reformatted sagittal images and hence incidental bone lesions may be missed.

Recommendations and conclusion: Radiographers were asked to ensure the requests has side of pain and haematuria history. To scan from T10 level to pubic symphysis and to send scanogram and reformatted sagittal images as well on PACS. Referrers asked to give adequate clinical details of side of pain and haematuria.

1. Al-Bakir I, tse D, D'Costa H. Radiological investigation of renal colic following teh introduction of CT KUB. RCR Audit-Live. 2010. 2. Tsiotras, A R Daron Smith, Ian Pearce, Kieran O'Flynn and Oliver Wiseman. British Association of Urological Surgeons standards for management of acute ureteric colic. Journal of Clinical Urology 2018, Vol. 11(1) 58 -61.Sagepub.co.uk/journals DOI: 10.1177/2051415817740492 journals.sagepub.com/home/uro 3. Webb WR, Brant WE, Fundamentals of Body CT. Third edition. Major NM. Elsevier - Health Sciences Division. November 2005. Page 276. 4. British Association of Urological Surgeons (BSUS) guidelines for acute management of first presentation of renal / ureteric lithiasis, December 2008. 5. iRefer. Making best use of a Department of Clinical Radiology, Guidelines for Doctors, 8th Edition 2017, The Royal College of Radiologists, London.

P045 Delayed diagnosis of renal cancer does it cause harm?

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Background: In a previous study we found that in 16% of patients (50 of 327) diagnosed with renal cancer, the lesion was visible in retrospect on an earlier imaging investigation. (1) It is known that many renal cancers are relatively indolent. The purpose of the present study was to determine as far as possible whether patients came to harm as a result of delay.

Methods: Patients from this cohort were included if they survived 5 years from treatment or died in the interim. Imaging and case note review was performed. Patients were deemed not to have come to harm if they survived 5 years from the date of treatment without evidence of metastatic disease or died of an unrelated cause with no sign of recurrence.

Results: 40 patients were identified fitting the inclusion criteria. Median delay was 37.7 months (0.7-79.7). 32/40 were found not to have come to harm as a result of delay. Harm may have resulted in the remaining 8/40. Example cases will be presented.

Conclusion: The determination of harm following delayed diagnosis is not straightforward. Indeed, patients with low volume asymptomatic metastases are often observed for a while before starting treatment. It was possible to show that in most patients the delay did not result in harm, in keeping with what is known of the natural history of this disease.

1. Bradley, A.J., Maskell, G.F., Mannava, A., Pollard, A., et al. (2021) Routes to diagnosis and missed opportunities in the detection of renal cancer. *Clinical Radiology*.76 (2), 129134.

P046 Real world single centre comparison of upgrading and upstaging in prostate cancer: Looking at the impact of multi-parametric MRI and transperineal biopsies

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Introduction: This studies primary aim was to assess whether the introduction of multi-parametric MRI (mpMRI) and transperineal template (TP) biopsy has improved the accuracy of prostate cancer staging and grading compared to standard high resolution T1/T2-weighted MRI and transrectal ultrasound (TRUS) biopsies. The secondary aim was to assess whether the re-classifying of T2 disease with broad contact of tumour with the prostate capsule as T2/T3a disease was predictive for diagnosing T3 disease.

Method: Retrospective analysis of 156 patients who underwent preoperative mpMRI and TP biopsy between 2017-2019 was compared with a group of 114 patients preoperatively staged with standard MRI and graded with TRUS biopsy between 2013-2016. The international cancer imaging societies reporters' course states that any lesion with capsular contact length >15mm is highly likely to have capsular invasion. Where this was seen on mpMRI the imaging was staged as T2c/T3a. The T2c/T3a group was classified as T3 when analysing for change in stage and also analysed as a separate subgroup.

Results: Compared to the pre-intervention date 37.80% fewer patients were upstaged, 10.60% more patients were downstage and 26.22% more where unchanged. Regarding Gleason group, 18.06% fewer patients were upgraded, 0.50% fewer were down graded and 18.56% where unchanged. 19 mpMRI reports used the T2c/3a stage. At final pathological diagnosis of these 19 patient 47.37% had organ confined disease whilst 52.63% had T3 spread.

Conclusion: We found that the introduction of mpMRI, TP biopsy and the reclassifying of T2 disease with broad capsular contact improved the accuracy of prostate cancer diagnosis.

P047 The development of the 'advanced adaptor' role for urology patients receiving online adaptive radiotherapy treatment

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Background: Adaptive Radiotherapy uses online CBCT to adapt each treatment session to daily changes in patient position and anatomy. Treatment plans are generated within minutes with the patient on the treatment couch, with the full adaptive process completing from start to finish in a normal appointment time frame. The adaptive process initially began as clinician led treatment, but the role of advanced adaptor has been created as a delegation. The advanced adaptor role takes aspects of different professions such as clinicians, dosimetrist, physicist and radiographer to create one multi-disciplinary role.

Purpose: To delineate organs at risk based on CT quality imaging. Analysis of CBCT and target generation. Assessment of dose to targets and surrounding structures leading to the selection of treatment plans. All completed in an online real time environment. Outcome for patients Increased accuracy of treatment plan. Potential for reduced toxicity. Better patient experience due to reduction in pre-treatment preparations.

Summary: Outline of the adaptive radiotherapy workflow within the department Requirements to become an advanced adaptor Training and competency matrix Graphics (image of treatment machine, example of image quality, skill matrix diagram).

P049 Giant sigmoid diverticulum

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This is a case report of a patient presenting with a giant sigmoid diverticulum; hence I will discuss the risk factors, presentation, imaging findings, differentials, management and complication of patients with giant sigmoid diverticulum. Giant diverticula in the colon is rare worldwide and the first case to be described radiologically was in 1946. There are under 200 cases reported worldwide, most of which are through case studies¹. The commonest location for giant diverticula to arise is the sigmoid colon². Giant colonic diverticula can be seen as a rare presentation of diverticulosis which is very common and well described³. Giant colonic diverticulum most commonly presents with abdominal pain and on examination most commonly an abdominal mass is felt. It is important to be able to recognise giant diverticula as the gold standard for diagnosis is computed tomography (CT) as opposed to colonoscopies where giant colonic diverticulum can be if the pedicle of the diverticula is particularly narrow^{4,5}. There are three subtypes of giant colonic diverticula which are: giant pseudo-diverticula, inflammatory giant colonic diverticula and true giant colonic diverticula. The most common subtype is the inflammatory type. It is important to recognise a giant colonic diverticula because if it goes untreated it can form an abscess or perforate and turn into a surgical emergency². Other differentials to consider would include but are not limited to volvulus, diverticula of the duodenum, Meckel's diverticulum, emphysematous cystitis, emphysematous cholecystitis, colonic fistula or a pancreatic pseudocyst.

1. Steenvoorde P, Vogelaar FJ, Oskam J, Tollenaar RA. (2004) Giant colonic diverticula: review of diagnostic and therapeutic options. *Dig Surg* 21(1): 1–6. 2. Stephen Thomas, Robert L. Peel, Leonard E. Evans, Kelly A. Haarer. (2006). Giant Colonic Diverticulum. *RSNA, Radiographics* 3. Roger T, Rommens J, Bailly JM, Vollont GH, Belva P, Delcour C. (1996) Giant colonic diverticulum: presentation of one case and review of the literature. *Abdominal Imaging*; 21(6): 530–533 4. Giuseppe Nigri, Niccolò Petrucciani, Giulia Giannini, Paolo Aurello, Paolo Magistri, Marcello Gasparrini, and Giovanni Ramacciato. (2015) Giant colonic diverticulum: Clinical presentation, diagnosis and treatment: Systematic review of 166 cases. *World J Gastroenterol*. 21(1): 360–368.

P050 RARE case of simple appendiceal mucocele

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An appendiceal mucocele is described as a dilated and abnormal accumulation of mucin in the appendix, most commonly as a result of epithelial proliferation. However, it can also be caused by an obstruction or inflammation of the appendix. It is a rare disease and sometimes it can present like an acute appendicitis. Computed tomography should be used vastly to prevent serious complications such as pseudomyxoma peritonei, if underlying pathology is

neoplasm, or ileocolic intussusception We present here a case study on patient with an appendiceal mucocele, together with its radiological, endoscopic as well as histological features. A 74-year-old gentlemen was referred for a colonoscopy due to symptom of anaemia. He had an incidental finding of abnormal appendix orifice bulging into the lumen for about 15mm with an appearance of submucosal cystic lesion. He subsequently had a CT thorax, abdomen and pelvis which showed a 7-8cm appendiceal mucocele with 1.8cm diameter. An urgent Laparoscopic Appendectomy was performed, which revealed an intact but large distended appendix with 9cm in length. The appendiceal lumen was filled with mucus material. No polyps or tumour identified. Histological examination revealed that this was a simple appendiceal mucocele with no evidence of malignancy. The patient was well post-operatively with no complication noted.

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- Louis TH, Felter DF. Mucocele of the appendix. *Proc (Bayl Univ Med Cent)*. 2014;27(1):33-34. doi:10.1080/08998280.2014.11929046
- Radswiki, T., Sharma, R. Appendiceal mucocele. Reference article, *Radiopaedia.org*. (accessed on 14 Dec 2021) <https://doi.org/10.53347/rID-12273>

P051 An audit to evaluate the success rates and complication rates of percutaneous image guided liver biopsy

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Percutaneous image-guided biopsy is performed widely at most centres in the UK for focal liver lesions, with a move towards the use of image guidance (ultrasound or CT) for non-focal liver biopsy to enhance diagnostic yield and reduce complications. We report an audit assessing the biopsy success and complication rates at a major department over one year. Guidelines have set recommended parameters for various stages of the biopsy process, and these were the focus of our audit (1). All patients who underwent percutaneous liver biopsy between January 2021 to January 2022 were assessed against the audit standard table (Table 1). Procedure documentation and PACS reports were used to gather information on complications, needle size and number of passes. Tissue histopathology reports were reviewed to assess adequacy. The findings were presented at the departmental audit meeting and disseminated among interventionalists, radiographers and support staff. Overall, the results are within the accepted standards which is reassuring for our department. A future re-audit is recommended to ensure quality is maintained. Minor complications included abdominal/ shoulder tip pain with two patients having vasovagal symptoms. No link was found between the needle gauge, number of passes, complication and success rates. However, this was not statistically tested. This audit will prove useful when consenting patients as department statistics can be presented. It can also be a reference for future audits. In future audits, it may be interesting to assess success and complication rates in targeted versus non-targeted liver biopsies

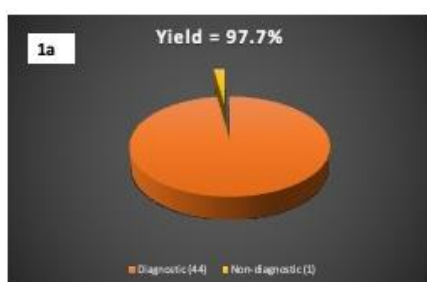


Figure 1a shows the success rate.

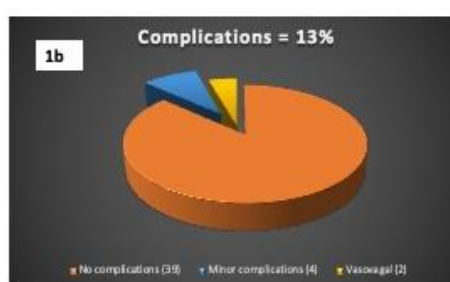


Figure 1b shows the complication rate.

(2).

Table 1. Audit standard ¹

Success rate	>98%
Complication Rate	<30%

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P052 Finding the Baseline in PETCT: accuracy of different liver reference sample SUV measurements compared to a gold standard whole liver measurement

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Purpose or learning objectives: PETCT is now well-established as the modality of choice in the assessment of various cancers. A number of scales have been devised such as the Deauville score which use liver uptake as an internal reference. SUVmax values for the liver may vary, however, between readers and the technique used to sample and measure the liver. Consequently, this may result in an inaccurate final score which may affect patient management. This study assesses the accuracy of background reference liver SUVmax measurements between readers and measurement techniques compared to a gold standard whole liver measurement.

Methods or background: We assessed a series of PETCT scans performed at our institution between 2017-2019. Two independent readers performed blinded 2D and 3D region-of-interest measurements of liver SUVmax on a subset of 30 patients to assess inter-observer reliability. 104 scans were then assessed by three readers. 2D and 3D region-of-interest liver SUVmax measurements were made followed by a whole liver SUVmax 'gold standard' measurement for each case.

Results or findings: The two independent readers' initial measurements showed high interobserver reliability. We present a comparison between the 2D and 3D liver SUVmax values with the whole liver 'gold standard', including relevant statistical analyses.

Conclusion: Our data provides evidence for whether a 2D or 3D region-of-interest measurement is more accurate in assessing background liver uptake. Limitations: A larger study series would have more accurate results. Three different readers assessments may have led to some measurement error. Whole liver 'gold standard' measurement was difficult to obtain.

P053 The role of water-soluble contrast enemas in assessing anastomoses prior to ileostomy reversal, and their influence on patient outcomes

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Background: Water-soluble contrast enemas (WSCE) are routinely performed to check anastomotic integrity and patency in patients who have undergone a low anterior resection and loop ileostomy formation, in preparation for subsequent ileostomy reversal. The use of WSCE remains controversial¹ and no specific guideline exists in this regard. Our aim was to evaluate whether WSCE influence management and postoperative outcomes.

Method: WSCE examinations performed between January 2019 to March 2021 were retrieved. Radiology reports, discharge summaries, and clinic letters were retrospectively collected from prospectively maintained data to determine outcomes.

Results: Over the 24-month period, we identified 63 patients who underwent a WSCE following an anterior resection. Seven had positive radiological leaks (11%), and six of these seven underwent further investigations, then either proceeded to a successful reversal (3) or are awaiting surgery (3). Additionally, WSCE identified 10 strictures (16%). Again, due to these findings, they underwent additional investigations before proceeding to interventions (ileostomy reversal, endoscopic dilatation, or resection of stenosed anastomosis). Only one (2%) ileostomy reversal was not successful due to a small bowel leak, not related to the low anastomosis.

Conclusion: This study demonstrates a positive WSCE result impacts subsequent investigations or interventions required. A positive result (leak or stricture) was never a contra-indication for reversal, and none of the positive results had significant postoperative complications. The only unsuccessful reversal was not related to the low anastomosis.

1. Habib, K., Gupta, A., White, D., Mazari, F.A.K. and Wilson, T.R. (2015). Utility of contrast enema to assess anastomotic integrity and the natural history of radiological leaks after low rectal surgery: systematic review and meta-analysis. *International Journal of Colorectal Disease*, 30(8), pp 1007-1014.

P054 An audit to assess the availability of eGFR results in patients for CT IV contrast examination

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Background: Iodinated contrast agents can cause contrast-induced acute kidney injury (CI-AKI) especially in patients with certain risk factors including diabetes and known kidney problems. Estimated Glomerular filtration rate (eGFR) is recommended as the preferred parameter for assessing renal function prior to CT contrast examination^{1,3}. Guidelines from ESUR 2018 recommend the provision of eGFR results at the point of referral¹ while guidelines from ESUR 2018, NICE 2019 and RANZCR 2018 identify previous kidney problems and known diabetes as common risk factors to CI-AKI^{1,2,3}.

Method: All outpatient CT IV contrast examinations were included retrospectively from January -- February 2021. eGFR results and history of previous kidney disease and diabetes were obtained both from referral notes and patients' responses to contrast safety questions as entered on CRIS (Computerised Radiology Information System).

Results: 1,943 outpatient CT IV contrast examinations were performed between January-February 2021. 949 (49%) patients did not have recent eGFR results (≤ 3 months) available before their CT appointment. 23% of these patients had risk factors for CI-AKI as agreed by the referred guidelines, with a total of 7%, 14% and 2% having a history of known kidney problems, diabetes and both respectively. In addition, 119 out of 153 patients with diabetes were on metformin medication, an added risk to CI-AKI³.

Conclusion: The audit does not meet the current available guidelines and hence there is a need to develop a robust local policy on CT IV contrast examinations. This should emphasize the referrer's responsibility to provide renal function results for patients especially those with risk factors to CI-AKI.

1. ESUR contrast media safety committee, Thomsen, H., Stacul, F., Almen, T., Bellin, M., Bertolotto M. et al. (2018). ESUR Guidelines on Contrast Agents. 10.0. European Society of Urogenital Radiology. Version 10. 2. National Institute For Health and Care Excellence (NICE). (2019). Acute kidney injury: prevention, detection and management [Online] [Viewed 20th September, 2021]. Available from: www.nice.org.uk/guidance/ng148 ©. 3. The Royal Australian and New Zealand College of Radiologists (RANZCR). (2018). Iodinated contrast media guideline. V2.3 [online]. [Viewed 20th September, 2021]. Available from: <https://www.ranzcr.com/college/document-library/ranzcr-iodinated-contrast-guidelines>



PAEDIATRICS POSTER PRESENTATIONS

P055 Optimising image quality and radiation dose for neonatal incubator imaging

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Introduction: Neonates often require imaging within incubators however limited evidence exists as to the optimal method and acquisition parameters to achieve these examinations. This study aims to standardise and optimise neonatal chest radiography within incubators.

Methods: A neonatal anthropomorphic phantom was imaged on two different incubators under controlled conditions using a DR system. Exposure factors, SID and placement of image receptor (direct v tray) were explored whilst keeping all other parameters consistent. Image quality was evaluated using absolute visual grading analysis (VGA) with contrast-to-noise ratio (CNR) also calculated for comparison. Effective dose was established using Monte Carlo simulation using entrance surface dose within its calculations.

Results: VGA and CNR reduced significantly ($p < 0.05$) whilst effective dose increased significantly ($p < 0.05$) for images acquired using the incubator tray. The optimal combinations of parameters for incubator imaging were: image receptor directly behind neonate, 0.5mAs, 60kV at 100cm SID, however, if tray needs to be used then these need to be adapted to: 1mAs at maximum achievable SID. Effective dose was highest for images acquired using both incubator tray and 100cm SID owing to a decrease in focus to skin distance. There is significant increase ($p < 0.01$) in VGA between using 0.5mAs and 1mAs but an apparent lack of increase between 1 to 1.5mAs.