in health care costs. One suggested method to reduce premature drain removal is to use intercostal drains with ballooned tips. These would provide a relatively atraumatic physical obstruction to the thoracostomy site, whilst being easy to use as stitching or extensive taping may not be required.

Methods We conducted a pilot study of a dedicated 16F ballooned intercostal drain (Rocket Medical; Figure 1) to assess its safety and feasibility, and to give an indication as to whether a reduction in accidental early drain removal could be achieved. Drains were inserted under ultrasound guidance using the Seldinger technique and secured with dedicated dressings. Skin sutures were not applied. Pain scores were collected from a subset of 11 patients using a visual analogue scale (VAS) from 0 (no pain) to 10 (worst pain imaginable) at insertion, 24h post-insertion, and drain removal to ensure pleural irritation was not prohibitive.

Results Twenty patients requiring intercostal tube drainage as an in-patient for pleural effusion were recruited from a single hospital site. Of the drains inserted, 1/20 (5%) was prematurely dislodged, comparing favourably with the literature. Inspection of the device showed that the balloon had become partially unglued from the drain, hence deflation. The patient did not require further pleural procedures. No other drain-related adverse events were recorded. The drains were generally well tolerated, with median(range) pain scores at insertion, 24 hours, and removal of 1 (0–7), 3 (0–8), and 2 (0–7).

Conclusion The use of a dedicated ballooned intercostal drain is safe and feasible, and may reduce the need for drain re-siting. A larger randomised trial is planned.

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Lung Cancer Investigations

P16 RADIAL EBUS BIOPSY WITH GUIDE SHEATH FOR PERIPHERAL PULMONARY LESIONS

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Introduction The aim of lung cancer screening programs is the detection of early lung cancer, which may appear as small peripheral pulmonary lesion (PPL). Although radial EBUS guided biopsy is recommended by NICE to obtain tissue diagnosis in PPL which cannot be seen by conventional bronchoscopy, there is a paucity of published data within the UK regarding this technique. We looked at our 4-year radial EBUS results at our tertiary centre.

Methods We reviewed 71 consecutive patients who underwent radial EBUS guided biopsy for investigation of a PPL, performed using a guide sheath (K201 or K203) by a consultant operator assisted by a respiratory trainee. We assessed the diagnostic rate, yield from sampling techniques (biopsy vs brushings), whether the diagnosis correlated with other procedures/management, and any complications.

Results Mean patient age was 70 years (range 44–89), 38 female, and 41 (58%) had undergone 1 or more unsuccessful investigations at their local hospital. We were able to visualise the lesion by ultrasound leading to subsequent sampling in 62/71 (87 %)

patients. A diagnosis of malignancy was confirmed in 41/62 (66%) patients. Of the 21 biopsies which did not demonstrate malignancy, 11 were subsequently shown to have cancer (false negatives—pathological diagnosis by other methods or clinical-radiological diagnosis or awaiting follow up) but were 10 true negative (resolution or 2 year stability on CT scan). The yield for malignancy was superior with brushings (88%) compared to biopsy (73%). The overall sensitivity for cancer was 72% (N = 71, whole cohort) and 82% (N = 62, lesion was visualised by ultrasound) respectively. Two patients developed a pneumothorax which did not require intervention.

Conclusions Radial EBUS is a safe and effective technique in obtaining tissue diagnosis in PPL not amenable to other biopsy methods. We visualised the lesion in 87% of patients and our diagnostic yield for malignancy is similar to current standards. Radial EBUS should take a more prominent role in diagnostic pathways for PPL within the UK, particularly in the context of future lung cancer screening programmes.

P17 A RETROSPECTIVE ANALYSIS COMPARING THE USE OF PROCORE WITH STANDARD FINE NEEDLE ASPIRATION IN ENDOBRONCHIAL ULTRASOUND GUIDED TRANSBRONCHIAL NEEDLE ASPIRATION (EBUS-TBNA)

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Endobronchial ultrasound has become first line in the investigation of mediastinal lesions suspicious for malignancy in keeping with NICE guidelines, however needle size and type, along with number of passes required to maximise diagnostic sensitivity remains unclear.

Previous meta-analyses, the largest of which included 576 patients,¹ have compared the use of ProCore with standard fine needle aspiration in the assessment of pancreatic masses with differences noted only in the number of passes required.

We aim to assess whether a ProCore needle improves diagnostic sensitivity in EBUS-TBNA.

Complete follow up data regarding all 235 patients undergoing EBUS-TBNA in a district general hospital has been collected since the service's inception in 2012. Results were collated and retrospectively analysed allowing for calculation of test sensitivity and specificity. Comparison was then made between procedures where standard fine needle aspiration was performed and those using a ProCore needle.

Overall sensitivity of EBUS-TBNA was shown to be 85% with a specificity of 100% in keeping with quoted figures from other centres. Standard fine needle aspiration produced a sensitivity of 77% (85/110) versus ProCore sensitivity of 92% (115/125) with a p value of 0.0016.

30% (33/110) of patients undergoing standard fine needle aspiration required an appropriate crossover technique such as mediastinoscopy or CT guided FNA in order to either obtain or confirm the diagnosis compared with 15% (19/125) of the ProCore group with a p value of 0.0064.

Our retrospective analysis shows a statistically significant difference in the diagnostic sensitivity of sampling mediastinal lymphadenopathy using a ProCore needle compared with standard fine needle aspiration. It also shows that a significantly fewer number of patients required further procedures in order to obtain or confirm the diagnosis. This could potentially be confounded by the retrospective nature of the study design, however due to

the statistical significance demonstrated, further study is required in the form of a randomised control trial.

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P18 DO BRONCHIAL WASHINGS IMPROVE DIAGNOSTIC YIELD IN PATIENTS UNDERGOING EBUS-TBNA

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Introduction EBUS is increasingly used in the diagnosis and staging of lung cancer, particularly where there are no endobronchial lesions. Despite this, in these cases referring physicians often request bronchial washings to be performed at the same time, in the hope of increasing diagnostic yield. We wished to investigate whether this added to the information provided by EBUS-TBNA in such patients.

Methods We looked at all patients who underwent EBUS procedures at our tertiary centre in the last six months, who also had washings taken for cytology at the same sitting where there were no visible endobronchial lesions. We compared the diagnostic yield from EBUS-TBNA with that from the bronchial washings.

Results Of the 111 EBUS patients, 40 underwent concurrent bronchial washings for cytology (mean age 70 years (range 23–89), 23 (58%) male). EBUS-TBNA samples were diagnostic in 39 (98%): 31 malignancy (12 adenocarcinoma, 11 squamous cell carcinoma, 3 small cell carcinoma, 2 carcinoid, 2 breast adenocarcinoma, 1 renal cell carcinoma) and 8 were benign disease. Although bronchial washings were also diagnostic for malignancy in 7 (18%) (4 squamous cell carcinoma, 3 adenocarcinoma), all these cases also had positive EBUS-TBNA samples. There were no cases in which bronchial washings provided the diagnosis in the context of a negative EBUS-TBNA sample.

Conclusions This is the first study to evaluate the effectiveness of bronchial washings in addition to EBUS-TBNA sampling, where there is no visible endobronchial disease. Since each cytological sample analysis costs £75, elimination of bronchial washings in our patients could have saved £3000 over this 6-month period. We conclude that in those patients undergoing EBUS-TBNA, who also have peripheral pulmonary lesions, bronchial washings do not improve the diagnostic yield, and should not constitute routine practice.

P19 CENTRAL AIRWAY OBSTRUCTION IN BRONCHOGENIC CARCINOMA

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Background Endobronchial compromise with central airways obstruction (CAO) is a life threatening complication of lung cancer. Endobronchial treatments provide immediate symptom relief, while allowing other treatment modalities to begin. Yet the prevalence of this condition is poorly defined. We set to identify the prevalence of CAO to inform the development of an interventional service.

Method Between 11/2014–11/2015, we reviewed the index computer tomography (CT) scans of all patients diagnosed with a thoracic malignancy. Data collected included staging and the presence of endobronchial involvement. In patients with reported endobronchial involvement, images were reviewed for suitability of airway treatment.

Results Over the study period 434 patients were diagnosed with a thoracic malignancy. In 51 non-primary bronchogenic malignancies were identified, including 41 mesotheliomas. Of the remaining 383 patients with lung cancer, 359 underwent an index CT scan. Staging by CT was reported in 291 (81.0%) patients. Of the 359 patients with CT imaging available, endobronchial disease was present in 111 (30.9% (95% confidence intervals (CI) 26.1–35.7%), with 29 (8.0%; 95% CI: 5.2–10.8%) patients having CAO. Of these, the commonest site was the bronchus intermedius (62.1%). The median degree of obstruction was 71.4% (interquartile range 50–100). Extrinsic compression was dominant in 8 (27.6%) patients. By cell type, squamous cell carcinoma, NSCLC-NOS, small cell lung carcinoma, and adenocarcinoma accounted for 9 (31.0%), 5 (17.2%), 4 (13.8%), and 4 (13.8%) cases respectively. In 9 (31.0%) no histology was available. Of those patients with CAO, 26 (89.7%) could be considered for airway treatments, however only 3 (12%) had a therapeutic procedure performed. Of 18 patients with follow up imaging, 8 (44%) developed obstructive complications.

Conclusions CAO affects nearly 1 in 10 lung cancer patients at the time of diagnosis and services should be developed to evaluate and offer timely intervention. Further longitudinal data will help predict the risk of developing central airways obstruction.

P20 HAEMOPTYSIS IN PATIENTS WITH NO EVIDENCE OF LUNG MALIGNANCY ON COMPUTED TOMOGRAPHY-IS FLEXIBLE BRONCHOSCOPY NECESSARY?

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Background Current NICE guidelines for lung cancer advocate referral to fast track clinic for unexplained haemoptysis in patients who are aged 40 and over. The current practice in our respiratory department and in most units across United Kingdom is to investigate this with a CXR, computed tomography (CT) thorax and flexible bronchoscopy regardless of the findings of the CT.

Aim The aim of this study was to evaluate whether bronchoscopy adds any further value to the findings of highly sensitive CT scans in the current era. We particularly wanted to look at number of serious pathologies such as cancer detected by flexible bronchoscopy in these patients.

Methods A retrospective analysis was conducted using our local bronchoscopy database which identified 148 flexible bronchoscopy episodes that fulfilled our inclusion criteria (all patients undergoing bronchoscopy for haemoptysis who had already undergone CT thorax which did not identify a cause for this). The cases were included irrespective of their smoking status and age and covered a period of 4 years between 2011 and 2015.

Results A total of 148 flexible bronchoscopy episodes were reviewed. Female to male ratio was 1:3 and mean age was 59 years. 72% of patients were smokers. There was no case of lung cancer identified in this cohort of patients. No pathological finding was identified in 87% (129) of the cases. The common