cancer. We believe that our finding is based on differences in EBUS-TBNA and EUS-FNA accessibility to the mediastinum. Additional benefits of EBUS-TBNA in the EUS-centred group were mainly obtained from targeting inaccessible nodes by EUS (2R or 4R). Subcarinal nodes are generally accessible by EUS; however, some parts may not be covered by EUS. Among four metastatic subcarinal nodes diagnosed only by EBUS in the EUS-centred group, the right sides of the subcarinal nodes were not well visualised by EUS in three cases (figure 1). In one patient, performing EUS-FNA on subcarinal nodes was difficult due to a haematoma that developed following the sampling of the 4 L nodes. Of the four cases, two cases were counted as having benefited from EBUS-TBNA in 'detecting' mediastinal metastasis. In the two other cases, metastases of the other nodes were diagnosed by EUS. As Dr Annema commented¹, we missed three metastatic subcarinal nodes by endoscopic staging. We believe that this false-negative result is because these nodes had very small metastatic foci. Surgery identified microscopic metastatic foci in two cases (2.2 and 0.8 mm, respectively). In the third case, the size of the subcarinal node was 14×42 mm on chest CT scans; however, three metastatic foci diagnosed by surgery were relatively small (5.5, 2 and 2 mm). Two aspirations by each method missed these foci. To miss small metastatic foci is a limitation of endoscopic staging.^{3 4}

Secondary procedures were added for inaccessible locations or areas difficult to access by the first procedure. In the EBUS-centred group, common targets of EUS-FNA were nodal stations 4 L and 7.² However, large areas of the nodes were already covered by EBUS-TBNA, the mean aspiration number by EUS per target was 1.6 and the procedure time was short. The higher aspiration number by the first procedure in the EBUS-centred group compared with the EUS-centred group (mean 8.1 vs 4.1)² is due to a higher accessibility to the mediastinum by EBUS.⁵ The number of nodal stations sampled by the first procedure was higher in the EBUS-centred group (mean 3.0 vs 1.9).² The number of aspirations per nodal station by the first procedure was slightly higher in the EBUS-centred group (2.7 (8.1/3.0) vs 2.2 (4.1/1.9)). This may be explained by the fact that larger areas are covered by EBUS-TBNA. Station 4R nodes were aspirated 2.9 times on average by EBUS-TBNA in order to cover the anterior-tracheal and right paratracheal

Author's response to 'Complete (EBUS and EUS) endosonographic staging of lung cancer'

We thank Dr Annema¹ for his thoughtful comments on our article published online in *Thorax*.² We observed a significant diagnostic benefit from endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) following endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) in the mediastinal staging of potentially operable lung

Figure 1 Cases with metastatic subcarinal nodes diagnosed only by EBUS-TBNA in the EUS-centred group. (A) In a patient (F/68) with adenocarcinoma in the right middle lobe, EUS-FNA on station 4 L was negative. The main part of station 7 was not well visualised by EUS. EBUS-TBNA on the right side of the subcarinal node was diagnostic of metastasis, which diagnosed N2 disease. (B) In a patient (M/54) with right upper lobe adenocarcinoma, EUS-FNA on station 1R detected metastasis. EUS-FNA that covered the upper part of station 7 was negative. The right lower area of station 7 was not well visualised by EUS due to the azygos vein. EBUS-TBNA that covered the right parts of station 7 showed metastasis. Stations 2R and 4R were also positive by EBUS-TBNA. EUS-FNA, endoscopic ultrasound-guided fine needle aspiration; EBUS-TBNA, endobronchial ultrasound-guided transbronchial needle aspiration; Eso., oesophagus; LN, lymph node; RML, right middle lobe; v., vein.

parts. Subcarinal nodes were also aspirated three times on average by EBUS-TBNA in the EBUS-centred group in order to cover the right and left parts through both main bronchi and the bronchus intermedius.

We used different needles for EBUS-TBNA and EUS-FNA. EBUS-TBNA and EUS-FNA are not sterile procedures because scopes are inserted through the mouth and pharynx. Oesophageal bacterial species have shown similar patterns as oral flora.⁶ In our study, the ultrasonic bronchoscope channel was flushed with 70% alcohol, and the surface of the bronchoscope was cleaned with alcohol after the first procedure to avoid excessive contamination by bronchial or oesophageal secretions.

We think that EUS-FNA is a good procedure when EBUS-TBNA is difficult. Based on our studies,^{2–5} we perform EBUS-TBNA as the main procedure for the mediastinal staging of operable lung cancer. We add EUS when locations that are difficult or inaccessible by EBUS-TBNA are noticed or when bronchoscopy is difficult due to severe cough, hypoxia and other conditions.

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