

CASE REPORT

Accidental fracture of EBUS-TBNA needle during sampling of an enlarged mediastinal lymph node

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Abstract

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) for sampling enlarged hilar and mediastinal lymph nodes, and mediastinal tumours is a safe procedure and can be performed under sedation and local anaesthesia. Rare complications of this procedure include haemorrhage, pneumothorax, pneumonia, mediastinitis and pericarditis (Asano F et al., Complications associated with endobronchial ultrasound-guided transbronchial needle aspiration: a nationwide survey by the Japan Society for Respiratory Endoscopy. *Respir Res* 2013;14:50). I report an unexpected fracture of the tip of the EBUS-TBNA needle as it hit a bronchial cartilage ring during attempted insertion into a subcarinal node.

INTRODUCTION

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a relatively new procedure for assessing hilar and mediastinal adenopathy. It is generally safe, with a high degree of specificity, sensitivity, positive and negative predictive values, and diagnostic accuracy [2, 3]. Its merit in assessing the mediastinal nodal staging for lung cancer is also recognized [3, 4]. I report an unexpected event of the EBUS-TBNA needle tip snapping as it hit a bronchial cartilage ring during sampling of an enlarged subcarinal lymph node. After successful retrieval of the broken needle, the EBUS-TBNA sampling was completed using a new needle. Neither the patient suffered harm nor any damage occurred to the endobronchial ultrasound (EBUS) bronchoscope.

CASE REPORT

A 74-year-old man had wedge resection and mediastinal nodal clearance for a T2aN2M0 moderately differentiated adenocarcinoma in left upper lobe, in November 2012. The patient declined a completion lobectomy. Hence he was treated with adjuvant chemotherapy. He previously had excision of a T3N2M0 rectal

cancer followed by chemotherapy, and was living with a long-term colostomy. No local or distant metastases from his rectal cancer were identified through more than 4 years of follow-up.

In November 2015, his surveillance contrast-enhanced computed tomography (CT) scan of chest, abdomen and pelvis revealed enlarged pre-carinal and sub-carinal lymph nodes, with the sub-carinal node showing central necrosis (Fig. 1).

He had an EBUS bronchoscopy under sedation (midazolam 2 mg and fentanyl 50 mcg intravenously). The enlarged sub-carinal node was identified. Unexpectedly, the EBUS transbronchial sampling needle (22 gauge; Cook®, USA) hit a cartilage ring in right main bronchus just below the carina, and snapped, with a 15 mm broken end of the needle left stuck in the bronchial wall. The EBUS bronchoscope and the long part of the needle were removed. A video bronchoscope was introduced and the broken needle was retrieved by forceps. The patient was given top-up intravenous sedation with 2 mg midazolam and 50 mcg fentanyl and the EBUS procedure was completed using a new needle. The samples confirmed nodal recurrence of lung adenocarcinoma. Hence the patient was referred to the oncology service following a review of histology in the lung cancer multi-disciplinary team meeting.

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Figure 1: CT scan image showing the enlarged subcarinal lymph nodes with central necrosis.



Figure 2: The 15 mm tip of the EBUS-TBNA needle showing the site of fracture close to the junction between the long, shiny electroplated section and the coarse distal end.

DISCUSSION

The first case of EBUS-TBNA needle breakage was described by Özgül *et al.* in 2014 [5]. The accident had occurred while the needle was moved back and forth for sample collection during the third pass, following its successful introduction into the lymph node. In the current report, however, the needle broke at the first attempted pass as it hit a bronchial cartilage ring. Furthermore, the bronchoscopist was not aware of using excessive force, which might have caused the needle to break.

A recent national survey from Japan included 7345 EBUS-TBNA procedures, and reported a number of rare complications of EBUS-TBNA including bleeding, pneumothorax, infection such as pneumonia and mediastinitis, lignocaine toxicity, pericarditis and breakage of the EBUS bronchoscope [1]. In this survey, breakdown of the needle during EBUS-guided mediastinal node sampling was reported in 0.2% procedures only. However, it is not clear from the report whether these cases involved a complete break of the EBUS-TBNA needle, similar to the case

described above, or simply had a minor kink in the needle, which sometimes does happen during sampling. The authors also did not further elaborate the outcome of the small number of procedures complicated by accidental needle breakdown or fracture [1].

Fortunately in the case described here, there were no complications such as any harm to the patient or the EBUS bronchoscope getting damaged due to needle breaking in the right main bronchus. The patient remained stable post-bronchoscopy and was discharged the same day.

The bronchoscopist subsequently noted that the needle had snapped very close to the junction between the long, shiny electroplated portion and the coarse end of the needle (Fig. 2), and wondered whether this junction is a relatively weak point along the length of the needle. Özgül *et al.* in their report had also noted the site of breakage close to the junction between the shiny long portion and the coarse short end of the needle [5].

This unexpected event was discussed in the lung cancer multi-disciplinary team meeting and a report was filed on hospital's dedicated incident reporting website. The needle identifier number and batch number were noted and forwarded to the company supplying EBUS-TBNA needles to our endoscopy unit. The fact the needle had snapped close to the junction between the long shiny part and the coarse end bit was also highlighted, as this may represent a weak point in the needle's structure requiring further investigation.

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CONFLICT OF INTEREST STATEMENT

None declared.

FUNDING

No funding to report.

ETHICAL APPROVAL

Not required as the events described were part of routine service.

CONSENT

Written consent from the patient uploaded.

GUARANTOR

S. M. Tariq is a guarantor of this study.

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