A Case Report of Endobronchial Ultrasound Needle Fracture

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Abstract
Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) has many potential complications though most occur infrequently. We encountered a case in which the EBUS needle broke during TBNA. The patient was a 65 year old man who underwent EBUS-TBNA for right paratracheal lymphadenopathy. During the procedure, the TBNA needle was found to be broken. We were able to completely recover it without any complications to the patient or to the EBUS scope.

Keywords
Endobronchial ultrasound, Transbronchial needle fracture

Introduction
EBUS-TBNA has gained popularity within the last decade. Compared to mediastinoscopy and biopsy, EBUS-TBNA boasts comparable results in terms of diagnosing and staging of lung cancer [1]. It is generally safe and minimally invasive. It is also used to diagnose benign causes of mediastinal adenopathy. The potential (albeit rare) complications from EBUS-TBNA include vascular puncture with mediastinal hemorrhage, air embolism, mediastinitis, bleeding into the airway [2-4]. Here we present a rare complication of equipment failure where an EBUS needle breakage occurred during the procedure. We perform EBUS-TBNA routinely at our institution and this is the first time we have observed this type of complication.

Case Report
A 65 year old man with multiple medical problems including coronary artery disease status post coronary artery bypass graft, chronic atrial fibrillation, congestive heart failure, diabetes mellitus, rheumatoid arthritis, peripheral arterial disease was sent to the bronchoscopy lab to evaluate for the increasing size of his right paratracheal lymph node. At the time of his procedure, the size of this 4R station lymph node was 2.3 × 2.2 cm. The lymph node was located by EBUS. Three fine needle aspiration (FNA) samples were taken. On the third pass, the needle handle became extremely loose and felt very unusual to the operator. At this time the needle system was removed from the EBUS bronchoscope. The EBUS bronchoscope was pulled back in the trachea and the operator noticed that the needle was still inserted in the right paratracheal position. The EBUS scope was removed and the guidewire connected to the needle was seen extending through the entire trachea, through the vocal cords and out of the mouth (Figure 1). The patient remained stable. A standard flexible video bronchoscope was inserted into trachea. The guidewire and needle were clearly seen, with the needle protruding from the right paratracheal area approximately 2 cm from the main carina (Figure 2 and Figure 3). No bleeding was noted. The needle and guidewire were removed intact by pulling on the guidewire protruding from the patients mouth (Figure 1). On inspection, no damage to the bronchial mucosa or upper respiratory tract was noted. No damage to the EBUS scope was noted. The EBUS scope was reinserted and the lymph node displayed no apparent ultrasound abnormalities. Two more FNA samples were obtained using a new needle. Adequate tissue was collected and confirmed by rapid on site evaluation as suspicious for small cell carcinoma. Post procedure chest X-ray did not demonstrate any abnormalities and the final pathology result confirmed small cell carcinoma. Photos were obtained at various points in the procedure and consent for disclosure of events and photographs were obtained after the case was concluded.

Discussion
There has been an emerging use of EBUS-TBNA instead of over mediastinoscopy for biopsy of mediastinal and hilar lymphadenopathy given it is less invasive and of comparable sensitivity. It enables...
mass with associated pleural effusion and mediastinal/hilar lymphadenopathy. The bronchoscopist felt unexpected resistance while advancing the needle through the working channel. The catheter was withdrawn and it was noted that the needle had been inadvertently advanced while still within the working channel. The remainder of the procedure was performed without any complications. During sterilization of the bronchoscope, it was found to be damaged. Several days after the procedure, the patient called in and reported that he had coughed up a spring, which was determined the that spring-like unit was a piece of the single use EBUS-TBNA aspiration needle [4].

Our presented case involved a unique pattern of needle breakage in that it fractured at the point where the catheter enters the handle of the needle apparatus (Figure 4). Similar cases were not reported previously. The needle breakage was discovered immediately, and we removed the broken segment completely without difficulty. The remainder of the procedure went smoothly, a diagnosis was confirmed and no harm came to the patient or to the EBUS scope. In retrospect, it is most likely that the wire that is connected to the needle was kinked as the needle was inserted into the working channel of the bronchoscope. It is believed that this most likely weakened the connecting wire and when the needle was deployed, it fractured at this kinked area.

Conclusion

Although many complications of EBUS-TBNA procedure have been reported, needle breakage is relatively rare. This type of needle breakage with complete recovery has not yet been reported. We recommend that if any segment of the needle apparatus becomes damaged during the procedure, that needle should be discarded and replaced with a new needle system to complete the procedure.

References