Newer Techniques

Nasal route for endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA): An alternative modality in difficult oral bronchoscope insertion

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ABSTRACT

Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is usually performed under moderate sedation through the oral approach. Oral insertion is performed owing to the larger size of the EBUS bronchoscope as well as the delicate and rigid distal end with an integrated ultrasound transducer assembly. Nasal route for EBUS scope insertion has been described as a feasible alternative. We herein report a patient wherein inability to introduce the EBUS bronchoscope through the mouth necessitated nasal insertion of the bronchoscope to successfully perform EBUS-TBNA. We discuss the relevant issues comparing the nasal and oral introduction of the EBUS bronchoscope.

KEY WORDS: Bronchoscopy, endobronchial ultrasound, endobronchial ultrasound-guided transbronchial needle aspiration

INTRODUCTION

Convex probe endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is an indispensable modality for the evaluation of mediastinal lymphadenopathy and masses of various etiologies. The procedure is usually performed on daycare basis under moderate conscious sedation though many bronchoscopists prefer general anesthesia and perform the procedure through endotracheal tube or supraglottic airway. When performed under conscious sedation, the EBUS bronchoscope is conventionally inserted through the oral route owing to the larger diameter of the scope as compared with a conventional adult flexible video bronchoscope and the presence of a rigid distal end with incorporated delicate ultrasound transducer assembly at the tip which may get damaged with rough handling. However, in certain circumstances, particularly where oral insertion of the scope is not feasible due to reasons such as anatomical distortion or presence of an oropharyngeal mass, nasal route for EBUS scope insertion may be an alternative. Few studies have described the feasibility of nasal route for performing EBUS-TBNA. We herein report a patient where inability to introduce the EBUS bronchoscope orally necessitated the utilization of nasal approach to perform the procedure.

CASE REPORT

A 30-year-old never-smoker male patient was evaluated under the ENT services for complaints of a painless oral ulcer over right gingivobuccal sulcus and reduced mouth opening for 4 months. Biopsy from the lesion revealed squamous cell carcinoma...
and patient received radiotherapy. After 5 cycles of radiotherapy, 18-fluorodeoxyglucose-positron emission tomography-computed tomography (18-FDG-PET-CT) scan was performed for feasibility of surgical resection. PET-CT demonstrated uptake in primary mass in right gingivobuccal area and a FDG-avid right lower paratracheal lymph node [Figure 1]. For evaluation of the mediastinal lymphadenopathy, the patient was referred to us for EBUS-TBNA.

At our center, we routinely perform EBUS-TBNA under moderate conscious sedation through oral route after insertion of a bite block. This patient had markedly restricted mouth opening (<1 finger) and had a large ulcerative growth over right buccal mucosa. Externally, swelling was apparent over the right cheek also [Figure 2]. EBUS scope insertion through the mouth was not feasible due to risk of oral bleeding and difficult insertion and maneuvering. In view of these issues, it was decided to perform the procedure through nasal route. Under conscious sedation (following intravenous administration of midazolam 2 mg and fentanyl 50 mcg), the EBUS bronchoscope (Olympus BFUC-180F, outer diameter 6.9 mm, Olympus Corporation, Japan) was introduced through left nostril. Five mL of 2% lignocaine gel was instilled in the nostril for lubrication and local anesthesia before bronchoscope introduction. EBUS bronchoscope was carefully and gently advanced through the nostril and anesthesia during the rest of the procedure was obtained by 2% lignocaine solution administered “spray as you go.” All lymph node stations including bilateral paratracheal, hilar, interlobar, and subcarinal were screened systematically without any difficulty in scope manipulation. A 12 mm × 10 mm sized lower right paratracheal lymph node (station 4R) was identified and three passes were obtained using 21-G EBUS needle (ViziShot, Olympus Corporation, Japan). Rapid-onsite examination was suggestive of the presence of malignant cells. Total procedure duration was 20 min. There were no procedural complications.

Final cytological examination was consistent with the diagnosis of metastatic squamous cell carcinoma. The patient was referred to radiation oncology services for further management.

**DISCUSSION**

This report highlights that the nasal route is a feasible alternative for performing EBUS-TBNA in patients with issues related to difficult oral introduction of the EBUS bronchoscope. It can be a safe and feasible alternative in patients with restricted oral opening due to conditions such as temporomandibular joint disease, oral submucosal fibrosis, or oral malignancies. We did not encounter any complication related to nasal insertion of scope and it did not affect the ability to screen all EBUS accessible mediastinal lymph node stations.

EBUS-TBNA is conventionally performed through oral route in most centres due to larger scope size and most operators are trained with oral route for EBUS-TBNA. On the contrary, flexible bronchoscopy is performed most commonly through nasal route. Nasal route is perceived to provide more scope stability and thus leading to easy performance of various bronchoscopic procedures. A recent randomized open-label trial compared nasal and oral approach for EBUS-TBNA under conscious sedation.[2] No difference was found in patient comfort, diagnostic utility, and procedural complications between oral and nasal route. This trial highlighted the feasibility of performing EBUS-TBNA through the nasal approach.

For conventional bronchoscopy, nasal and oral routes have been compared in few studies. A randomized trial comparing the oral and nasal routes for flexible bronchoscopy found oral route to be more convenient during bronchoscope insertion and is associated with less coughing.[4] On the other hand, a cohort study assessed factors related to patient’s willingness to return for bronchoscopy and found 74% patients with nasal insertion had willingness to

![Figure 1: Fluorodeoxyglucose-positron emission tomography-computed tomography scan image showing the fluorodeoxyglucose avid right paratracheal lymph node](image1)

![Figure 2: The visible swelling over the right cheek and severely restricted mouth opening](image2)
return for a bronchoscopy as compared to 57.1% with oral insertion. A recent randomized trial demonstrated that if sedation is used, patient comfort is similar with oral and nasal approach for flexible bronchoscopy. However, the oral route of insertion provided quicker visualization of the vocal cords and was associated with lesser cumulative lignocaine dose and there were no events of insertion failure with the oral approach.

Preferable route for bronchoscopy varies within countries and within centers as well. It is a possibility that at many centers (in India as well as in other countries), nasal route of EBUS scope insertion is practiced more often than reported. Route of entry also depends on facial structure which has wide racial variations. Roomy nasal air passages may allow easier scope entry. Similarly, females, in general, have less spatial airway size and thus nasal entry may be difficult in females as compared to males. The effect of obesity on upper airway and narrowing of nasopharynx also needs to be considered.

The complications related to route of entry include epistaxis and postprocedure throat pain. The incidence of epistaxis following nasal flexible bronchoscopy has been estimated to be about 7%. The two studies which have assessed nasal EBUS scope insertion have suggested minor epistaxis in 1% and 2.7% patients, respectively. All these bleeding episodes were minor and resolved without any specific intervention.

CONCLUSION

Nasal route for EBUS scope insertion is a feasible alternative for performing EBUS-TBNA. However, we shall not recommend its use as a routine as the oral route of EBUS is a well-established method and it minimizes the possibility of scope damage and reduces lignocaine dose as nasal lignocaine instillation is avoided. Nasal route may be employed in patients with technical issues related to difficult oral insertion of the EBUS bronchoscope as discussed.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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