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EBUS-TBNA in children: The road less travelled

The ultrasonographic evaluation and sampling of mediastinal lesions by endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) or endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) is the standard of care for adult patients [1]. It allows for real-time visualization of mediastinal lymph nodes during bronchoscopic needle aspiration and has virtually replaced mediastinoscopy for the evaluation of mediastinal pathologies in adults. The cell block samples obtained during EBUS-TBNA are processed as biopsy samples and significantly add to the yield of EBUS-TBNA. The use of EBUS-TBNA for mediastinal lesions in pediatric patients has revolutionized clinical practice at many centers and is now being used routinely for the evaluation of undiagnosed mediastinal lymphadenopathy and masses [2, 3]. While the reach of mediastinoscopy for mediastinal evaluation is limited, endo-ultrasonic modalities have a more extensive reach. In a recent study by Demir and Onal [4], authors described their experience with mediastinoscopy for the sampling of mediastinal lesions in 22 patients. None of the patients had undergone EBUS-TBNA or EUS-FNA prior to mediastinoscopy which suggests that this modality is still underutilized. Out of the 22 patients in the study population, 20 were ≥ 12 years of age. EBUS-TBNA can easily be performed in this age group as tracheal size in these individuals is sufficiently large enough to allow insertion of an EBUS bronchoscope without causing ventilatory compromise. In such patients, the procedure can also be performed under conscious sedation and does not necessarily need general anesthesia. Younger children usually require the procedure to be performed under general anesthesia with an airway conduit [5]. The endoscope used for

endoscopic ultrasound is large and may not be appropriate for small children. As an alternative, the thinner EBUS bronchoscope (6.9 to 7.4 mm) can be introduced transesophageally to perform needle aspiration from esophageal accessible lymph node stations, particularly the subcarinal and left paratracheal ones. This technique is described as transesophageal bronchoscopic ultrasound-guided fine-needle aspiration (EUS-B-FNA) [6].

One of the concerns among pediatricians regarding endosonographic techniques remains the ability to acquire a sufficient sample for histological analysis. Tissue cores can be obtained with the use of the usual 21G or 22G needles. In addition to the standard 21 and 22 G needles for EBUS-TBNA, larger gauge EBUS-TBNA needles (19G) and pro-core needles are also now available. These may allow for the obtaining of a sufficient enough sample for histopathological analysis. Transbronchial forceps biopsy under EBUS guidance from lymph nodes can also be performed in patients with a suspected lymphoma [7]. In this technique, a small path is created in the bronchial tree under ultrasound guidance to allow the small biopsy forceps to enter the lymph node and obtain biopsies for histological evaluation. The EBUS-TBNA and EUS-B-FNA approach can provide a diagnosis in a significant proportion of pediatric patients thereby avoiding mediastinoscopy, especially in patients with granulomatous etiology. In the present era, the endosonographic evaluation of the mediastinum must be considered as the first-line approach for mediastinal lesions in the pediatric population. Mediastinoscopy should be reserved for individuals with non-diagnostic EBUS-TBNA or EUS-B-FNA, and/or for lesions that are not accessible by either of these two approaches.

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Conflict of interest

None declared.

References:

1. Madan K, Mohan A, Ayub II, et al. Initial experience with endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) from a tuberculosis endemic population. *J Bronchology Interv Pulmonol.* 2014; 21(3): 208–214, doi: [10.1097/LBR.000000000000080](https://doi.org/10.1097/LBR.000000000000080), indexed in Pubmed: [24992128](https://pubmed.ncbi.nlm.nih.gov/24992128/).
2. Gilbert CR, Chen A, Akulian JA, et al. The use of convex probe endobronchial ultrasound-guided transbronchial needle aspiration in a pediatric population: a multicenter study. *Pediatr Pulmonol.* 2014; 49(8): 807–815, doi: [10.1002/ppul.22887](https://doi.org/10.1002/ppul.22887), indexed in Pubmed: [24039186](https://pubmed.ncbi.nlm.nih.gov/24039186/).
3. Dhooria S, Madan K, Pattabhiraman V, et al. A multicenter study on the utility and safety of EBUS-TBNA and EUS-B-FNA in children. *Pediatr Pulmonol.* 2016; 51(10): 1031–1039, doi: [10.1002/ppul.23415](https://doi.org/10.1002/ppul.23415), indexed in Pubmed: [27142997](https://pubmed.ncbi.nlm.nih.gov/27142997/).
4. Demir OF, Onal O. Is mediastinoscopy an effective diagnostic method in mediastinal area evaluation in pediatric patients? *Asian J Surg.* 2020; 43(6): 690–695, doi: [10.1016/j.asjsur.2019.09.012](https://doi.org/10.1016/j.asjsur.2019.09.012), indexed in Pubmed: [31668417](https://pubmed.ncbi.nlm.nih.gov/31668417/).
5. Mittal S, Bharati SJ, Kabra SK, et al. Paediatric Endobronchial Ultrasound-guided Transbronchial Needle Aspiration: Anaesthetic and procedural considerations. *Indian J Anaesth.* 2018; 62(2): 150–151, doi: [10.4103/ija.IJA_514_17](https://doi.org/10.4103/ija.IJA_514_17), indexed in Pubmed: [29491526](https://pubmed.ncbi.nlm.nih.gov/29491526/).
6. Madan K, Garg P, Kabra SK, et al. Transesophageal Bronchoscopic Ultrasound-guided Fine-needle Aspiration (EUS-B-FNA) in a 3-Year-Old Child. *J Bronchology Interv Pulmonol.* 2015; 22(4): 347–350, doi: [10.1097/LBR.000000000000169](https://doi.org/10.1097/LBR.000000000000169), indexed in Pubmed: [26492608](https://pubmed.ncbi.nlm.nih.gov/26492608/).
7. Bramley K, Pisani MA, Murphy TE, et al. Endobronchial Ultrasound-Guided Cautery-Assisted Transbronchial Forceps Biopsies: Safety and Sensitivity Relative to Transbronchial Needle Aspiration. *Ann Thorac Surg.* 2016; 101(5): 1870–1876, doi: [10.1016/j.athoracsur.2015.11.051](https://doi.org/10.1016/j.athoracsur.2015.11.051), indexed in Pubmed: [26912301](https://pubmed.ncbi.nlm.nih.gov/26912301/).