

## Efficacy and safety of EBUS-TBNA and EUS-B-FNA in children

A systematic review and meta-analysis.

Pediatr Pulmonol. 2021 Jan;56(1):23-33.

**Objective:** Limited literature is available on the utility of **Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA)** and **trans-esophageal bronchoscopic ultrasound-guided fine-needle aspiration (EUS-B-FNA)** in the pediatric population. The systematic review and meta-analysis was performed to ascertain the yield and safety of EBUS-TBNA and EUS-B-FNA in children.

**Data Sources:** PUBMED and EMBASE

**Study Selection:** studies reporting the utilization of EBUS-TBNA/EUS-B-FNA in children (<18 years of age)

**Data Extraction:** Two reviewers independently reviewed all the studies.

**Outcome measures:** The pooled diagnostic yield and sampling adequacy (proportions with 95% confidence intervals [CIs]) using meta-analysis of proportions using the random effects model. Detailed of any procedure related complications were also analyzed.

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Pediatric Evidence And Research Learning Snippet



## EBUS-TBNA and EUS-B-FNA in children

**Results:** 12 relevant studies (5 case series and 7 case reports on EBUS-TBNA/ EUS-B-FNA, 173 patients) were found. Data from 5 case series (164 patients) were summarized for the calculation of the sampling adequacy and diagnostic yield. Safety outcomes were extracted from all publications.

The pooled sampling adequacy and combined diagnostic yield of EBUS TBNA/EUS-B-FNA were 98% (95% CI, 92%–100%) and 61% (95% CI, 43%–77%), respectively. A procedure-related major complication [hypoxemic leading to termination of procedure] was reported in 1 patient (1/173, a major complication rate of 0.6%), and minor complications [transient hypoxemia (n = 2), transient tachycardia (n = 1), transient hypotension (n = 1), airway bleeding (n = 1), excessive coughing (n = 1)] occurred in 6 patients (6/173, a minor complication rate of 3.5%).

**Discussion:** EBUS was developed in adults mainly for staging and diagnosis of lung cancer. However, since then, the diagnostic utility of EBUS is established in many other benign diseases like tuberculosis, sarcoidosis, etc. EBUS has been a useful modality for evaluation of lymphoma if it is combined with immunophenotyping and molecular analysis. The large size of EBUS scope (6.9 mm to 7.3 mm) has been the major constraint in pediatric population.

EBUS scope can be safely used orally in children > 12 years of age. In younger children (>2-3 years) the same scope can be used through the esophagus to sample the subcarinal, lower left paratracheal and para-aortic lymph nodes.

**Conclusions and Key Messages:** Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) and transesophageal bronchoscopic ultrasound-guided fine-needle aspiration (EUS-B-FNA) are safe procedures with a good diagnostic yield in children.

### EXPERT COMMENT

•The need for EBUS-TBNA and EUS-B-FNA is increasingly being recognized in children for evaluation of mediastinal lymphadenopathy where the diagnosis cannot be ascertained by other means.

•With the availability of thin EBUS bronchoscopes the paradigm is getting widened even in younger children.

•Pediatric Pulmonologist must acquire the skill with the adult colleagues.

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With warm regards,

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Editor – Academic Pearls  
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#### Reference

Madan K, Iyer H, Madan NK, Mittal S, Tiwari P, Hadda V, Mohan A, Pandey RM, Kabra SK, Guleria R. Efficacy and safety of EBUS-TBNA and EUS-B-FNA in children: A systematic review and meta-analysis. *Pediatr Pulmonol.* 2021 Jan;56(1):23-33. doi: 10.1002/ppul.25124.