

Transbronchial Mediastinal Cryobiopsy – Literature Review and Practice Recommendations

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Summary

This paper reviews the efficacy and safety of Endobronchial Ultrasound-Guided Transbronchial Mediastinal Cryobiopsy (EBUS-TBMC) as a method for diagnosing both malignant and benign mediastinal lesions. The study contrasts EBUS-TBMC with the more commonly used Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration (EBUS-TBNA), highlighting the advantages and limitations of each technique.

Key Findings

- Increased Diagnostic Yield:** EBUS-TBMC has shown a higher diagnostic yield compared to EBUS-TBNA, particularly in diagnosing lymphoma, sarcoidosis, and tuberculosis.
- Sample Quality:** Cryobiopsy provides larger histological samples which are crucial for accurate diagnosis and molecular analysis, especially in conditions where tissue architecture is vital.
- Safety and Efficacy:** EBUS-TBMC is safe and effective for both malignant and benign lesions. It offers a minimally invasive alternative with fewer complications compared to traditional surgical approaches.
- Procedure Variations:** There is significant variation in the practice and technique of EBUS-TBMC across different centers. There is no standardized methodology, which can impact diagnostic outcomes.

Recommendations

- Sequential Approach:** Combining EBUS-TBNA and TBMC improves diagnostic yields. Advanced ultrasound techniques like elastography may enhance TBMC's effectiveness.
- Track Creation:** The track for the cryoprobe can be created using the EBUS-TBNA needle puncture site. Both 19G and 22G needles are effective, and high-frequency needle-knives can be used if needed.
- Optimal Techniques:** The authors recommend starting with a freezing time of 5 seconds, with the option of gradually increasing up to 10 seconds on subsequent passes, if larger specimen size is desired.

Authors' conclusion

EBUS-TBMC demonstrates promise as a valuable diagnostic tool for mediastinal lesions, particularly in cases where traditional needle aspiration may fall short. Further research and standardization of techniques are necessary to optimize its use and improve patient outcomes.

Proposal for a standardized methodology for performing endobronchial ultrasound-guided mediastinal cryobiopsy: a four-step approach

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Introduction

The paper by Ariza Prota et al. (2024) discusses the advancements and challenges in the field of endobronchial ultrasound (EBUS)-guided mediastinal cryobiopsy. This technique aims to improve the accuracy of diagnosing various mediastinal pathologies, especially in cases where conventional methods like EBUS-guided transbronchial needle aspiration (EBUS-TBNA) fall short due to inadequate sample size or quality. Mediastinal cryobiopsy offers a larger, higher-quality tissue sample, which is crucial for diagnosing conditions such as lymphoproliferative diseases, benign granulomatous disorders, and advanced non-small cell lung cancer (NSCLC).

Methodology of the four-step Ariza-Pallarés method

The authors propose a standardized four-step methodology for performing mediastinal cryobiopsy using EBUS guidance:

- 1. Planning:** Identifying suitable candidates for the procedure and ensuring proper preparation.
- 2. Puncture:** Utilizing either a high-frequency needle knife or a conventional needle to create an access path to the target lesion. The suggested standard practice is to make 8–12 passes during this first TBNA.
- 3. "the Tunnel":** Tunneling involves creating a pathway through the mucosa, submucosa, and capsule of the lymph node to allow for easy insertion of the cryoprobe. The suggested standard practice is to make 8–12 passes during this second TBNA, until it can be confirmed that the capsule has been successfully broken.
- 4. The Cryobiopsy:** Applying the cryoprobe to the lesion under EBUS guidance to obtain a tissue sample.

Authors' conclusion

Mediastinal cryobiopsy, guided by EBUS, is a promising advancement in the diagnostic work-up of mediastinal lesions. It addresses the limitations of EBUS-TBNA by providing higher quality tissue samples necessary for comprehensive pathological and molecular assessments. The proposed standardized methodology aims to streamline the procedure, enhancing its safety and diagnostic yield.

This paper serves as a comprehensive guide for interventional pulmonologists, outlining a practical and systematic approach to mediastinal cryobiopsy, thereby contributing to improved diagnostic accuracy and patient outcomes in the management of mediastinal diseases.