

EDITORIAL

Pneumothorax: Anesthetic Challenge following Supraclavicular Brachial Plexus Block

Pneumothorax is a rare but significant complication of the supraclavicular brachial plexus block due to the proximity of the brachial plexus to the dome of the pleura. The use of ultrasound guidance has significantly reduced the risk of pneumothorax compared to traditional landmark techniques. In large studies, the incidence with ultrasound is estimated to be approximately 0.04% to 0.06% (or 0.4 per 1,000 blocks), whereas landmark-based techniques have reported rates as high as 6.1%. Diagnosis can be challenging because symptoms are often delayed. While some cases present immediately, many patients do not develop dyspnea or chest pain until 48 to 72 hours after the procedure. Key factors increasing the risk include loss of needle tip visualization during the procedure, operator inexperience, and patient factors such as COPD, smoking, or a high pleural dome. Traditional supine chest X-rays may miss small or ventral pneumothoraces. Upright expiratory X-rays or thoracic ultrasound are preferred for better sensitivity in detecting iatrogenic injury.

Preventive Strategies, continuous visualization ensure the needle tip is visible at all times before advancing. Use the First Rib as a “Backstop” Aim for the “corner pocket” where the first rib provides a physical barrier between the needle and the pleura. Hydro-localization use small injections of fluid (like D5W or saline) to confirm the needle tip’s position if it is obscured.

The supraclavicular brachial plexus block is a widely used technique for upper limb anesthesia due to its rapid onset and reliable coverage. This study aims to assess the incidence of pneumothorax following supraclavicular brachial plexus block. Aim of the study: The aim of the study was to determine the incidence of pneumothorax following supraclavicular brachial plexus block.

Pneumothorax was more frequently observed with landmark-based supraclavicular brachial plexus blocks compared to ultrasound-guided techniques, reinforcing the safety advantage of ultrasound guidance. Risk factors such as underlying pulmonary conditions, obesity, and steeper needle angles appeared to contribute to the occurrence of pneumothorax. These findings underscore the importance of patient evaluation and technique refinement to minimize complications associated with this regional anesthesia approach.

At last, we hope that this type of study and observation will make awareness among the professionals and people in future, and will disseminate various type of new problems and their solutions.

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References:

1. Gray AT. Ultrasound guidance for regional anesthesia. Miller's Anesthesia. 7th ed. Philadelphia: Churchill Living Stone Elsevier. 2010:1675-86. 2.
2. Butterworth JF, Mackey DC, Wasnick JD. Clinical anesthesiology: Sth ed. New York: McGraw-Hill Medical Publishing; 2013. p. 985-7. 3.
3. Lanz E, Theiss D, Jankovic D. The extent of blockade following various techniques of brachial plexus block. Anesthesia & Analgesia. 1983 Jan 1;62(1):55-8.