https://africanjournalofbiomedicalresearch.com/index.php/AJBR
Afr. J. Biomed. Res. Vol. 28(4s) (August 2025); 81-83
Research Article

Superficial Cervical Plexus Block in a Child with Mediastinal Lymphadenopathy and Tracheal Compression: A Case Report

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Abstract:
To our knowledge, this is one amongst the few case reports on the successful use of ultrasound-guided superficial cervical plexus block (SCPB) as the sole anaesthetic technique for cervical lymph node excision in a paediatric patient with tracheal compression due to mediastinal lymphadenopathy. A 13-year-old girl child with cervical and mediastinal lymphadenopathy presented for cervical lymph node biopsy. CT imaging revealed moderate tracheal narrowing. The procedure was successfully completed under ultrasound-guided SCPB with minimal sedation, without airway instrumentation. This case report highlights the feasibility of using regional anaesthetic techniques in children with complex airway pathology, suggesting that superficial cervical plexus block (SCPB) may serve as a safe and effective alternative to general anaesthesia in selected high-risk paediatric patients.

Key words: Superficial Cervical Plexus Block, Paediatric, Mediastinal Lymphadenopathy, Difficult Airway

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received- 04/08/2025 Acceptance- 06/08/2025

DOI: https://doi.org/10.53555/AJBR.v28i4S.8297

Introduction:

Cervical lymphadenopathy is a common clinical presentation in children and may arise from various causes including infectious, inflammatory, or neoplastic conditions [1]. In some cases, it is associated with mediastinal lymphadenopathy resembling a mediastinal mass. Excision of the cervical lymph node and subsequent histopathological analysis are necessary for establishing a definitive diagnosis [2], which in turn helps in choosing the appropriate therapy and long-term management of the disease. This procedure is traditionally performed under general anaesthesia to ensure patient immobility and comfort. **However,** Superficial cervical plexus block as a sole anaesthetic

technique has proven to be an effective alternative to General anaesthesia in adults undergoing carotid endarterectomy and superficial Cervical lymph node excision [3]. However, its use as the **primary anaesthetic modality** in paediatric patients remains underreported, particularly in the setting of mediastinal lymphadenopathy resembling a mediastinal mass with tracheal compression. **This case report describes the successful use of SCPB for cervical lymph node excision in a 13-year-old with mediastinal lymphadenopathy and tracheal compression, thereby avoiding general anaesthesia and its associated risks.**

Case presentation:

Patient Information:

A 13-year-old female child weighing 39 kg presented with history of cough for 10 days with expectoration. She had slight discomfort on lying supine. There was no history of difficulty in breathing, chest pain, or weight loss. She had no significant past medical or surgical history. Preoperative airway assessment revealed normal mouth opening, full range of neck movements, no abnormal external airway predictors and no craniofacial anomalies.

Clinical Findings and Diagnostic Assessment:

On examination she was afebrile and her vital signs were stable, and oxygen saturation was 98% on room air. Respiratory examination revealed bilateral equal air entry with normal vesicular breath sounds.

On routine evaluation Chest X ray revealed mediastinal widening. Subsequent CT of the neck and thorax showed multiple enlarged lymph nodes in the upper, mid, and lower jugular levels, posterior triangle, bilateral paratracheal, subcarinal, and hilar regions, with moderate narrowing of the distal trachea and carina.

Therapeutic Intervention:

Surgeons decided to perform a cervical lymph node excision and perform a histopathological analysis which could help them to plan the further course of patients treatment. In view of the imaging findings suggestive of mediastinal lymphadenopathy with tracheal compression and complexity of airway management with general anaesthesia ultrasound-guided superficial cervical plexus block (SCPB) with minimal sedation was chosen as the primary anaesthetic technique. The child and her family were counselled on the day prior to the procedure to alleviate anxiety. Written informed consent was obtained from the mother the day before surgery. Patient was shifted to the operating room. All ASA Standard monitors were attached, 22 G IV access was secured and child was counseled again to reduce procedural anxiety. An initial bolus of fentanyl 1 mcg/kg was administered. With the patient positioned supine and her head turned to the right, ultrasound-guided SCPB was performed on the left side using an in-plane approach with a 50 mm Stimuplex® needle. After infiltration with 2 mL of 2% Lignocaine, a total of 10 mL of local anaesthetic solution was administered: 5 mL of 2% Lignocaine with Adrenaline, 5 mL of 0.5% Bupivacaine, and 1 mL of sodium bicarbonate.

Sedation was titrated using intermittent boluses of Fentanyl (0.5 mcg/kg) in response to patient movement. The total intraoperative Fentanyl dose was 2 mcg/kg. The sensory block was adequate for completion of the surgical procedure uneventfully without conversion to general anaesthesia.

Follow-Up and Outcomes:

Postoperatively, the child was monitored in the PACU for 1 hour. Visual Analogue Scale (VAS) for pain remained at 1. She maintained oxygen saturation of 98% on room air and was hemodynamically stable. She was subsequently shifted to the ward without complications.

Discussion:

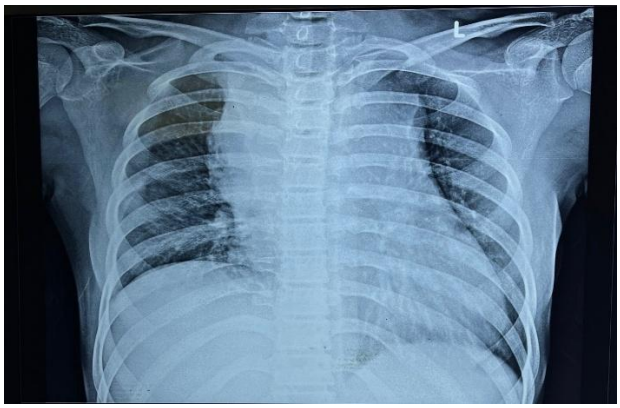
Superficial cervical plexus block (SCPB) has been extensively used in adult patients undergoing procedures involving the anterolateral neck, but its use in paediatric population remains underreported. The superficial cervical plexus originates from the anterior rami of the C2–C4 spinal nerves and provides sensory innervation to the anterolateral neck, retro auricular region, and skin over the clavicle [4].

In our case, the child presented with extensive cervical and mediastinal lymphadenopathy, with CT imaging revealing moderate tracheal narrowing. Although general anaesthesia is commonly used technique in paediatric patients for cervical lymph node excision, it was avoided due to the **risk of airway obstruction and failed ventilation, particularly following induction due to loss of muscle tone in the context of tracheal compression.** SCPB under ultrasound guidance, combined with minimal sedation, provided a safe and effective alternative—maintaining spontaneous ventilation, avoiding airway manipulation, and offering sufficient analgesia for the surgical procedure.

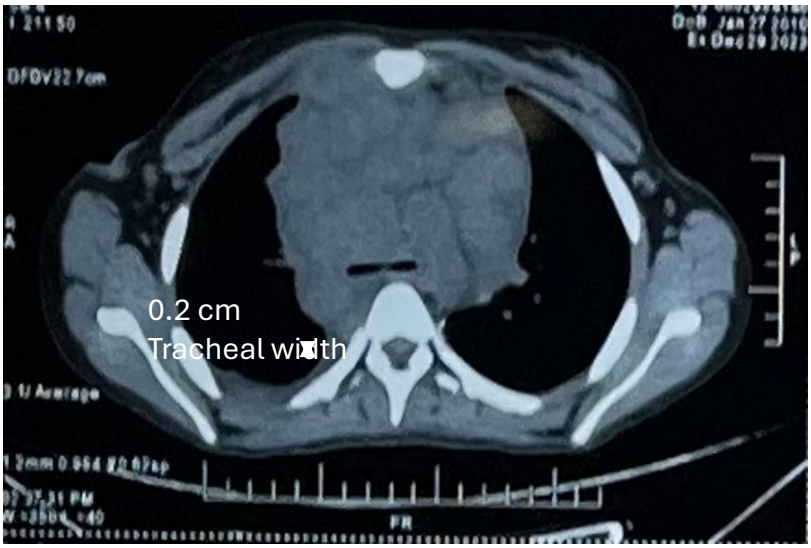
The efficacy and safety of SCPB in paediatric patients have been described in a few reports. Tobias et al. successfully used SCPB for a 16-year-old undergoing cervical lymph node excision without requiring additional intravenous analgesia or block supplementation [5]. Similarly, a retrospective analysis by Miller et al. found that children undergoing otologic surgery with SCPB received significantly less intraoperative morphine and required fewer postoperative opioids [6]. Suresh et al. also reported the use of bilateral SCPB in an awake paediatric patient for medialization thyroplasty with good postoperative outcomes [7]. Beyond intraoperative anaesthesia, SCPB also provides effective postoperative analgesia, potentially reducing opioid consumption and enhancing recovery. However, like all regional techniques, it is not without risks. Potential complications include local infection, hematoma, inadvertent intravascular injection, and rarely, total spinal anaesthesia from intrathecal spread [5,8]. These risks underscore the importance of using ultrasound guidance while performing the block. Furthermore, in pediatric patients, effective communication and cooperation are key factors to ensure a high success rate.

Conclusion:
This case demonstrates the successful application of ultrasound-guided superficial cervical plexus block (SCPB) as the sole anaesthetic technique in a paediatric patient with mediastinal lymphadenopathy and tracheal compression undergoing cervical lymph node excision. This case report highlights the feasibility of using regional anaesthetic techniques in children with complex airway pathology, suggesting that superficial cervical plexus block (SCPB) may serve as a safe and effective alternative to general anaesthesia in selected high-risk paediatric patients.Further clinical studies are warranted to define its safety profile, efficacy, and broader utility in the paediatric population.

Declarations:
Patient consent: Informed written consent was obtained from the patient's legal guardian for publication of this case report and accompanying clinical information.
Conflict of Interest: None declared
Funding: None
Ethical approval: Not required for case report as per institutional policy



Chest X ray showing mediastinal lymphadenopathy



CT scan image showing narrowing of trachea

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