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Opioid-Sparing Anesthetic Strategy with Ultrasound-Guided Superficial Cervical Plexus Block in Pediatric Recurrent Lymphangioma Surgery: A Case Report

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A B S T R A C T

Introduction: Pediatric cervical mass surgery presents unique perioperative challenges, including airway proximity, hemodynamic lability, and the need for effective opioid-sparing analgesia. The superficial cervical plexus block (SCPB) targets the cutaneous branches of C2-C4 emerging at the posterior border of the sternocleidomastoid muscle, but its use in pediatric oncologic neck surgery is infrequently reported. **Case presentation:** A 9-year-old girl (24 kg) presented for excision of a progressively enlarging recurrent right cervical mass clinically and radiologically suggestive of a multiloculated lymphatic malformation. After balanced general anesthesia with endotracheal intubation, an ultrasound-guided right SCPB was performed using 8 mL of ropivacaine 0.2% with dexamethasone 5 mg as an adjuvant. The 2-hour excision proceeded with stable hemodynamics, no additional intraoperative opioid requirement after a single induction-phase fentanyl dose, and a positive fluid balance of +40 mL. The patient was extubated uneventfully, recovered in the post-anesthesia care unit (PACU) without rescue analgesic demand, and was transferred to the ward on postoperative day 1 with excellent analgesia and no neurologic, respiratory, or wound complications. **Conclusion:** Ultrasound-guided SCPB combining low-concentration ropivacaine with perineural dexamethasone provided effective opioid-sparing analgesia for pediatric cervical lymphangioma excision while preserving respiratory reserve and hemodynamic stability. Compared with previously published pediatric SCPB cases — predominantly in vocal cord, otologic, and tympanomastoid surgery — the present report extends documented experience to recurrent oncologic cervical mass excision, contributing to the developing pediatric regional anesthesia literature in the Indonesian and broader Asian setting.

1. Introduction

Lymphatic malformations (LMs), traditionally referred to as lymphangiomas, are benign congenital anomalies of the lymphatic system characterized by abnormal embryologic development of lymphatic channels. Approximately seventy-five percent of these lesions arise in the head and neck region, where they may present at birth or become clinically apparent during early childhood as soft, compressible cervical masses with variable trans-illumination and a tendency to enlarge during episodes of upper respiratory infection or trauma.[1] The reported incidence ranges from 1.2 to 2.8 cases per thousand live births, with a slight male predominance and no clear genetic predisposition outside of small subsets associated with syndromic conditions such as Turner or Noonan syndromes.[2]

Although histologically benign, head and neck LMs are clinically important because of their proximity to the aerodigestive tract, neurovascular bundle, cranial nerves, and cervical sympathetic chain, all of which may be infiltrated, displaced, or distorted by the lesion. As a consequence, even well-planned surgical interventions can be technically demanding and may carry meaningful morbidity, especially when the lesion is recurrent or has previously been instrumented.[1,2]

Modern management of pediatric head and neck LMs is increasingly multimodal and patient-centered, incorporating sclerotherapy, surgical excision, image-guided percutaneous interventions, and pharmacologic mTOR inhibition with sirolimus, depending on lesion morphology (microcystic, macrocystic, or mixed), location, complications such as airway compromise or bleeding, and prior treatment history.[1] Nevertheless, surgical excision remains a cornerstone of definitive therapy when the lesion is well-circumscribed, recurrent after sclerotherapy, or producing functional or cosmetic disability that cannot otherwise be addressed.[2] For the anesthesiologist, the scenario of a child returning for re-excision of a recurrent cervical LM combines several layers of complexity: the patient population (school-aged children with developmental and behavioral considerations), the operative field (an airway-adjacent neck with previously dissected and potentially fibrotic planes), and the perioperative goals (immobility, hemodynamic stability, safe emergence, and high-quality analgesia with minimal opioid burden).

Regional anesthesia has progressively assumed a central role in pediatric perioperative care over the last two decades, evolving from a largely caudal- and central-neuraxial-dominated practice to a discipline that now relies heavily on ultrasound-guided peripheral nerve blocks integrated within multimodal analgesic plans.[3-5] Large prospective registries such as the Pediatric Regional Anesthesia Network (PRAN) have shown that, when performed by trained operators, peripheral and neuraxial blocks in children carry a very low incidence of permanent complications, with no permanent neurologic deficit reported across more than one hundred thousand registered blocks.[6,7] Concurrently, expert societies and meta-analyses increasingly emphasize that the goals of pediatric regional anesthesia extend beyond pain reduction in isolation: they encompass opioid-sparing strategies, hemodynamic stability, smoother emergence, decreased postoperative nausea and vomiting (PONV), and earlier discharge from the post-anesthesia care unit.[3,4] These outcomes are particularly desirable in pediatric head and neck surgery, where airway sensitivity, the small margin of error in opioid dosing, and the emotional impact of postoperative pain on both patient and caregivers have well-recognized clinical relevance.

The cervical plexus is anatomically formed by the anterior rami of the first four cervical spinal nerves and provides motor innervation to the deep cervical musculature and the diaphragm (via the phrenic nerve), as well as cutaneous sensation to the anterolateral neck, ante- and retro-auricular regions, and the supraclavicular skin.[8] Three principal techniques have been described to block the plexus, each varying in depth, extent of blockade, and complication profile: a deep paravertebral approach at the C2-C4 level, an intermediate approach beneath the investing layer of deep cervical fascia at C4, and a superficial approach in which local anesthetic is deposited subcutaneously along the posterior border of the sternocleidomastoid (SCM) muscle near Erb's point.[8] A systematic review of complications associated with cervical plexus blockade in carotid endarterectomy demonstrated a significantly lower rate of serious complications with superficial or intermediate techniques compared with deep or combined approaches (odds ratio 2.13, p=0.006), supporting the clinical preference for the superficial approach in scenarios in which deep neural blockade is not required.[9]

Despite a robust adult literature, peer-reviewed pediatric data on superficial cervical plexus block (SCPB) for cervical mass excision remain limited, and even fewer reports document the technique's role specifically in recurrent lymphangioma excision. Most pediatric experience comes from thyroidectomy, cleft surgery, and craniofacial reconstruction; case-based descriptions of SCPB used in oncologic or vascular-anomaly excision have been sporadic. Given the favorable safety profile of SCPB and the clinical demand for opioid-sparing pathways in children, structured documentation of pediatric experience is timely.[10]

The aim of this case report is to describe and analyze the anesthetic management of a 9-year-old girl undergoing excision of a recurrent right cervical lymphangioma using balanced general anesthesia combined with ultrasound-guided SCPB using ropivacaine 0.2% and dexamethasone 5 mg as an adjuvant, and to position the case within the existing pediatric SCPB literature through a structured comparison. The novelty of the present report lies in three elements: (i) the documentation of an opioid-sparing pediatric anesthetic strategy in a recurrent cervical LM — a combination that is clinically common but rarely formally reported; (ii) a structured, anatomically grounded justification of why the superficial rather than the deep or intermediate approach was preferred in the pediatric airway-adjacent setting; and (iii) the integration of a low-concentration long-acting local anesthetic with a glucocorticoid adjuvant, framed within the published evidence on perineural dexamethasone in pediatric and adult populations. As a single-case observational report, this contribution sits at the descriptive and hypothesis-generating end of the evidence ladder; it does not seek to establish causality between the chosen technique and the favorable outcome, but rather to illustrate a feasible, safe, and evidence-aligned pathway that anesthesiologists in similar resource and patient settings — including Indonesian academic centers — can adapt and audit.

2. Case Presentation

Written informed consent was obtained from the patient's parents for the publication of this case report and any accompanying clinical details and images. Any clinical photographs or imaging used in the manuscript were de-identified.

A 9-year-old girl (body weight 24 kg, height 135 cm; body mass index 13.2 kg/m²) was referred for elective surgical excision of a right-sided cervical mass that had been progressively enlarging over the preceding two months, as detailed in Table 1. There was no associated cough, rhinorrhea, fever, dysphagia, dyspnea, or stridor at presentation. The mass had recurred after a prior intervention performed elsewhere and had become palpably firmer and more well-defined on serial outpatient evaluations. Her past medical history was notable for an undescended left testis with a status post-orchidopexy in April 2024; she had no history of asthma, seizures, or allergic reactions. Her perinatal history was unremarkable: she was delivered by cesarean section at 39-40 weeks of gestation with a birth weight of 3200 g and a birth length of 47 cm, cried immediately after delivery, and had no neonatal jaundice or anemia. Routine antenatal care had been provided by a midwife, with no maternal complaints documented. The parents reported that growth and development had been age-appropriate, with no neurological or behavioral concerns. The principal demographic and admission details, working diagnosis, planned procedure, and anesthetic plan are presented in Table 1, which serves as the patient-level reference for subsequent sections.

Table 1. Patient demographics and admission summary.

Parameter	Value
Gender	Female
Age	9 years
Weight/Height	24 kg/135 cm (BMI 13.2 kg/m²)
ASA physical status	II*
Diagnosis (working)	Recurrent right cervical lymphatic malformation (vs fourth branchial cleft anomaly†)
Planned procedure	Tumor excision under general anesthesia + USG-guided right SCPB
Anesthetic plan	Balanced GA + USG-SCPB (ropivacaine 0.2% 8 mL + dexamethasone 5 mg)

*ASA: American Society of Anesthesiologists; mild systemic disease (anemia, chronic structural cervical lesion).
†Final histopathological classification pending at the time of submission.

Preoperative vital signs were within age-appropriate limits: temperature 36.6°C, heart rate 105 beats per minute (regular, strong pulses), respiratory rate 20 breaths per minute, and oxygen saturation 98% on room air. The patient was alert, cooperative on parental presence, and her overall demeanor was age-appropriate; no formal validated anxiety scale was administered. A standard B1-B6 systems-based assessment was performed.

For B1 (Breathing), the airway was patent with spontaneous, comfortable respiration. Symmetric chest wall movement, vesicular breath sounds bilaterally, and the absence of rhonchi or wheezing were documented. Although a formal Mallampati score and dynamic neck flexion-extension assessment were not specifically recorded, the cervical mass was non-pedunculated, did not cross the midline, did not extend retropharyngeally on imaging, and was not associated with stridor, voice change, or positional dyspnea, suggesting an otherwise unremarkable preoperative airway profile.

For B2 (Blood/Circulation), the extremities were warm, dry, and well-perfused, with capillary refill time <2 s. Cardiac auscultation revealed a single, regular S1S2 with no murmur, gallop, or extra heart sounds. There were no signs of high-output state or visible neck venous engorgement. For B3 (Brain), the Glasgow Coma Scale was 15 (E4V5M6), with active spontaneous movement and no focal deficit. For B4 (Bladder), spontaneous voiding was preserved. For B5 (Bowel), bowel sounds were normoactive with no distention. For B6 (Bone/Back), no peripheral edema, cyanosis, or skeletal abnormality was identified, but a 3 × 3 cm firm, immobile mass was palpable in the right lateral neck. Targeted screening for VACTERL anomalies was negative, and a structured upper respiratory infection (URI) score was likewise negative.

Preoperative laboratory testing demonstrated mild normocytic anemia attributable to iron deficiency, with otherwise unremarkable hematologic, coagulation, electrolyte, and liver/renal indices supporting the safety of an elective procedure. Cervical magnetic resonance imaging revealed a multiloculated cystic lesion at the right posterior cervical space, favoring a fourth branchial cleft anomaly with a strong differential diagnosis of lymphatic malformation, and demonstrated no airway, retropharyngeal, or intracranial involvement. The complete laboratory and imaging profile is summarized in Table 2; one unit of packed red cells was nevertheless cross-matched and reserved as a precaution, given the recurrent nature of the lesion and the potential for occult intraoperative bleeding from previously dissected planes.

Table 2. Preoperative laboratory and imaging findings.

Parameter	Result
Hematology (22/10/24)	Hb 10.5 g/dL · Hct 33.2% · WBC 7.87 × 10^3/µL · Platelets 408 × 10^3/µL
Coagulation (12/11/24)	PT 10.60 s (INR 1.02) · APTT 32.00 s‡
Electrolytes (22/10/24)	Na 134 · K 4.23 · Cl 103 mEq/L
Liver/renal (22/10/24)	SGOT 26 · SGPT 9 U/L · Albumin 4.89 g/dL · Urea 26.1 · Creatinine 0.40 mg/dL
Imaging (cervical MRI, 09/09/24)	Multiloculated cystic lesion in the right posterior cervical space; suspected fourth branchial cleft anomaly with differential diagnosis of lymphatic malformation; no intracranial pathology§

‡PT: prothrombin time; INR: international normalized ratio; APTT: activated partial thromboplastin time. §MRI: magnetic resonance imaging.

The patient was assessed as American Society of Anesthesiologists (ASA) physical status II, on the basis of mild anemia and a chronic structural cervical lesion in an otherwise healthy and developmentally appropriate child. Informed consent for surgery and anesthesia, including a detailed explanation of the proposed regional technique, was obtained from both parents. The preoperative plan included: (i) insertion of a 20-gauge intravenous catheter; (ii) maintenance fluid therapy with one-half normal saline plus 5% dextrose at 64 mL/h during fasting; (iii) standard fasting guidelines of six hours for solids and infant formula and two hours for clear fluids; (iv) preoperative behavioral preparation with parental presence (no pharmacologic premedication was administered); (v) reservation of one unit of cross-matched packed red cells; and (vi) postoperative disposition to the regular pediatric ward.

A balanced general anesthetic technique was planned, with controlled ventilation through an age-appropriate cuffed endotracheal tube. The intraoperative analgesic strategy was conceived as a multimodal pathway in which an ultrasound-guided right SCPB would be the principal regional component, supplemented by intravenous paracetamol 15 mg/kg administered after induction and a single induction dose of fentanyl 1-2 µg/kg. The block was planned with 8 mL of ropivacaine 0.2% (16 mg, equivalent to 0.67 mg/kg) and 5 mg of dexamethasone (≈0.21 mg/kg) as a perineural adjuvant. These doses lie well below pediatric maximum allowable doses for ropivacaine (≤3 mg/kg single shot) and within the dexamethasone dose range supported by adult and pediatric meta-analyses.[10-12] Pediatric SCPB volumes in published series typically range from 0.1 to 0.2 mL/kg; the 8 mL volume used corresponded to ~0.33 mL/kg, modestly above the lower end of this range, chosen to ensure adequate craniocaudal spread along the posterior border of the SCM. For this case, the operational definition of the opioid-sparing outcome was set as: no further intraoperative or PACU opioid administration after the single induction-phase fentanyl bolus, supplemented only by intravenous paracetamol.

After standard ASA monitoring, including five-lead electrocardiography, pulse oximetry, non-invasive blood pressure, capnography, and core temperature, anesthesia was induced with intravenous propofol and a non-depolarizing neuromuscular blocking agent at standard pediatric induction doses, following pre-oxygenation with 100% oxygen via face mask. Tracheal intubation was achieved on the first attempt with an age-appropriate cuffed endotracheal tube, and bilateral equal breath sounds with an appropriate end-tidal carbon dioxide trace were confirmed. Mechanical ventilation was titrated to maintain normocapnia and an inspired oxygen fraction sufficient for $SpO_2 \geq 98\%$. Anesthesia was maintained with a volatile agent in an air/oxygen mixture, with depth titrated to standard clinical end points.

After induction and confirmation of stable hemodynamics, the patient was positioned supine with the head turned approximately 45° to the contralateral (left) side. The right neck was prepared with chlorhexidine antiseptic solution and draped sterilely. A high-frequency linear ultrasound transducer (8-12 MHz), covered with a sterile sleeve and gel, was placed transversely at the level of the cricoid cartilage and gently moved laterally and posteriorly until the SCM muscle and its posterior border could be identified. The transducer was then slid caudally along the posterior border of the SCM until the prevertebral fascia and interscalene groove came into view in cross-section, with care taken to identify the external jugular vein and surrounding subcutaneous vasculature in order to avoid inadvertent intravascular puncture. The needle insertion site corresponded to the published anatomic landmark of Erb's point, near the midpoint between the mastoid process and the clavicular insertion of the SCM, as illustrated in Figure 1, where the dermatomal distribution of the four superficial branches is also shown.

A 22-gauge 50-mm blunt-tip needle was advanced under in-plane ultrasound guidance from posterior to anterior. The needle tip was targeted to the subcutaneous plane immediately superficial to the prevertebral fascia and posterior to the SCM. After negative aspiration, a 1 mL hydrolocation test bolus confirmed appropriate tissue plane, and 8 mL of ropivacaine 0.2% mixed with 5 mg dexamethasone was deposited incrementally in 1-2 mL aliquots, with intermittent re-aspiration. Real-time ultrasound visualization confirmed appropriate cephalo-caudal spread along the posterior border of the SCM, with no visible vascular puncture, no spread into the prevertebral or paravertebral compartments, and no displacement of nearby vascular structures. No nerve stimulator was used. The block was completed within approximately five minutes and was tolerated without hemodynamic disturbance. Block efficacy in this case was inferred clinically (from the absence of intraoperative hemodynamic response to incision and the absence of postoperative analgesic demand) rather than demonstrated by formal postoperative dermatomal sensory mapping.

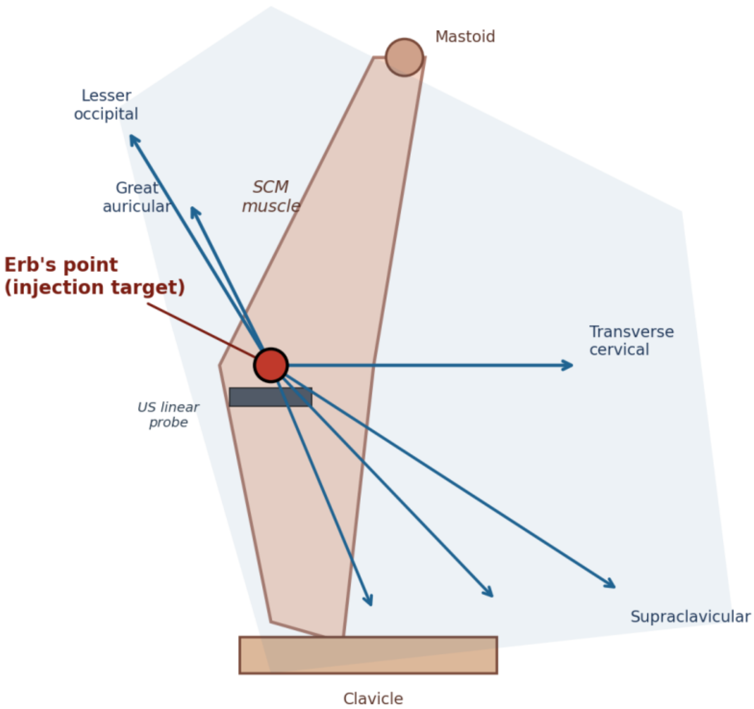

Figure 1. Schematic of cervical plexus anatomy and the superficial cervical plexus block (SCPB) target. Superficial branches of C2-C4 emerge at Erb's point along the posterior border of the sternocleidomastoid muscle and supply the anterolateral neck, ante-/retro-auricular regions, and supraclavicular skin.

Surgery proceeded approximately ten minutes after block completion, allowing time for partial onset. Intraoperative monitoring revealed a heart rate that remained between 90 and 110 beats/min, mean arterial pressure within ±20% of baseline, end-tidal CO_2 between 35 and 40 mmHg, and SpO_2 consistently 99-100%. The duration of surgery was two hours. Intraoperatively, the surgeon identified a solid-appearing tumor measuring 3 × 3 × 3 cm, which was excised in toto with adequate macroscopic margins. The intraoperative finding of a more solid-than-cystic lesion did not change the immediate surgical plan, and tissue was submitted for histopathologic confirmation. Fluid management consisted of 400 mL of crystalloid solution; no colloid or blood products were administered. Output during the procedure included 100 mL of urine, an estimated 30 mL of intraoperative blood loss, and 160 mL of insensible/maintenance loss, resulting in a positive fluid balance of +40 mL. No additional intraoperative opioid was administered after the induction dose of fentanyl, and the patient required no rescue boluses of either short-acting opioid or vasopressor agents.

At the end of surgery, the volatile agent was discontinued, neuromuscular blockade was antagonized, and the patient was extubated awake and uneventfully. She was transferred to the PACU and monitored for 60 minutes, during which her hemodynamics remained stable, oxygen saturation was 98-100% on room air, and her FLACC pain assessments remained at 0-1 at 0, 30, and 60 minutes, indicating no significant pain. No PACU rescue analgesics were administered. There was no nausea, vomiting, hoarseness, dysphagia, or respiratory distress. By postoperative hour two, the patient tolerated oral fluids and was transferred to the regular pediatric ward. On postoperative day one, she was clinically well, with a clean and intact wound, no neurologic or respiratory complications, and no clinical evidence of phrenic nerve palsy or Horner syndrome. Parental report indicated that the child appeared comfortable and that the postoperative recovery was perceived as smoother than after her previous procedure. She was discharged later the same day with parental instructions for wound care, oral paracetamol on demand, and outpatient follow-up.

In summary, the patient profile presented in Table 1 — an ASA II 9-year-old girl with a recurrent right-sided cervical lymphangioma — underwent successful tumor excision under balanced general anesthesia combined with an ultrasound-guided right SCPB using 8 mL of ropivacaine 0.2% with 5 mg of dexamethasone. The intraoperative course was hemodynamically stable, no additional opioids were required after induction, and the postoperative course was unremarkable, with a smooth PACU transition and ward discharge on postoperative day one without analgesic rescue, respiratory compromise, or wound complications. The final histopathological diagnosis was pending at the time of manuscript submission and will be reported in subsequent follow-up.

3. Discussion

The clinical management of pediatric head and neck lymphangioma has shifted over the last two decades from a paradigm dominated by complete surgical excision toward a more nuanced and multidisciplinary approach. Sclerotherapy with bleomycin, OK-432 (picibanil), or doxycycline is now considered a first-line option for many macrocystic lesions, and pharmacological mTOR inhibition with sirolimus has shown promise for diffuse, microcystic, and infiltrative variants for which surgery alone is unlikely to be curative.[1] Surgical excision retains a primary role in well-circumscribed macrocystic lesions amenable to complete resection, in functionally or cosmetically disabling residual disease following sclerotherapy, and in recurrent lesions where the abnormal lymphatic channels have become more fibrotic and less responsive to intralesional therapy.[2] In the present case, the lesion was recurrent, progressively enlarging, and located in a relatively superficial right posterior cervical position, making targeted surgical excision an appropriate and likely definitive option.

From the anesthesiologist's perspective, recurrent neck lesions present a constellation of distinctive concerns. Previous dissection or sclerotherapy may have rendered tissue planes adherent and poorly demarcated, increasing the risk of prolonged dissection, occult bleeding, and iatrogenic injury to neurovascular structures. The proximity of the lesion to the carotid sheath, internal jugular vein, vagus nerve, sympathetic chain, and accessory nerve mandates a calm, immobile operative field, which in pediatric practice almost invariably implies general anesthesia with airway control. From a regional-anesthetic standpoint, prior cervical surgery may also alter superficial fascial planes and superficial vascular anatomy, theoretically affecting the spread of locally injected anesthetic and increasing the risk of inadvertent vascular puncture. In this patient, real-time ultrasound visualization was used to identify the external jugular vein and to confirm a homogeneous spread along the posterior border of the SCM, mitigating these concerns. At the same time, a substantial fraction of the perioperative nociceptive load arises from skin incision, subcutaneous dissection, retraction along the SCM, and platysmal closure — all of which fall predominantly within the cutaneous distribution of the superficial branches of the cervical plexus. This anatomic alignment between the surgical field and the dermatomal coverage of an SCPB is what makes the technique especially attractive when integrated with general anesthesia in this clinical context.[2-4]

Several themes recur in the pediatric anesthesia literature whenever neck surgery is discussed.[11-13] First, airway considerations are paramount. Although an isolated, well-defined lateral neck mass without retropharyngeal extension rarely produces airway obstruction, the head-turned position required for optimal surgical exposure, the proximity of the operative field to the airway, and the potential for postoperative tissue edema or hematoma formation all argue for a secured definitive airway. Second, the small absolute volumes of distribution and the more rapid hemodynamic responses of pediatric patients amplify the consequences of even modest changes in vasomotor tone or fluid balance, particularly when the surgery is performed in the head-up position to reduce venous engorgement of the operative field. Third, pediatric pain physiology is now recognized to involve dynamic central sensitization, and inadequately treated intraoperative nociception can lead to disproportionately greater postoperative pain, opioid demand, and PONV than would be expected from an objective assessment of tissue trauma alone.[3,4] For all these reasons, an opioid-sparing multimodal approach — incorporating regional anesthesia, paracetamol, and (where appropriate) intravenous non-opioid agents — is strongly preferred over an opioid-centric strategy.

The added value of a regional component in this context can be conceptualized along three axes. The first is intraoperative, where blockade of cutaneous afferents reduces the systemic anesthetic and opioid requirements needed to maintain hemodynamic stability during incision and dissection.[4] The second is at emergence, where the residual analgesic effect of the block facilitates a calm, comfortable awakening with reduced risk of cough, hypertension, and laryngospasm. The third is during the early postoperative period, where prolonged sensory blockade reduces the demand for systemic opioids and the associated risks of sedation, respiratory depression, and PONV — all of which are particularly undesirable in a child returning home or to a regular ward without continuous high-acuity monitoring.

A precise mental model of cervical plexus anatomy is fundamental to any rational choice of technique.[8] The cervical plexus derives from the anterior rami of the first four cervical spinal nerves. After leaving the intervertebral foramina, these rami pierce the prevertebral fascia and form a series of anastomotic loops between the longus capitis and middle scalene muscles. These loops give rise to two functional groups of branches: deep branches, which provide motor innervation to the deep cervical musculature and, via the phrenic nerve, the diaphragm; and superficial branches, which carry the sensory information of the anterolateral neck and adjacent regions.[8]

The superficial branches emerge from beneath the posterior border of the SCM at a clinically reliable landmark known as Erb's point, which corresponds approximately to the midpoint of a line drawn between the mastoid process and the clavicular insertion of the SCM (refer back to Figure 1). From there, the branches divide into ascending and descending groups: the lesser occipital and great auricular nerves ascend to supply the retro-auricular and posterior auricular regions; the transverse cervical nerve runs anteriorly across the SCM to supply the anterolateral neck; and the supraclavicular nerves descend to innervate the skin overlying the clavicle and the upper anterior chest.[8] This dermatomal distribution is precisely the territory most likely to be traversed by an incision designed to access a posterolateral cervical mass.

The plexus also has well-known functional anastomoses with adjacent neural structures, including the hypoglossal, glossopharyngeal, and vagus nerves, as well as the cervical sympathetic chain. These connections explain the patterns of side effects associated with deep blocks, including dysphagia, dysphonia, and sympathetic outflow disruption (Horner syndrome). The superficial approach, by virtue of being deposited subcutaneously and superficial to the deep cervical fascia, largely avoids these structures and is therefore the safest of the three approaches.[8,9]

Three principal techniques for cervical plexus block have been described, each with its own depth, target compartment, and complication profile.[8] The deep approach involves the deposition of local anesthetic in the C2-C4 paravertebral space, deep to the prevertebral fascia. While this can produce dense anesthesia of both deep and superficial branches, it carries a measurable risk of inadvertent intravascular injection, neuraxial spread (with potentially catastrophic respiratory or cardiovascular consequences), phrenic nerve blockade resulting in unilateral diaphragmatic paresis, recurrent laryngeal nerve involvement, and Horner syndrome.[8,9] In adult patients undergoing carotid endarterectomy, deep or combined cervical plexus blocks have been associated with a significantly higher rate of serious complications related to the injecting needle than superficial or intermediate techniques (odds ratio 2.13, p=0.006).[9] In pediatric patients, where the absolute anatomic distances involved are smaller and the consequences of even unilateral diaphragmatic paresis can be more pronounced relative to overall respiratory reserve, these risks are amplified.

The intermediate approach involves the deposition of local anesthetic at the level of the C4 transverse process, between the prevertebral fascia and the investing layer of the deep cervical fascia. This approach can produce a more extensive blockade than the superficial technique, especially with larger volumes, but is not entirely devoid of phrenic involvement and may cause some motor block.[8,14] The superficial approach involves the deposition of local anesthetic subcutaneously and superficial to the deep cervical fascia, typically along the posterior border of the SCM at Erb's point. The technique is technically simple, has the lowest reported complication rate of the three approaches, and provides reliable analgesia for procedures whose nociceptive footprint corresponds predominantly to the cutaneous distribution of the superficial branches.[9,8,15] A randomized comparison by Tran and colleagues between ultrasound-guided and landmark-based superficial cervical plexus blocks reported success rates that were comparably high in both groups (with ultrasound providing better dispersion visualization rather than markedly higher success), supporting the argument that ultrasound is most useful in the superficial approach for confirming spread, avoiding vascular puncture, and minimizing the volume of local anesthetic required.[15]

Within this framework, four alternatives were considered for the present patient: (i) general anesthesia alone with intraoperative opioid titration; (ii) surgeon-performed wound infiltration at the end of the procedure; (iii) intermediate cervical plexus block; and (iv) deep cervical plexus block. The first was rejected because it would not deliver any opioid-sparing benefit; the second because end-of-procedure infiltration provides only limited intraoperative analgesia and is technically inferior to a preoperative block of the same dermatomal field; the third because the additional spread offered no incremental benefit for this superficial dissection; and the fourth because of the unfavorable risk-benefit profile in pediatric airway-adjacent anatomy. Thus, the superficial approach was chosen on the basis of three converging considerations: (i) the surgical incision and dissection were anatomically confined to the lateral cervical region, mapped within the cutaneous distribution of C2-C4 superficial branches as illustrated in Figure 1; (ii) the patient was a school-aged child for whom respiratory reserve and the absence of motor block of the diaphragm were prioritized; and (iii) the technique was intended as an opioid-sparing adjunct to general anesthesia, not as a sole anesthetic, so the deeper analgesic spread offered by intermediate or deep approaches was not required.

Ropivacaine is a long-acting amide local anesthetic that has been increasingly preferred over bupivacaine in pediatric regional practice because of its more favorable safety profile, particularly with regard to cardiac and central nervous system toxicity.[16,17] Its physicochemical properties — including a slightly lower lipid solubility than bupivacaine, relatively rapid plasma protein binding, and stereoselective metabolism — translate into a wider therapeutic window, a shorter duration of cardiotoxicity in the event of accidental intravascular injection, and a better separation between sensory and motor blockade at low concentrations.[17] In pediatric patients, in whom the absolute body mass available to dilute and metabolize a given dose is small, this safety margin is clinically meaningful.[16]

Pediatric dosing recommendations for single-shot ropivacaine peripheral nerve blocks generally cap the total dose at approximately 3 mg/kg (a maximum allowable single-shot dose of 72 mg in this 24-kg patient), a recommendation echoed by the joint ESRA/ASRA Practice Advisory and supported by data from PRAN registries documenting low complication rates within this dose envelope.[10,18] In our patient, the total dose administered (8 mL × 0.2% = 16 mg) corresponded to approximately 0.67 mg/kg — roughly one-quarter of the pediatric ceiling — leaving a wide safety margin. This dose was deliberately conservative for two reasons. First, the superficial branches of the cervical plexus are sensory-only and respond well to relatively low concentrations of local anesthetic; pushing the concentration higher would offer little additional analgesic benefit while increasing the systemic absorption and potential cardiac toxicity in the event of inadvertent intravascular spread. Second, dilute (0.2%) rather than concentrated (0.375-0.5%) ropivacaine preserves a clearer separation between sensory and motor blockade, an advantage in a pediatric patient in whom subtle motor effects on the SCM and platysma could theoretically influence airway dynamics. Pediatric SCPB volumes published in adult-extrapolated and small pediatric series typically range from 0.1 to 0.2 mL/kg; the 8 mL volume used here corresponded to approximately 0.33 mL/kg, modestly above the lower end of this range, chosen to ensure adequate craniocaudal spread.[10,17] The duration of analgesia observed clinically — extending into the early postoperative phase as suggested by the absence of rescue analgesic demand — is consistent with the published time-course of low-concentration ropivacaine when combined with an adjuvant.[11,19]

Dexamethasone is a long-acting glucocorticoid that has been extensively studied as an adjuvant to peripheral nerve blocks in adults, with growing — although still less mature — evidence in pediatric practice.[11,19-21] Multiple meta-analyses have shown that perineural dexamethasone, when added to long-acting local anesthetics, significantly prolongs the duration of sensory block and reduces postoperative pain intensity and opioid consumption.[11,20,21] In a Cochrane systematic review by Pehora and colleagues, perineural dexamethasone increased the mean duration of sensory blockade and reduced postoperative pain intensity, although the authors noted high heterogeneity and emphasized that the evidence base in children remained limited.[20] A meta-analysis by Albrecht and colleagues quantified the prolongation of analgesia at approximately 233 minutes for short- or medium-acting local anesthetics and approximately 488 minutes for long-acting local anesthetics, with no clear dose-response between 4 and 8 mg.[11] A systematic review by Choi and colleagues specifically of dexamethasone adjuvant to brachial plexus block similarly demonstrated significant prolongation of analgesia and a reduction in opioid requirements.[21] Recent meta-analyses suggest that intravenous and perineural routes may produce broadly similar analgesic prolongation; the perineural route was used in this case because it permitted single-syringe co-administration with the local anesthetic at the procedural moment, simplifying workflow, and is consistent with established case-based practice. It should be acknowledged that perineural use of dexamethasone is considered off-label in many regulatory environments, which has implications for institutional governance.

The proposed mechanisms of action for the analgesic prolongation produced by perineural dexamethasone are multifactorial. Local vasoconstriction reduces the systemic uptake of local anesthetics and prolongs perineural exposure. Direct action on neuronal glucocorticoid receptors may suppress the activity of unmyelinated C-fibers, which are the primary mediators of postoperative pain. Anti-inflammatory effects at the site of injection further reduce nociceptive amplification produced by surgical tissue trauma. Pediatric-specific dose-response data remain limited; the 5 mg dose used here (≈0.21 mg/kg) lies within the range typically used in adult studies (4-10 mg) and within the antiemetic and analgesic range frequently used as an intravenous adjunct in pediatric anesthesia. The favorable postoperative course observed in this case is qualitatively consistent with the published evidence, but should not be interpreted as quantitative evidence of an effect attributable to dexamethasone in isolation.

The clinical concept of opioid-sparing in pediatric perioperative care has received increasing attention, motivated both by the recognition that children are particularly vulnerable to opioid-related adverse drug events (including respiratory depression, sedation, and PONV) and by broader societal awareness of the consequences of unnecessary opioid exposure.[3,4] Although ERAS-style pediatric pathways are still under development for many surgical specialties, the underlying principle of multimodal analgesia — combining regional anesthesia, paracetamol, and non-opioid systemic agents wherever appropriate, and reserving opioids for breakthrough requirements — is widely endorsed.

The clinical signal in our case is consistent with this framework. After a single induction-phase fentanyl bolus, no further opioids were required intraoperatively, and the patient did not require PACU rescue analgesics. This pattern aligns qualitatively with published findings from systematic reviews showing that effective regional blocks in pediatric surgery are associated with population-level reductions of approximately 30-50% in perioperative opioid use, decreased PACU rescue analgesia, and lower rates of PONV.[4,22] These population-level estimates are not the same as quantitative outcomes of a single case; rather, they provide an evidence-aligned context against which the present case can be interpreted.

The hemodynamic stability observed throughout the procedure also deserves comment. The combination of a balanced general anesthetic with an effective regional block typically produces a more stable hemodynamic profile than either approach alone: the regional block reduces nociceptive surges that would otherwise require deeper systemic anesthetic depth or rescue boluses of opioid or vasopressor, while general anesthesia provides immobility and amnesia. The result is often a flatter, more predictable intraoperative course with fewer dose adjustments and less hemodynamic excursion, which was clearly evident in our case.[22]

Despite the favorable outcome in our patient, no regional anesthetic technique is risk-free.[6-9] Reported complications of cervical plexus blockade — most documented in adult settings — include local anesthetic systemic toxicity (LAST), inadvertent vascular puncture and hematoma, recurrent laryngeal nerve block with associated hoarseness, phrenic nerve block with hemidiaphragmatic paresis, dysphagia, Horner syndrome, infection, intraneural injection with persistent paresthesia, and (rarely) total spinal anesthesia from inadvertent neuraxial spread. The frequency of these events varies markedly with the depth of the block: deep approaches carry the highest combined complication rate, intermediate approaches an intermediate rate, and superficial approaches the lowest rate.[9]

Pediatric-specific evidence is most robustly drawn from the PRAN database, which has reported very low rates of permanent neurologic injury and severe LAST across more than 100,000 blocks in children.[6,7] Specifically, no permanent neurologic deficit was identified in the PRAN cohort, the rate of transient neurologic deficit was approximately 2.4 per 10,000, and severe LAST occurred at a rate of 0.76 per 10,000. These rates were achieved within a system of routine ultrasound guidance, weight-based dose calculations, fractionated injection, and continuous intraoperative monitoring — practices that we replicated in this case. Mitigation strategies include ultrasound visualization for needle position and spread, aspiration before each incremental injection, weight-based maximum dose calculations and dosing well below the toxicity threshold, avoidance of deep paravertebral spread, vigilance for early signs of LAST or motor block of the diaphragm, and immediate availability of intravenous lipid emulsion in line with ASRA guidelines.[12,23,24]

A more conceptual consideration is the limited analgesic territory of the SCPB. Because the block predominantly anesthetizes the cutaneous branches of C2-C4, deep dissection or extensive traction on visceral structures may produce nociceptive input that is not fully covered by the technique. In the present case, the operative field was confined to superficial-to-mid cervical layers, and the surgical course did not require deep paratracheal or carotid-sheath dissection, so the analgesic coverage of the SCPB was matched to the nociceptive load. In settings where deeper dissection is anticipated, supplementation with a deeper regional component, intravenous adjuncts, or a carefully titrated opioid would be appropriate.

Although the original Tran and colleagues randomized trial showed that ultrasound did not significantly increase the success rate of superficial cervical plexus blockade compared to a careful landmark-based technique in adults,[15] ultrasound guidance offers other important advantages that justify its near-universal adoption in modern pediatric practice.[24,25] These include direct visualization of needle position, confirmation of spread along the desired plane, identification and avoidance of nearby vascular structures (including the external jugular vein and superficial cervical vessels), and adaptation to the relatively compact pediatric anatomy in which precise small-volume injection is essential. Operator competence in pediatric regional ultrasound is itself a learned skill that benefits from mentored exposure and ongoing case volume; the technique described here should not be viewed as a one-off intervention but as an element of a coherent regional anesthesia training pathway.

Practical priorities relevant to our practice included: avoiding the external jugular vein, which crosses the SCM superficially in the area of Erb's point and is easily compressed during transducer pressure; confirming the absence of pleural shadowing in the supraclavicular region to mitigate the (theoretically very low) risk of pleural breach during caudal extensions of the block; verifying spread cephalad and caudad along the posterior SCM border to ensure that all four targeted superficial branches are bathed; and using a small-volume hydrolocation bolus to confirm appropriate tissue plane before depositing the full dose.

To position the present case within the broader pediatric regional anesthesia literature, we compared its clinical profile and anesthetic strategy with four representative published reports of pediatric cervical superficial plexus or great-auricular branch blockade. The structured side-by-side comparison is provided in Table 3, which summarizes patient population, surgical indication, block technique, local anesthetic and adjuvant, anesthetic context (general anesthesia vs sedation), and the principal observed outcome for each report. Several patterns emerge from this comparison.

First, the published pediatric SCPB experience to date has been concentrated in three surgical contexts: vocal cord and laryngeal procedures performed under sedation rather than general anesthesia,[26] children undergoing tympanomastoid surgery for chronic ear disease,[27] and children undergoing otologic surgery via a postauricular incision.[28] The case described here extends documented pediatric SCPB experience into a fourth context — recurrent oncologic cervical mass excision in the macrocystic lymphangioma–branchial cleft anomaly differential — which has been comparatively under-represented in the indexed literature. As shown in Table 3, this contextual gap is the principal reason that a structured comparison is informative rather than redundant.

Second, the choice of local anesthetic and adjuvant in our case differs in instructive ways from the published comparators. Suresh and Templeton (2004) used bilateral SCPB with bupivacaine to facilitate intraoperative phonation in an awake teenage patient undergoing medialization thyroplasty, capitalizing on the sensory-only profile of the superficial branches.[26] Suresh and colleagues (2004) studied a preemptive bilateral great auricular nerve block — a focal subset of the SCPB territory — using 0.25% bupivacaine with epinephrine in children undergoing tympanomastoid surgery, in a randomized trial design.[27] Miller and colleagues (2025) reported a retrospective single-center cohort of 237 children (121 with SCPB) undergoing cochlear implantation, tympanomastoidectomy, tympanoplasty, or myringoplasty.[28] In contrast, the present case used dilute ropivacaine (0.2%) with perineural dexamethasone — a combination chosen for its favorable cardiac safety profile, opioid-sparing intent, and potential for prolonged analgesia, as discussed in Sections 3.5–3.6.

Third, the outcomes reported across these comparators converge on a consistent pattern of safety and analgesic feasibility, but diverge on the magnitude of benefit. The Suresh & Templeton case demonstrated that an SCPB-only sedation strategy is feasible in selected pediatric awake-airway scenarios.[26] The Suresh GAN trial found that preemptive blockade of the great auricular nerve did not provide significant additional postoperative analgesia compared with a non-preemptive approach in tympanomastoid surgery,[27] a result that highlights the limits of an isolated focal cervical-branch block when integrated with an already opioid-rich anesthetic. The Miller cohort observed lower intraoperative opioid administration with SCPB but no statistically significant reduction in PONV,[28] suggesting that block efficacy on opioid use may not always translate to dramatic differences in PONV when other non-opioid antiemetic strategies are used. The favorable postoperative course in the present case — no intraoperative opioid after induction, no PACU rescue, smooth ward transfer — is qualitatively consistent with these outcomes and adds an oncologic-cervical-mass data point to the documented experience.

Fourth, technique-related differences are also informative. The Suresh & Templeton case used a bilateral landmark-based SCPB (pre-ultrasound era for routine pediatric SCPB),[26] the Suresh GAN trial used focal great auricular blockade with anatomical landmarks,[27] and the Miller cohort included both ultrasound-guided and landmark-based approaches.[28] The present case used a unilateral ultrasound-guided technique with in-plane needling, hydrolocation, and fractionated dosing — features that align with contemporary pediatric regional anesthesia best practices and with the safety record documented in PRAN registries.[6,7] The clinical relevance of these technical differences is that ultrasound guidance, while not necessarily increasing dichotomous block success, supports volume reduction, vascular avoidance, and confirmation of spread — particularly important when, as in this case, the operative field had been previously dissected.

Taken together, the comparison summarized in Table 3 supports three practical inferences. First, pediatric SCPB has been used safely across a range of surgical contexts, and the addition of a recurrent lymphangioma case extends rather than challenges that experience. Second, the agent–adjuvant combination used here (ropivacaine 0.2% + dexamethasone 5 mg) is consistent with contemporary pediatric pharmacologic principles and is supported by adult-derived efficacy data, although pediatric-specific quantitative dose-response data remain limited. Third, the heterogeneity of outcomes across the comparator literature underscores the need for prospective comparative studies in pediatric cervical surgery — particularly for contexts (such as oncologic excision) that have been least represented to date. The present case is offered as a structured, transparent point of reference to support such future work.

This case has practical relevance for several reasons. First, it documents in detail the integration of an evidence-based opioid-sparing strategy into the perioperative management of pediatric cervical surgery in an Indonesian academic center, contributing to the growing local literature on pediatric regional anesthesia. Although large prospective registries from Europe and North America have established the safety of pediatric regional anesthesia, locally relevant case-based literature remains comparatively sparse, and structured case reports of this kind can play an important role in supporting departmental adoption, training, and audit. Second, by anchoring the discussion in primary anatomic, pharmacologic, and procedural reasoning rather than in a rote protocol — and by explicitly comparing the present case with the established pediatric SCPB literature in Table 3 — the report aims to model the kind of explicit clinical reasoning that anesthesiology trainees can adapt to other scenarios. Third, the report illustrates that with appropriate planning, even a single-shot superficial regional technique combined with general anesthesia can deliver an opioid-sparing intraoperative course, a smooth recovery, and an uncomplicated early postoperative period, and that these outcomes are achievable in routine practice without specialized infusion pumps, continuous catheters, or advanced postoperative monitoring environments.

It is important to note that the equitable translation of these techniques to non-academic and lower-resource settings depends on the availability of high-frequency linear ultrasound transducers, fine-gauge regional anesthesia needles, and operators with formal pediatric regional anesthesia training. Institutional pathways that may help expand adoption include departmental protocols for pediatric SCPB; structured audit and registry contribution to PRAN-style networks; mentored block training for residents and fellows; and explicit governance for the off-label use of perineural adjuvants such as dexamethasone.

This case report has several limitations intrinsic to the format. First, as a single observational case, it cannot establish causality between the chosen anesthetic strategy and the favorable outcome. Many factors — including the patient's overall good health, the relatively short operative time, the limited tissue trauma, and the absence of intraoperative complications — likely contributed to the smooth course independently of the regional component. The contribution sits at the descriptive and hypothesis-generating end of the evidence ladder. Second, block efficacy was inferred from clinical course rather than demonstrated by formal postoperative dermatomal sensory mapping; future practice should incorporate brief postoperative sensory assessment when feasible.

Table 3. Comparison of the present case with similar published pediatric cervical superficial plexus/great-auricular branch block reports.

Study (year)	Population	Indication	Block/technique	Local anesthetic + adjuvant	Principal outcome
Present case (2026)	9-year-old girl, 24 kg, ASA II	Recurrent right cervical lymphangioma excision (vs branchial cleft anomaly)	USG-guided unilateral SCPB; in-plane; hydrolocation; fractionated	Ropivacaine 0.2% 8 mL (0.67 mg/kg) + dexamethasone 5 mg (~0.21 mg/kg); GA + IV paracetamol	Stable hemodynamics; no additional intraoperative opioid; FLACC 0-1 in PACU; uneventful POD 1 discharge
Suresh & Templeton (2004)[26]	Pediatric awake patient	Vocal cord medialization thyroplasty (awake phonation required)	Bilateral landmark-based SCPB; sedation only (no GA)	Bupivacaine (sedation as adjunct, no perineural steroid)	Successful awake intraoperative phonation; SCPB feasible as sole regional component in selected pediatric airway-cooperative cases
Suresh et al. (2004)[27]	Pediatric RCT cohort, tympanomastoid surgery	Postoperative analgesia after tympanomastoid surgery	Bilateral preemptive great auricular nerve block (focal SCPB territory); landmark technique; under GA	Bupivacaine 0.25% with 1:200,000 epinephrine; no perineural steroid	Preemptive GAN block did not significantly improve postoperative analgesia compared with non-preemptive timing
Miller et al. (2025)[28]	Retrospective cohort: 237 children aged 1-18 y; 121 with SCPB	Cochlear implantation, tympanomastoidectomy, tympanoplasty, myringoplasty (postauricular incision)	USG- or landmark-guided unilateral SCPB; under GA	Local anesthetic per institutional protocol; no perineural steroid	Lower intraoperative opioid administration in block group; no significant reduction in PONV; no block-attributable adverse events
Tran et al. (2010)[15]	Adult RCT (referenced for technique comparison)	Carotid-related cervical surgery	USG-guided vs landmark-based superficial cervical plexus block	Local anesthetic per protocol	Comparable success rates; ultrasound provided improved spread visualization and lower vascular puncture risk — supports the technique standard adopted in our case

ASA: American Society of Anesthesiologists; FLACC: Face/Legs/Activity/Cry/Consolability score; GA: general anesthesia; GAN: great auricular nerve; PACU: post-anesthesia care unit; POD: postoperative day; PONV: postoperative nausea and vomiting; RCT: randomized controlled trial; SCPB: superficial cervical plexus block; USG: ultrasound-guided. Citation numbers refer to the reference list at the end of the manuscript.

Third, the exact contribution of perineural dexamethasone to block duration cannot be quantified in a single case. Fourth, formal pain trajectories beyond the immediate postoperative period — such as 24- and 48-hour rescue analgesic consumption — were not captured in a manner suitable for prospective research, and the qualitative description of no rescue analgesic demand should be interpreted accordingly. Fifth, ultrasound images and quantitative block onset times were not captured in a manner suitable for inclusion in a research dataset. Sixth, the histopathological diagnosis at the time of writing remained in the radiologic-clinical category of suspected lymphatic malformation versus branchial cleft anomaly; final confirmation will follow histopathological review. Seventh, the comparators included in Table 3 are heterogeneous in design (single-case report, randomized trial, retrospective cohort) and surgical context, so the comparison should be read as descriptive rather than as a formal meta-analytic synthesis.

Future directions include formalizing institutional protocols for pediatric SCPB based on the framework illustrated here; conducting prospective case series comparing general anesthesia alone with general anesthesia plus SCPB in pediatric cervical surgery, with predefined outcomes for opioid consumption, FLACC pain scores, recovery quality, and complication rates; and incorporating image and dose data into a local pediatric regional anesthesia registry that can contribute to international networks such as PRAN. These would help generate locally validated evidence and would support broader adoption of opioid-sparing techniques in Indonesian pediatric practice.

In an appropriately selected pediatric patient undergoing excision of an anterolateral cervical lesion, ultrasound-guided SCPB combined with balanced general anesthesia is technically straightforward, anatomically well matched to the surgical field, and clinically associated with opioid-sparing intraoperative and early postoperative care. The choice of ropivacaine 0.2% with 5 mg of dexamethasone provides an effective and conservative agent-adjuvant combination, leveraging the favorable safety profile of dilute long-acting amide and the analgesic prolongation produced by perineural glucocorticoid. The chosen total dose (≤3 mg/kg of ropivacaine) leaves a wide safety margin against LAST and is well within the envelope endorsed by the joint ESRA/ASRA Practice Advisory.[10,12,18] Adopting the technique within a systematic framework that includes ultrasound guidance, weight-based dose calculation, fractionated injection, and continuous monitoring is associated, in larger registries, with very low complication rates.[6,7] The structured comparison in Table 3 places the present case alongside the existing pediatric SCPB literature and is intended to support — rather than substitute for — future prospective comparative work.

4. Conclusion

This case report describes the successful anesthetic management of a 9-year-old girl undergoing excision of a recurrent right cervical lymphangioma using a multimodal strategy that combined balanced general anesthesia with an ultrasound-guided superficial cervical plexus block performed with 8 mL of ropivacaine 0.2% and 5 mg of dexamethasone as a perineural adjuvant. The technique was performed within a conservative pediatric dose envelope, produced a stable intraoperative course without additional opioid requirement after induction, and was associated with a smooth post-anesthesia recovery and an uncomplicated early postoperative period. The clinical pattern observed in this case is consistent with the published evidence on superficial cervical plexus blockade and on perineural dexamethasone, and the structured comparison with prior pediatric SCPB reports (Table 3) places the present experience as an extension into the recurrent oncologic cervical mass setting — a context that has been comparatively under-represented in indexed literature. Although a single case cannot establish causality, this report supports the integration of ultrasound-guided SCPB into multimodal analgesic pathways for pediatric anterolateral cervical surgery, particularly when an opioid-sparing strategy is desirable. Prospective comparative studies, including pediatric registry-based work in Indonesian and broader Asian settings, are warranted to formally quantify the analgesic, hemodynamic, and recovery-related benefits of SCPB in pediatric head and neck surgery.

5. References

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