Anesthesia challenges for emergency surgery in a pediatric patient with congenital laryngomalacia

Sir,
The genesis of congenital laryngomalacia has been enigmatic. Being the most common cause of congenital stridor, it is generally associated with various anomalies. Severe airway obstruction can be seen in 22q11.2 anomaly along with laryngomalacia. Inherited associated anomalies may pose an additional constraint on anesthetic management and require a holistic approach. Airway obstruction in such cases increases the intrathoracic pressure leading to reflux disorders, which further aggravates the symptoms.

An 11-month-old infant weighing 6.5 kg referred to our tertiary care center with a history of a fall on a sharp object with 2–3.5 cm vertical laceration of the nose along with nasal septal cartilage injuries for repair. The patient was a known case of congenital laryngomalacia with inspiratory stridor which decreases on being prone. On examination, bilateral crepitations were present in both the lung fields with mild inspiratory stridor and heart rate of 126/min. Fasting status was confirmed. Antireflux prophylaxis and antisialagogue were administered. The patient was shifted to the operating room after obtaining informed consent from the parents. Standard monitoring ensued. In view of the blood trickling from nasal cartilage into the postpharyngeal wall, gentle oral suctioning was done followed by Plan A, i.e., inhalational induction with 6%–7% sevoflurane and 100% oxygen while maintaining the spontaneous respiration in the lateral position with head low to prevent aspiration of the blood. Difficult airway cart was kept ready with the tracheostomy set as Plan B. Intravenous (IV) access was secured followed by fentanyl 2 μg/kg IV Mask ventilation was ascertained and check video
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laryngoscopy with Truview video laryngoscope (Truview PCD™ video laryngoscope [TVL], Netanya, Israel) [Figure 1] revealed a Cormack and Lehane Grade 3 of glottis. Local anesthetic spray (lignocaine 10%) of the upper airway was done to facilitate smooth intubation. TVL-guided intubation with size 4.0 micro-cuffed endotracheal tube was achieved using optimal external laryngeal manipulation in the left lateral position, and injection rocuronium 1 mg/kg was administered. Maintenance was done with oxygen, air, and sevoflurane targeting the minimum alveolar concentration (MAC) of 1.2. Intraoral packs were placed after making the infant supine. On resumption of the spontaneous breathing at the end of surgery, sevoflurane was reduced to target MAC of 1.0 to prevent emergence delirium and IV dexmedetomidine 0.5 μg/kg bolus was administered 10 min before the culmination of surgery. The patient was reversed based on the train of four patterns on peripheral nerve stimulator and extubation done gently in deep plane of anesthesia under video laryngoscope guidance. Perioperative period was uneventful with no airway event, and the infant was shifted to Pediatric Intensive Care Unit for observation.

Children with laryngomalacia frequently have an easily recognizable difficult airway, making the conventional methods of securing the airway difficult. The altered anatomy may require urgent tracheostomy for securing the airway. Fiber-optic intubation technique is the gold standard; however, in view of nasal cartilage injury with ongoing bleeding, it was obviated in our case. Inhalational induction while maintaining the spontaneous respiration as being a safer option was adopted.[4] Intubation was difficult with associated large overhanging epiglottis, redundant arytenoid tissue, and the inspiratory stridor. TVL was utilized and successfully attempted in the lateral position firstly due to stridor which increased on being supine and secondly due to the ongoing trickle of blood from the nasal cavity. All precautions were taken to extubate infant in deep and spontaneously breathing without invoking any adverse airway event. Extubation should incorporate an effective comprehensive plan to prevent cannot intubate and cannot ventilate situation. This was made possible by the administration of the bolus of dexmedetomidine an alpha-2 agonist just before the completion of surgery by preventing the unwarranted emergence delirium after sevoflurane use. Di et al. utilized dexmedetomidine to facilitate smooth extubation in children post tonsillectomy, utilizing its sedative, analgesic, and properties to minimally affect the airway reflexes.[5]

The anesthetic management of patients with laryngomalacia utilizes a multiprong approach by having a robust strategy to deal the anticipated difficult airway, maintaining the adequate depth of anesthesia, preferably extubating deep with spontaneous breathing and vigilant monitoring perioperatively, which could translate into a favorable outcome.

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Conflicts of interest
There are no conflicts of interest.

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Sir,

There is significant pain after thoracotomy surgery because of pleural and muscular damage, ribcage disruption, and intercostal nerve damage during surgery, which if not effectively managed lead to various respiratory complications delaying the discharge. For perioperative analgesia, although thoracic epidural has long been used as a standard technique, thoracic paravertebral block (TPVB) has also claimed to be safe, effective, and noninferior. There is fewer occurrences of side effects such as hypotension, urinary retention, nausea and vomiting. With the advent of ultrasound (US), performance of TPVB has been reemerged; however, the above side effects could not be nullified and there are reports of intrathoracic migration of catheter also.

Erector spinae plane block (ESPB), recently developed as a novel technique, has been shown to provide effective analgesia for both thoracic and abdominal surgeries in a few patients, although there are limited data in pediatric patients. From our experience of ESPB in breast surgeries and adult thoracotomy, and having been able get adequate analgesia compelled us to perform this block in pediatric thoracotomy. Here we report the use of the US guided ESPB with catheter for continuous local anesthetic (LA) infusion. Written informed assent as well as consent from parents of 12 year old boy posted for left decortication was obtained for regional block and also for publication without revealing the identity. He had no other systemic illnesses, and his airway examination was normal.

After induction of general anesthesia (GA), the child was positioned in the right lateral decubitus position, and ESP block was performed as described by Forero et al. with an 18 G Tuohy needle. Ten milliliter of 0.25% of ropivacaine was deposited in the fascial plane deeper to erector spinae muscle, after confirming with hydrodissection with 0.5 ml of saline. Following the LA injection, the catheter was introduced and placed in the same fascial plane and was secured with adhesive bandage.

On skin incision, there was rise in heart rate more than 20% from the baseline, which got settled with IV fentanyl 0.5 mcg/kg. He also received IV paracetamol 20 mg/kg. Rest of the intraoperative course was uneventful and was extubated on the table. He was observed for postoperative pain using visual analog scale (VAS) score.