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Anaesthetic Challenges in A Patient with Massive Lipoma Neck: Lateral Intubation A Salvage Technique

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Abstract
Introduction: *Significant difference exists in the physiology and anatomy of paediatric and adult airway, requiring an effective intervention, in case the emergency arises. We present a case of 3 year old child with massive lipoma on the anterior aspect of neck.*
Case Report: *A 3 year old girl, weighing 13 kg, presented with a massive neck mass, Her swelling was supported with cotton padding and head with the ring underneath. Child was induced adequately mask ventilated in lateral position. Inj fentanyl 25 µg i.v, inj. propofol 25 mg i.v given. After obtaining adequate ventilation, inj. suxamethonium 25 mg i.v given. Laryngoscopy was done in lateral position and child was intubated successfully in first attempt with uncuffed ETT of ID 4.5mm and the position of the tube was confirmed by $EtCO_2$ and auscultation (figure 3). Then the child was made supine.*

Introduction

Paediatric airway management remains the most harrowing task before the anaesthetist. Significant difference exists in the physiology and anatomy of paediatric and adult airway, requiring an effective intervention, in case the emergency arises.

We present a case of 3 year old child with massive lipoma on the anterior aspect of neck. These children pose a challenge as though laryngoscopy maybe straightforward but problem lies at the vocal cords or beyond where the airway may be compromised due to pressure effects of a long standing swelling.[1] We describe the challenges incurred in our case where the technique of lateral intubation proved to be a boon. To the best of our knowledge and extensive search of literature, this technique has rarely been reported in paediatric patients for a huge anterior neck mass.

Case Report

A 3 year old girl, weighing 13 kg, presented with a massive neck mass, enlarging gradually over a period of 2 years (figure 1). She was scheduled for elective excision of the mass. There was no significant past history of any comorbidity or congenital history as revealed by her father. There was no history of dyspnea, stridor or swallowing difficulties. On examination the base of the mass extended vertically from the lower border of mandible up to sternum inferiorly and midclavicular line on either side (approx. size of 10 x 10 cm in the midline). The mass was soft in

consistency, non tender with slight stretching of the skin on the surface but no evidence of dilated veins were present. Systemic examination and routine investigation were within normal limits. Ultrasonography confirmed a lipomatous neck swelling. To rule out intrathorac extension, we advised CECT neck/ chest, which confirmed a soft tissue mass with only extrathoracic extension upto lower end of sternum. There was no evidence of tracheal deviation or compression. STN revealed a huge pretracheal soft tissue shadow and no tracheal deviation (figure 2). After adequate preparation, child was brought in the OT, monitors attached and intravenous line secured. Patient was premedicated with inj atropine (0.2 mg) and inj midazolam (0.5 mg). Our anaesthetic plan was GA with lateral intubation but due to an anticipated difficult airway, an emergency cart consisting of LMA, rigid fibrooptic bronchoscope, tracheostomy set was kept ready. Her swelling was supported with cotton padding and head with the ring underneath. Child was induced with sevoflurane (4-6%) in oxygen and adequately mask ventilated in lateral position. Inj fentanyl 25 µg i.v, inj. propofol 25 mg i.v given. After obtaining adequate ventilation, inj. Suxamethonium 25 mg i.v given. Laryngoscopy was done in lateral position and child was intubated successfully in first attempt with uncuffed ETT of ID 4.5mm and the position of the tube was confirmed by $EtCO_2$ and auscultation (figure 3). Then the child was made supine. Tube was fixed and connected to the circuit. Maintenance was done with nitrous oxide in oxygen with sevoflurane (1-2%) and controlled ventilation done. Monitoring comprised of NIBP, HR, ECG, SpO_2, $EtCO_2$. Total IV fluids and blood loss were carefully recorded and replaced appropriately in view of the large swelling excision. Intraoperative period was uneventful as surgery proceeded as per plan. The child was extubated successfully after reversing neuromuscular blockade on completion of surgery (figure 4). Child was shifted to the recovery room and postoperative period was uneventful.

Figure 1 child with asymptomatic large midline swelling

Figure 2 X ray STN: huge pretracheal soft tissue shadow. Although, not compressing the airway.

Figure 3 Intubation—laryngoscopy done in lateral position and with uncuffed ETT of ID 4.5mm.

Figure 4 Postoperative: after excision of the swelling, child was successfully extubated

Discussion

Difficult airway in children can be present as difficulty in obtaining a mask seal, difficulty in visualizing the vocal cords or external factors like large masses wherein inspite of visualizing the vocal cords, we land up in cannot intubate, cannot ventilate (CICV) situation.[2] The challenges in our case were paediatric airway and its implications as well as massive anterior neck swelling. The sui genesis of our case was its presentation (3 years), until it grew into a massive neck swelling. The major challenges before us were limited neck movements, paediatric airway (limited functional reserve, higher oxygen demands with chances of early desaturation) compounded by direct pressure of the swelling on the airway threatening to compress the airway on induction with GA.[3] The proximity of the swelling to major vessels as well as sharing of the surgical field (with intraoperative chances of accidental extubation) were additional risk factors.

In our case, excision of the neck swelling was expected to involve manipulations of and around trachea and vessels of the neck, along with neck movements, thus intubation under general anaesthesia was planned even though LMA was kept ready because there were chances of sudden dislodgement and loss of airway due to space restriction.[4] Out of the many options available, awake fibroscopy was ruled out as the child being only 3 years old, would not cooperate for it.

The fear of airway complications after induction due to pressure from swelling, especially in supine position, prevented us from attempting flexible fibroscopy. These difficult airways are successfully managed by many means like intubating in spontaneously breathing patients or lifting the tumour to avoid pressure on the airway after induction. As the swelling was soft and huge, we could not get below the swelling and the possibility of lifting it up was ruled out. Other options like retrograde intubation and tracheostomy was not feasible in our case because of anatomical location and size of swelling (anterior aspect of neck).[5]

Anticipating difficult airway during induction in supine position, like the loss of airway and subsequent hypoventilation and hypoxaemia, we planned intubation in the lateral position. This proved to be a boon for this patient, and she could not only be ventilated but also intubated in first attempt without any difficulty or airway trauma. This technique lifted off the pressure of swelling on the airway and allowed smooth intubation.[6]

The uniqueness of this technique is that it leads to an increase in FRC and is considered better in ensuring a clear, unobstructed airway especially in anaesthetized, sedated patients. The asynchronous chest movements in spontaneously breathing supine patients are overcome in lateral position. This position widens the airway and decreases upper airway obstruction. Also it helps in gravity drainage of secretions.[7] The supremacy of lateral position in laryngoscopy is because tongue falls away from the larynx, whereas it falls posteriorly and thus obstructing the airway in supine position. Neck movements flexion and extension at the atlantooxipital joint can be achieved more easily and thus the alignment of oral, laryngeal and pharyngeal axis is more accurate.

Left lateral decubitus position proved to be useful in post tonsillectomy haemorrhage, obese patients, fracture spine in emergency and other trauma patients although literature related to airway management in lateral position is limited more so in paediatric patients.[7]

The ETT we chose in our case was uncuffed although cuffed would have been a better choice, due to less pressure effects and lesser chances of unintended extubation.

Conclusion

Lateral intubation is a highly advantageous procedure for securing the airway whenever collapse of airway is anticipated due to pressure effects of midline neck swelling and should be thought of at very early while planning surgery of such cases.

Consent

A written informed consent of the patient was taken before reporting this case

Sources of Support- Nil

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