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Management of 3 yrs old child with congenital tracheomalacia posted for inguinal hernia repair

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Introduction
Tracheomalacia is characterized by the flaccidity of the tracheal cartilages which helps in keeping the airway (trachea) open, resulting in the airway collapse in the conditions of increased airflow. It can be congenital or acquired and possess a challenge in the airway management during anaesthesia. Since our literature lacks adequate reports on airway management of these patients we lack in set protocol to be followed. Here we report the management of 3 yrs old child with congenital tracheomalacia posted for inguinal hernia repair.

Keywords: Tracheomalacia, Airway management

Case Report
A 3yrs old male child was posted for inguinal hernia repair.
On pre anesthesia evaluation, child was born preterm at 33+1 weeks. There was h/o respiratory distress since birth for which he was admitted in nursery for noninvasive ventilation for 14 days, also developed neonatal jaundice at day5. CECT head was suggestive of HIE at that time and was discharged at day20. There was persistent stridor since birth and for which he was investigated at 9months of age, where CECT Chest and bronchoscopy revealed tracheomalacia. Echo, USG abdomen, USG cranium was normal. No active management was done and patient was discharged after one month. Since then the stridor has improved and there was no episode of respiratory distress for the last two years.
All laboratory investigations were within normal limits and child was developmentally normal with body weight of 15kg.
On the day of surgery, EMLA cream was applied on both hands under adhesive bandage 40mins before proposed OT time. Premedication was done with 7.5mg oral midazolam and 35ug oral fentanyl 20mins before the surgery.
Child was adequately sedated and taken inside OT, monitors applied pulse oximetry, NIBP, 5 lead ecg. I/v line secured with 22G cannula left hand.
Inj Glycopyrrolate 0.1 mg and Fentanyl 20ug given. Patient was induced with Inj Propofol in incremental doses of 10mg to total of 40mg. Positive pressure ventilation done, there was no signs suggestive of increased airway resistance during expiration and child was easily ventilated. Inj. Atracurium 5mg given after confirmation of adequate ventilation during IPPV and airway secured using Igel size 2.0. Anesthesia maintained with O_2 33% + N_2O 66% + Halothane titrated 0.4-1% with controlled mode ventilation using JR

circuit. Caudal block was given using 10ml of 0.25% bupivacaine. Intraoperative period was uneventful.

LMA was removed with child fully awake after reversing muscle relaxant with inj Neostigmine 1mg + inj. Glycopyrrolate 0.2mg. Child maintained spontaneous respiration and unobstructed airway post operatively.

Discussion

Congenital tracheomalacia is when an infant is born with weak cartilage around the windpipe (trachea) that makes it difficult to keep the airway open.[1] The symptoms may vary from stridor to shortness of breath and cyanotic spells in severe cases. The weak tracheal cartilages cause trachea to collapse during expiration. It may occur as isolated defect or associated congenital syndromes. Treatment of symptoms may include humidified air, chest physical therapy, or continuous positive airway pressure (CPAP) for respiratory distress.[2] Severe tracheomalacia may need to be treated with surgery.[1]The severity of symptoms may increase with activity and periods of stress. Many children require no treatment with the condition worsening for 6–9 months and then abating.[3]

Since our patient was 3 years of age, we were expecting the condition might have improved. But our literature lacks in the ideal management in such cases. The best management would be smooth induction of general anesthesia, with the use of airway and ventilation support maneuvers such as CPAP or PEEP to prevent intraoperative airway collapse.[4] Avoiding endotracheal tube will provide smoother emergence from anesthesia, because of lesser post operative coughing and bucking, thereby reducing risk of airway collapse.[5-7] LMA has been safely used in many reports to avoid intubation and subsequent complications like coughing, post extubation croup and airway collapse.[8] With LMA there is a risk of airway obstruction during general anaesthesia with spontaneous respiration in patients with collapsible airway, so the controlled ventilation is advisable.[9] Recently reports of using Cobra PLUSTM, an extra glottic airway device found to be safe in a child with tracheomalacia.[10]

The second decision to be made was the use of muscle relaxant during the procedure or not. It has been seen that use of adequate muscle relaxation has improved the airway collapse in a child with tracheomalacia.[11] Therefore, we preferred using atracurium at the time of induction only.

Conclusion

The use of supraglottic device with controlled ventilation can be considered safer method of managing airway during anaesthesia in patients with tracheomalacia.

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