

CASE REPORT

"Cannot Ventilate Cannot Intubate" scenario in a Five Years Old Girl

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Difficult airway is defined as situation that face mask ventilation, laryngoscopy, or intubation cannot be done by clinician as easy as he expects where it. Difficulties in children airway management do not occur frequently and aggressive airway management in children is not required often.

We present a case of "cannot ventilate, cannot intubate" scenario in a five years old girl with a supraglottic cyst in operating room. We started to sedate the patient with ketamine for awake intubation but the cyst obstructed the airway and we couldn't ventilate her with mask. Two try of intubation with tube and bougie were failed and rigid bronchoscope could maintain the airway finally.

Keywords: difficult airway; bronchoscopic intubation; cannot ventilate; cannot intubate

The most important step in airway management is anticipating and preparing for problems [1]. Difficult airway is defined as situation where face mask ventilation, laryngoscopy, or intubation cannot be done by clinician as easy as he expects it [2-3].

Difficulties in children airway management do not occur frequently and aggressive airway management in children is not required often. [4-5].

Case Report

We present a case of a "cannot ventilate, cannot intubate" scenario in a five-year-old girl in operating room. Her problem started from birth. She suffered from respiratory distress after birth and had cyanosis needing supplementary oxygen. After ten days of birth she had bilateral pneumothorax. With presumptive diagnosis of tracheal stenosis, she was referred to more equipped hospital. Sonography, CT scan and bronchoscopy were done. These suggested that there was a salivary cyst on left vocal cord that blocked the supraglottic space. The cyst was surgically aspirated and respiratory distress was diminished. The neonate was discharged well. 4 years after that she had some period of respiratory distress and inspiratory stridor with the diagnosis of recurrence of that cyst located in aryepiglottic fold and piriformis sinus. She had some marsupialisation surgeries approximately every 6 months.

She looked alert and healthy when 5 years old. She was 25 kg. Her mouth opening was normal. Her Mallampati score was 2. There was no abnormality in facial anatomy. There were no signs of stridor or wheeze on respiration. Physical

exam of neck was normal with no palpable mass or swelling. Her mother said she had snoring during sleep. In her last neck sonography, a cystic lesion with diameter of 14 mm in 9 mm was reported in left aryepiglottic fold. In CT scan there was the same cyst without any compression effect and the airway was open.

Anesthetic Management

After taking iv line and performing monitoring we planned for awake intubation with conscious sedation. We started to infuse ketamine incrementally during mask ventilation. After a few seconds the child was sedated but she was breathing spontaneously and there was normal capnograph waves on the monitor. Suddenly we found that despite muscular respiratory effort of the child, capnograph waves disappeared and positive ventilation was not possible. Immediately we started laryngoscopy and tried to intubate the patient but there was no view of glottis or even epiglottis. There was only a very large mass at the base of tongue that originated from the left wall of pharynx and covered completely the opening of glottis. After changing the Macintosh laryngoscope with Miller blade second try with bougie was unsuccessful. O₂ saturation was falling and ventilation with mask was inadequate. Surgeon was preparing to make an emergency surgical airway, at this time third try was done by another colleague with rigid bronchoscope to push away the cyst from the opening of glottis. With bypassing the large cyst from the glottis the trapped air in lungs was released and ventilation was performed. After a rise in the O₂ saturation and stabilization of the patient, bronchoscope was withdrawn and laryngoscopy with wolf laryngoscope was done and armored tube was introduced with a guide to the trachea. Microsurgery was done to excise the cyst but it was perforated and contents leaked. The orifice of sacule was opened and walls of the cyst were completely removed. In the end of the surgery the child was extubated after completely awaking without any problem.

Discussion

Most important thing in airway management is predicting

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difficult airway and be prepared handle it [6]. First of all, we should take a very precise history about past anesthesia of the patient and next perform a complete airway physical exam [7]. In this case there was no history of difficult airway despite multiple airway surgeries that she had in the past. There was not any evidence of predicting factor of difficult airway except a supraglottic cyst that was reported had no compression effect on air way. The patient had no stridor or respiratory distress. Complex of these findings caused us to underestimate the risk of her airway management and get to trouble.

In this case, we maintained the spontaneous ventilation with conscious sedation and avoid neuromuscular blocking agents but it could not rescue the patency of airway.

In anticipated difficult airway, use of muscle relaxant can lead to complete airway obstruction and make ventilation or intubation very difficult [8]. Hence in predictable complicated airway it is recommended to use inhalational induction in spontaneously breathing patient [9].

In order to pediatric difficult airway guidelines in Cannot intubate and cannot ventilate (CICV) in a paralyzed anaesthetized child aged 1 to 8 years first we should call for help, deliver 100% O₂, optimize head position and chin lift /jaw thrust, insert oropharyngeal airway, supraglottic airway device and try two person bag mask technique [10].

If these were not successful we should consider surgical tracheostomy, rigid bronchoscopy+ Ventilate or/ jet ventilation (pressure limited).

Conclusion

Airway management is a very momentous skill, especially when the patient is a child. The anesthesiologist must be always alert and prepared for any unanticipated difficult airway. We faced a child with a supra glottic cyst that fell in

"cannot ventilate cannot intubate scenario" and rigid bronchoscopy could save her life.

References

1. Apfelbaum JL, Hagberg CA, Caplan RA, Biltz CD, Connis RT, Nickinovich DG, et al. Practice guidelines for management of the difficult airway: an updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology*. 2013; 118:251-270.
2. Murphy, MF, Walls, RM. Identification of the difficult and failed airway. In: *Manual of emergency airway management*, 2nd, Walls, RM (Eds), Lippincott Williams & Wilkins, Philadelphia 2004. p.74.
3. Sagarin MJ, Chiang V, Sakles JC, Barton ED, Wolfe RE, Vissers RJ, Walls RM. National Emergency Airway Registry (NEAR) investigators. Rapid sequence intubation for pediatric emergency airway management. *Pediatr Emerg Care*. 2002; 18(6):417-23.
4. Pallin DJ, Dwyer RC, Walls RM, Brown CA 3rd; NEAR III Investigators. Techniques and Trends, Success Rates, and Adverse Events in Emergency Department Pediatric Intubations: A Report From the National Emergency Airway Registry. *Ann Emerg Med*. 2016; 67(5):610-615.
5. Luten, RC, Kisson, N. The difficult pediatric airway. In: *Manual of Emergency Airway Management*, 2nd, Walls, RM, Murphy, MF, Luten, RC, et al (Eds), Lippincott Williams & Wilkins, Philadelphia 2004. p.236.
6. Walker RW. Management of the difficult airway in children. *J R Soc Med* 2001; 94(7):341-4.
7. Lee A, Fan LT, Gin T, Karmakar MK, Ngan Kee WD. A systematic review (meta-analysis) of the accuracy of the Mallampati tests to predict the difficult airway. *Anesth Analg* 2006; 102(6):1867-78.
8. Murphy, MF. Sedation and anesthesia for awake intubation. In: *Manual of Emergency Airway Management*, 2nd, Walls, RM (Eds), Lippincott Williams & Wilkins, Philadelphia 2004. p.82
9. Blank RS, de Souza DG. Anesthetic management of patients with an anterior mediastinal mass: continuing professional development. *Can J Anaesth*. 2011; 58(9):853-9.
10. Jagannathan N, Sohn L, FiadjoeBJA G.E. Paediatric difficult airway management: what every anaesthetist should know. *Br J Anaesth*. 2016; 117 Suppl 1:i3-i5.