Anaesthetic management of an infant with vallecular cyst: A challenging situation

Sir,

Congenital vallecular cyst, although rare, is an important condition leading to stridor and complete airway obstruction in infants, which may be precipitated by various factors such as feeding, crying, induction of anaesthesia or even during awake fibreoptic bronchoscopy. Different techniques have been described in the literature for securing the airway, and each one has its own merits and demerits. We report one such case in which the airway could not be secured by any of the conventional techniques described for such cases; thus, necessitating tracheostomy.

A 3-month-old male baby weighing 2.5 kg presented with coughing and vomiting following feeds and failure to thrive. The respiratory rate was 38/min, with minimal intercostal recession. There was no cyanosis or stridor. Oxygen saturation on room air was 98%. Diagnosis of vallecular cyst was made after computed tomography scan of the neck [Figure 1].

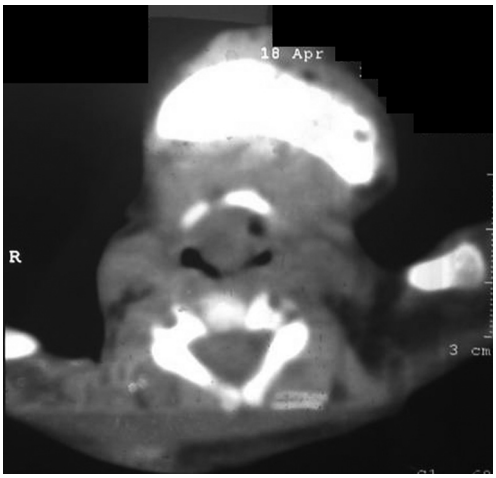

Figure 1: Computed tomography scan of the vallecular cyst

The child was scheduled for excision of the cyst. An inhalation induction with intubation was planned. Surgeons were asked to be standby for emergency tracheostomy, considering the high risk of loosing the airway and non-availability of a neonatal fibreoptic bronchoscope. An intravenous line was secured after induction of anaesthesia with halothane in 100% oxygen. After confirming mask ventilation, 5 mg propofol was supplemented and laryngoscopy attempted with Miller size 0 laryngoscope introduced by a paraglossal approach; but, a cystic swelling was visible in front of the tip of the blade that could not be deflected to either side or lifted up. Immediately, a decision to perform tracheostomy was made. However, as tracheostomy was being performed, mask ventilation became difficult and oxygen saturation dropped to 70%. Pink frothy secretions were noted in the oral cavity and nostrils suggestive of negative pressure pulmonary oedema. The patient's neck was extended and turned to the right to facilitate ventilation thereby improving the saturation to 90%. Meanwhile, a size 3 uncuffed tracheostomy tube was secured in place. Ventilation was facilitated by 1 mg atracurium. After this, the saturation rose to 98% and the chest cleared gradually. Anaesthesia was maintained with isoflurane in oxygen and 5 μg fentanyl. A check laryngoscopy was carried out to assess if muscle relaxation improved the glottic view, but neither the epiglottis nor the arytenoids could be visualised. The cyst was excised by an extraoral approach. Residual neuromuscular blockade was reversed and the baby was shifted to the Intensive Care Unit for further observation. The trachea was decannulated after 2 weeks and the baby has been doing well since. Parental consent was obtained for publication of this clinical scenario for educational purposes.

Vallecular cyst, although benign, carries a potential threat of hypoxia and death if not managed appropriately.[1] Laryngomalacia is associated in 90% of cases.[2] After reviewing the literature, it was observed that no specific technique has been clearly outlined for such a tricky situation. All techniques, such as paraglossal laryngoscopy, awake fibreoptic bronchoscopy, inhalation induction and even intubation after muscle relaxation and cyst aspiration, have been attempted.[3-5] Paraglossal laryngoscopy has been successfully executed in two cases.[3,4]

A pre-operative awake fibreoptic bronchoscopy under local anaesthesia may appear to be the safest technique, but is difficult even in expert hands because of the limited space available for manipulation of the scope in the hypopharynx and distorted laryngeal anatomy. Moreover, the danger of airway obstruction still remains in the case of failure of fibreoptic bronchoscopy.[3]

In light of these facts and the absence of stridor and cyanosis in an otherwise active infant, we decided to secure the airway by a paraglossal technique after inhalation induction.

Paraglossal laryngoscopy failed to reveal any laryngeal structure. This could be attributed to the fact that the cyst was adherent to the epiglottis, which could not be lifted. Although muscle relaxants have been used to facilitate laryngoscopy, a high incidence of associated laryngomalacia and fear of airway collapse and complete airway obstruction precluded the use of muscle relaxants in our case. Cyst aspiration can be associated with a risk of pulmonary aspiration, increased recurrence rate and difficulty in identifying cyst margins upon subsequent surgery.[3] Hence, a decision to establish a surgical airway was made for cyst excision. Tracheostomy in an infant itself is a demanding skill on the part of the surgeon due to difficult anatomy and precarious respiratory reserve.

To conclude, anaesthetic management of infants with vallecular cysts requires meticulous planning and individualised approach. Guiding factors for the anaesthetic plan are age and pre-operative symptomatology of the child, size and location of the cyst and, above all, expertise of the anaesthesiologist and facilities at hand for paediatric airway management. Preparedness for tracheostomy should always be present, especially in the absence of a neonatal fibreoptic bronchoscope, as surgical airway

may be the only option left, especially in an emergency situation.

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