INTRODUCTION
Airway management remains a significant cause of morbidity and mortality in paediatrics. The presence of a congenital or acquired disease involving the airway further increases the risk to the patient. In general, in paediatric practice, the difficult intubation scenario is well predicted. The principle of managing difficult airway in children is to maintain spontaneous ventilation either using intravenous (IV) induction agents in titrated doses or inhalational agents until the airway is secured. The aim is to deepen the patient sufficiently to perform conventional laryngoscopy at first, but it is important to minimise the number of attempts to prevent bleeding and trauma. If conventional techniques fail, one must have an alternate plan or wake up the patient or proceed with surgical airway.

CASE REPORT
A 7-month-old infant, weighing 6 kg, presented with lesion of the upper lip to our hospital. A hard, bosselated tumour measuring 5 cm × 10 cm was arising mostly from the left side of the lip, obliterating the nostrils [Figure 1a]. There were no signs of respiratory distress. Airway examination revealed 2 cm mouth opening on the right side. Room air saturation was 98%. Systemic and haematological examinations were within normal limits. Initial ultrasound Doppler and magnetic resonance imaging (MRI) were consistent with infantile haemangioma, which did not respond to oral propranolol and steroid therapy. Hence, he was posted for biopsy of the tumour.

After confirming nil per oral status, the infant was transported to the operation theatre. No pre-medication was given. Anticipating difficult airway in view of limited mouth opening and difficult mask ventilation, a difficult airway cart was kept ready. This included masks, oral airway and nasopharyngeal airways of...
assorted sizes, intubation stylets, bougie of appropriate size, assorted sizes of endotracheal tubes (size 2.5, 3.0, 3.5, 4.0), supraglottic airways, laryngoscopes with straight and curved blades, equipment for surgical airway such as cricothyroidotomy and tracheostomy kits and large bore suction catheters. General anaesthesia was induced with ketamine 2 mg/kg intravenously (IV) and fentanyl 2 μg/kg IV. Anaesthetic depth was increased with sevoflurane. A modified nasal trumpet (i.e., a 3.5 mm nasopharyngeal airway with an endotracheal tube connector attached) with Jackson–Rees breathing circuit connected to it was used to maintain spontaneous ventilation throughout the procedure [Figure 1b]. Placement of the modified nasal trumpet was confirmed with capnograph trace, chest rise and bag movement.

The biopsy report confirmed the diagnosis as embryonal rhabdomyosarcoma of the upper lip and hence he was posted for chemoport insertion. Induction was carried out with IV ketamine 2 mg/kg and IV fentanyl 2 μg/kg. Anaesthetic plane was deepened with sevoflurane. The depth of anaesthesia was assessed by end-tidal anaesthetic analyser and haemodynamic response of the patient to any noxious stimuli. ProSeal laryngeal mask airway (size 1.5) was inserted. The infant was on spontaneous respiration with assisted ventilation throughout the procedure [Figure 2a]. Saturation, heart rate, blood pressure and end-tidal carbon dioxide were monitored throughout the procedure. On both the occasions, recovery was smooth and uneventful.

The infant was posted again for debulking and wide excision of the tumour after poor response to chemotherapy. The tumour size had increased to 10 cm × 15 cm which led to feeding difficulties. There were no obvious signs of respiratory obstruction and he maintained a room air oxygen saturation of 98%. Repeat MRI revealed a large proliferative soft-tissue mass arising from the lip, involving gingivolabial sulcus, eroding lower alveolar ridge and displacing the tongue backwards with maintained fat interface with muscles of the base of the tongue. On the day of the procedure, after ensuring fasting status and availability of difficult airway cart including tracheostomy tubes, he was induced with 100% oxygen and slow titrated doses of IV ketamine 2 mg/kg with glycopyrrolate 0.01 mg/kg and fentanyl 2 μg/kg. Direct laryngoscopy during deep spontaneous ventilation confirmed a Cormack–Lehane Grade 3b. Trachea was intubated with a size 4 microcuff endotracheal tube on the second attempt. Bilateral air entry was checked, and intubation was confirmed with capnogram. Intraoperatively, the infant’s electrocardiogram, non-invasive blood pressure, end-tidal carbon dioxide concentration and oxygen saturation including airway pressures were monitored. The lungs were ventilated with a mixture of oxygen in air with end-tidal concentration of 1% isoflurane, and IV atracurium 0.25 mg/kg was used for maintenance of anaesthesia intraoperatively [Figure 2b]. Vital signs were stable throughout the procedure. At the end of the procedure, anaesthetic agents were tapered and neuromuscular blockade was reversed. Tracheal extubation proceeded after confirming spontaneous respiratory efforts and full recovery of consciousness. He was admitted to the

Figure 1: (a) An infant with rhabdomyosarcoma of the upper lip. (b) Airway management in scenario 1 (biopsy of the tumour) - nasopharyngeal airway was inserted and infant spontaneously ventilated

Figure 2: (a and b) Successful airway management of the case with ProSeal laryngeal mask airway and direct laryngoscopy - endotracheal intubation on two different occasions in the same infant
intensive care unit for 24 h and was discharged a week later after uneventful hospital stay.

**DISCUSSION**

Rhabdomyosarcoma is the most common soft-tissue tumour of childhood.[4] However, anaesthetic management of oral rhabdomyosarcoma has not been well reported in the literature. On extensive search in PubMed, we could only find one case report on anaesthetic management of rhabdomyosarcoma of the tongue.[3]

Preoperatively, our main concerns were difficult airway and risk of bleeding. The anaesthesiologists should have more than one plan for airway control in such cases and it should be discussed well in advance with the other team members. Optimised face mask ventilation (aided by an oropharyngeal or nasopharyngeal airway) or ventilation through supraglottic airway devices or nasopharyngeal tube can be the most helpful techniques. Since the first two procedures were of short duration, we decided to proceed with spontaneous ventilation using modified nasopharyngeal airway and supraglottic airway device.[6] The modified nasal trumpet is a useful equipment in situations where general anaesthesia is required but face mask ventilation is difficult like in tumours of the head and neck.[7]

The fibre-optic bronchoscope is now the preferred technique to secure difficult airway in paediatrics. Often in the absence of fibre-optic bronchoscope and other advanced techniques, alternate methods are used to secure the airway. Success of any such technique depends on constant maintenance of an unobstructed airway and sufficient satisfactory depth of anaesthesia.[8] Direct laryngoscopy can be a worthwhile manoeuvre in difficult airway situations because it may be possible to bring the larynx into view.[5] However, the anaesthesiologist should have an alternative plan such as retrograde intubation, cricothyroidotomy or tracheostomy to secure the airway in such situations. Furthermore, maintaining difficult airway registry helped us to meticulously plan the case in all the three situations. As previous records showed uneventful oxygenation and extubation, we could confidently proceed with definitive airway for debulking of the tumour. Studies have shown that incomplete records and improper allocation of information may influence key decisions in the management, and regular audits are required to maintain such standard of care.[9]

**CONCLUSION**

Management of patients with upper lip rhabdomyosarcoma can be challenging to the anaesthesiologists due to associated difficult airway. The key to success is effective airway assessment and planning. Utilisation of simple, yet time-tested familiar equipment and modifying these techniques accordingly enable successful airway control while avoiding complications.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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