

AN INFANT WITH A DIFFICULT AIRWAY

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An 8 month old baby girl was referred to our plastic surgery unit for neck contracture release and skin grafting. The child had sustained third degree burns on the left side of the face and the neck at the age of 6 months after she fell over a glowing lamp whilst crawling. Over the next few months she developed severe contractures to the neck (Figure 1).



Figure 1: 8 month old baby girl with neck contractures

The child was referred for preoperative assessment

for anaesthesia. She was active but underweight at 7kg. On examination, her mouth opening was severely restricted (Mallampatti class IV) and almost no neck movements were possible. The rest of the examination and baseline investigations were all within normal limits. Difficulty with laryngoscopy & intubation was anticipated. The hospital did not have a fibre-optic bronchoscope suitable for infants so a technique utilizing available equipment was planned and the child was scheduled for surgery.

- On the day of surgery the child was allowed a breast milk feed 4 hours prior to theatre.
- Anaesthesia was induced with intramuscular ketamine 10mg/kg with atropine 20mcg/kg. Oxygen was administered via facemask using the Jackson Rees modification of the Ayres T-piece and monitors applied: ECG, pulse oximeter and NIBP.
- A 22G intravenous cannula was inserted and an infusion of Hartmann's solution 20ml/kg commenced.
- Anaesthesia was deepened with halothane in oxygen and a size 1 LMA was introduced. Anaesthesia was maintained with halothane in oxygen and nitrous oxide.
- The surgeon performed immediate release of the contracture (Figures 2 and 3) following which neck movements were possible.
- The LMA was removed and the child was intubated with

a 3.5mm uncuffed ET tube under deep halothane anaesthesia (grade 1 laryngoscopy), and then allowed to breathe spontaneously (Figure 4).



Figure 2: Surgical release of contracture to give movement (LMA in place)



Figure 3: Release of contracture



Figure 4: Intubation

This child presented with what was very obviously a difficult airway due to burns contractures. The procedure required careful planning and discussion in advance between the anaesthesia and surgical teams. There are many acceptable ways of managing this situation safely, but the described technique was chosen, as it did not depend on any special equipment (none was available).

This staged procedure whereby the surgical team released the contracture immediately after induction of anaesthesia with ketamine resulted in immediate improvement of the airway. An impossible intubation was converted to a grade 1 laryngoscopy.

We felt that the use of the LMA allowed an additional degree of airway stability during the contracture release, although we could have used a simple 'chin lift/jaw thrust' to maintain the airway (no LMA).

We felt that after contracture release the tracheal tube allowed greater protection to the airway than performing the whole procedure using the LMA.

We did not think that laryngoscopy under deep halothane anaesthesia prior to contracture release would have had anything to add.

Consent was given for publication of these images

- The child was extubated fully awake following the skin grafting procedure (Figure 5) and recovered uneventfully with regular paracetamol and ibuprofen for analgesia.

Discussion

Respiratory complications of burns injuries may be due to:

- acute airway obstruction resulting from oedema of the airway due to inhaling hot gases, or secondary to facial oedema in burns of the head and neck.
- effects of inhalation of toxic substances.
- chronic airway obstruction due to the development of burns contractures.



Figure 5: After skin graft procedure