

## INTRODUCTION

Nasotracheal tube placement provides a patent airway and protects from aspiration of blood during oral and craniofacial surgery.

Surgical saws and instrumentation can damage the endotracheal tube (i.e. cuff rupture, total transection).

We report a case of nasotracheal tube rupture during a surgically assisted rapid palate expansion (SARPE) resulting in a large airway leak and culminating in replacement of the endotracheal tube in the surgical field.

## CASE PRESENTATION

14 year old male with previously repaired bilateral cleft lip and palate presented for SARPE. After induction, nasotracheal intubation was performed through the right naris with 6.0mm cuffed nasal RAE.

Prior difficult nasal intubations were related to the presence of nasopharyngeal fistulae. In this case, the nasopharynx and trachea were successfully intubated utilizing a red rubber catheter (Figure 1)

One hour into surgery, a sudden large leak was detected. The anesthesia circuit was intact and pilot balloon was holding air. Direct laryngoscopy and fiberoptic bronchoscopy (FOB) confirmed appropriate tube positioning. FOB revealed a defect in the tube wall (Figure 2). The nasotracheal tube was replaced intraoperatively under direct laryngoscopy.

A defect was noted along the channel between the pilot balloon and the cuff.  
The channel had filled with blood and clotted.  
The pilot balloon held air, but the cuff was deflated.  
(Figure 3 and 4)



Figure 1. Nasotracheal intubation



Figure 2. Fiberoptic view of damaged nasal RAE



Figure 3. Damaged nasal RAE



Figure 4. Pilot balloon holding air, channel filled with clotted blood, cuff deflated

## DISCUSSION

This case report highlights a low frequency, high acuity complication that can occur during craniofacial surgeries – nasotracheal tube damage.

The unique teaching point of this case report is that an intact pilot balloon *does not necessarily mean* that the cuff is intact.  
No prior incidence of this occurrence has been reported in the literature

- Early recognition and swift intervention are essential to patient safety.
- Circuit or machine leak must be quickly ruled out.
- Cuff integrity and tube placement must be confirmed. This can occur via direct laryngoscopy or fiberoptic bronchoscopy.
- The next step is *managing* an airway with a damaged nasotracheal tube. High gas flows and throat packing can be temporizing, but do not prevent aspiration of blood nor OR contamination with anesthetic gas.
- Endotracheal tube replacement is ideal, but is not easy in a bloody surgical field. Bougies, tube exchangers, laryngoscopes, and fiberoptic bronchoscopes can all facilitate tube replacement.
- Lastly, one must be prepared for a surgical airway in the event of failure to oxygenate and ventilate.

## REFERENCES

- 1.) Balakrishnan M, Kuriakose R. Endotracheal tube damage during head and neck surgeries as a result of harmonic scalpel use. *Anaesthesiology*. 2005; 102:870-1.
- 2.) Venugopal A, Balagopal PG. Intra-operative endotracheal tube damage: Anaesthetic challenges. *Indian Journal of Anesthesiology*. 2012;56(3): 311-312.
- 3.) Bang E, Jeon Y, Hong J. Damage to Endotracheal Tube during Lefort I Osteotomy – A Case Report. *Korean Journal of Anesthesiology*. 2007;53(4): 516-519.