

## Intra-operative endotracheal tube damage: Anaesthetic challenges

Sir,

Endotracheal tube (ETT) damage during surgery is increasingly reported in the literature. It can range from a simple cuff leak to a total transection of the tube during the surgical procedure, and the replacement can be challenging. We report a case of accidental damage to the nasotracheal tube by the oscillating saw during head and neck surgery, which was replaced immediately using a gum elastic bougie (GEB). The purpose of this case report is to highlight the use of GEB in tube exchange and to discuss the various options in the management of a damaged ETT intra-operatively.

A 70-year-old lady with controlled hypertension was undergoing left inferior partial maxillectomy and excision of maxillary sinus under general anaesthesia. Her baseline heart rate and blood pressure were 82/min and 146/84 mmHg, respectively. Following intravenous induction and adequate muscle relaxation, right nasotracheal intubation was performed for better surgical access and to retain the tube overnight. During the excision of the maxilla and vomer, the surgeon suddenly noticed bubbling of air through the blood. On suction, we could visualize a hole in the nasotracheal tube. The ventilator showed airway leak and alarm. We ventilated her with 100% oxygen and continuous suction was applied and haemostasis attained. The only option available was to replace the damaged tube. Removing an ETT without a bougie or tube exchanger could be risky if unable to reintubate. Hence, a lubricated GEB was passed through the damaged tube, which was then removed and a new one railroaded over the bougie. Another option was to intubate orally but, because we wanted to retain the tube post-operatively, we tried nasotracheally. The rent in the damaged tube was evident as shown in the figure. Surgical procedure

continued, neuromuscular block was reversed and nasotracheal tube retained. Vitals remained stable and she was extubated the next day.

It is essential to have difficult airway gadgets like GEB, tube exchangers, retrograde intubation set, McCoy laryngoscopes, newer laryngoscopes, fiberoptic bronchoscope, etc. in all operation theatres and intensive care units. GEB and tube exchangers are cheap, easily available and life-saving gadgets used in difficult airway management and tube-exchanging scenarios.<sup>[1,2]</sup> A cuff leak can be managed by throat packing but, if there is a chance for aspiration of blood, it is better to replace the tube immediately. Fiberoptic intubation is not ideal in a bloody field or in emergency. In a dry field, if time permits, and in an experienced hand, it could be a good option. Be prepared for cricothyrotomy and jet ventilation (using a needle or cannula) or surgical cricothyrotomy if intubation fails. Tracheostomy set and tubes should be available whenever difficult airway cases are dealt with, but considered only as a last resort. Prevent aspiration of blood by head tilt and suction if needed.

Peskin and Sachs in 1986 published a case report of intra-operative management of a partially severed ETT during orthognathic surgery.<sup>[3]</sup> They passed a smaller-sized tube through the damaged one, which may be difficult to pass nasotracheally. Balakrishnan and Kuriakose in 2005 reported an incidence of ETT damage during head and neck surgery as a result of harmonic scalpel and replaced the tube with the help of a tube exchanger.<sup>[4]</sup> Bidgoli *et al.* reported a serious anaesthetic complication of a Le Fort 1 osteotomy leading to surgical transection of the nasotracheal tube and its management.<sup>[5]</sup> Another report of accidental transection of armoured nasal ETT during surgery for Crouzon syndrome is presented by Murthy *et al.*, where they reintubated with an oral flexometallic tube.<sup>[6]</sup> Chalkeidis *et al.* reported a case of ETT damage during neurosurgical procedure where the armoured oral ETT was bitten and cut at two points where the anaesthesiologist's finger could occlude the defect and surgery could continue.<sup>[7]</sup> In a recent and interesting case report from Ladi and Aphale, an accidental transection of a flexometallic tube occurred during partial maxillectomy, where the tube was transected by the Giglisaw.<sup>[8]</sup> They found it difficult to remove the proximal and distal parts of the tube because of the intact nylon rings connecting them. Hence, they performed a tracheostomy and secured the airway and later removed the damaged tube.

An anaesthesiologist should be on the alert when the surgeon is operating around the airway, especially with sharp instruments, as there is a potential to damage the tube. Immediate recognition, confirmation and prompt management can be life-saving.

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