

## REFERENCES

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## Obstruction of a preformed armoured tracheostomy tube

To the Editor:

Hazards associated with the use of armoured silicone tracheal tubes have been reviewed recently.<sup>1</sup> We report a complication associated with the use of a preformed armoured tracheostomy tube which occurred during surgery.

A 65-yr-old woman (ASA physical class III) weight 61 kg was scheduled for tracheostomy, resection of the floor of the mouth and radical neck dissection. Following uneventful induction of anaesthesia, an 8.00 mmID cuffed PVC oral tracheal tube was positioned easily. A tracheostomy was performed and a 7.0 mmID silicone cuffed preformed flexible tracheostomy tube (Laryngoflex<sup>®</sup>, Rüsich AG, West Germany) was positioned and bilateral breath sounds auscultated. Mechanical ventilation was commenced and peak airway pressure was 25 cmH<sub>2</sub>O. At the surgeon's request, the tube was not secured with suture or tape. Surgery proceeded uneventfully until 3½ hr later when airway pressures were noted to be increasing. Over a period of ten minutes, peak airway pressure increased to 60 cmH<sub>2</sub>O. Manual ventilation was commenced. Breath sounds were checked and no wheezing was detected. A suction catheter was inserted into the trachea by the surgeons with some difficulty, and some blood-stained material was aspirated. However, airway pressures remained high and the surgeons were asked to replace the tube with a preformed red-rubber laryngectomy tube (Rüsich AG, West Germany). As the tube was withdrawn, it was noted to be sited only just within the lumen of the trachea, and the surgeon suggested that his team had inadvertently withdrawn the tube. When the new tube was positioned, peak airway pressure immediately returned to normal. No other problems ensued during the remainder of the anaesthetic.

Later, the tube and its cuff were inspected and found to be intact. The lumen was free from any obstructing material. The tube was then inserted into the barrel of a

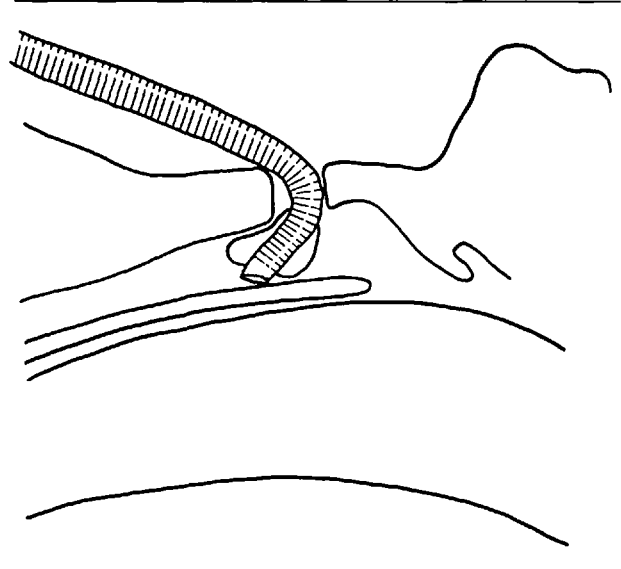


FIGURE 1. Diagram of a preformed armoured tracheostomy tube malpositioned against tracheal wall, resulting in obstruction.

20 ml syringe and the cuff inflated to prevent a leak. Gentle traction was then applied to the long axis of the tube and the bevel of the tube became abutted against the wall of the syringe. A diagrammatic representation of our proposed cause of the obstruction is shown in the Figure. The combination of soft cuff and short distance between the cuff and distal tip of the tube permits malpositioning when the tube is withdrawn. Methods to reduce the risk of obstruction of tracheal tubes include an angulated bevel or a Murphy eye. However, these modifications weaken the distal end of the tube and allow the tip to bend and cause obstruction. Further, inadvertent movement of the tube is more likely when it is not secured to the patient. Lack of markings on the tube gives no indication when a tube has been withdrawn inadvertently.

This incident illustrates again the benefits of replacing tracheal tubes when unexplained difficulties with ventilation occur, and emphasizes the importance of adequate tube fixation.

Richard H Riley MB BS  
Simon A. Mason  
Catharine D Barber MB BS  
Department of Anaesthesia  
Royal Perth Hospital  
Box X2213 GPO  
Perth, WA 6001  
Australia

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