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Inhalation of a Montgomery safe T-tube plug

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Abstract
The first case of an inhaled Montgomery Safe T-tube plug is reported. Both the surgeon and the patient should be aware of this possible complication and regular inspection of the plug is recommended. More than one plug should be provided with each T-tube.

Introduction

A wide variey of foreign bodies has been inhaled into the tracheobronchial tube but only extremely rarely are tracheostomy tubes implicated (Foxen, 1965). Either the inner (Kakar and Saharia, 1972) or the outer (Maru *et al.*, 1978; Bowdler and Emery, 1985) parts of a silver tube can undergo erosion and be inhaled. Evans (1987) mentions the removal of the horizontal limb of a Montgomery silicone tracheal T-tube (Safe T-tube*) from the trachea of a child with laryngeal stenosis. We report the first case of inhalation of an eroded Montgomery T-tube plug.

Case report

A 62-year-old woman required a permanent tracheostomy because of bilateral vocal fold paralysis following a thyroidectomy. She failed to self-care adequately using standard tracheostomy tubes but following the insertion of a 14 mm standard Montgomery silicone tracheal T-tube she managed to plug the T-tube during the day except for twice daily suctioning.

Nine months after its insertion she presented in acute respiratory distress. While replacing the plug in the horizontal limb, she had taken a deep inspiration and inhaled the plug. Under a general anaesthetic, the plug was removed by rigid bronchoscopy from the right posterior basal bronchus. This proved a difficult procedure due to the narrowness of the lumen and the smoothness of the plug. The safety rim of the plug was found to be eroded (Fig. 1). A new Montgomery T-tube was inserted and she remains fit and well three months later.

Discussion

The Montgomery silicone tracheal T-tube (Fig. 1) has been designed to maintain an adequate tracheal airway as well as providing support in cases of a stenotic trachea that has been reconstituted or reconstructed (Montgomery and Montgomery, 1990). It does not require regular changing and one patient is reported as having the same tube unchanged seven years later.

Being made of silicone it produces little foreign body reaction, and mucus and crusts do not readily adhere to it. The tube can easily be customized to the patients' requirement but it is important to smooth and bevel the intraluminal ends after shortening.

To prevent posterior displacement of the T-tube two ring washers are available for application to the grooved section of the horizontal limb. A single silicone plug with safety rim is supplied with which the horizontal limb can be occluded.

We have found the Montgomery T-tube to be particularly effective for those patients who, for physical or psychological reasons, fail to self-care adequately for their tracheostomy. It provides adequate phonation, an efficient cough and easy suctioning.

In the case we report the safety rim eroded resulting in inhalation of the plug. Alkaline bronchial secretions can cause erosion of copper and zinc both of which are present even in sterling silver tubes but the effect of those secretions on silicone is unknown. Simple mechanical stress caused by repeated removal and re-insertion appears a more likely factor.

Conclusion

The Montgomery Safe T-tube is not as safe in its present form as its name suggests. Erosion of the safety rim and inhalation of the plug can occur. Both the surgeon and the patient should be aware of this possible complication and regular inspection of the plug is recommended. More than one plug should be provided with each T-tube so that a spare is available should signs of erosion appear.

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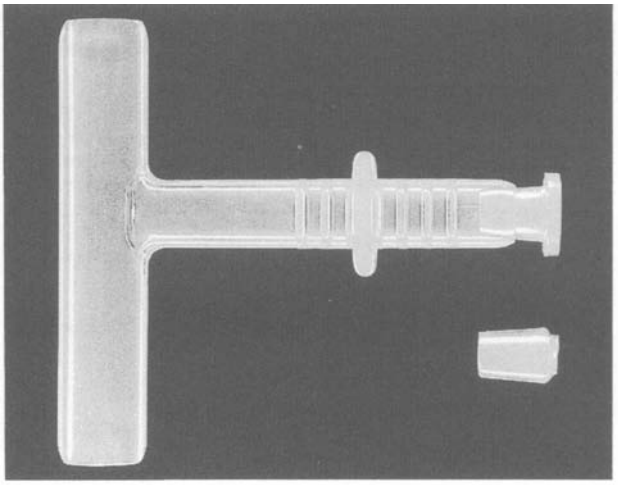

Fig. 1
Montgomery tracheal T-tube (Safe T-tube) with ring washer and plug in situ (Top).
Plug with eroded safety rim missing (bottom).

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