

Laryngeal foreign body: an unusual complication of percutaneous tracheostomy

B. N. KUMAR, F.R.C.S., R. M. WALSH, F.R.C.S. (ORL), R. G. COURTENAY-HARRIS, F.R.C.S. (ORL)

Abstract

Impaction of a foreign body in the larynx is a serious event. While inhaled foreign bodies may occasionally impact in the larynx especially in children, a laryngeal foreign body as a complication of percutaneous tracheostomy has not been reported in the literature. We describe the case of a fragment of a Seldinger wire retained in the larynx for two years following a percutaneous tracheostomy and review the literature on the complications of this procedure.

Key words: Foreign body; Larynx; Tracheostomy

Introduction

Impaction of inhaled foreign bodies in the larynx is very rare (Cohen *et al.*, 1980; Rothmann and Boeckman, 1980) with most passing into the tracheo-bronchial tree. However, when it does lodge in the larynx, spasm may occur leading to complete respiratory obstruction and death (Kent and Watson, 1990; Bhat and Oates, 1996). It is estimated that 600 children under the age of 15 years die from this cause every year in the United States (Evans, 1987). Iatrogenic impaction of a foreign body in the larynx as a complication of percutaneous tracheostomy has not been reported in the literature. We describe the case of a fragment of a Seldinger wire (Seldinger, 1953) impacted in the larynx for two years, the subsequent management and review the literature on percutaneous tracheostomy.

Case report

A 71-year-old man was referred by his general practitioner (GP) to the ENT department with a three-week history of progressive stridor and a midline neck swelling which discharged muco-pus. Prior to this he complained of difficulty in breathing and swallowing, hoarseness and a tickling sensation in his throat since undergoing an emergency double coronary artery bypass graft (CABG) after an angioplasty two years previously. Following the cardiac operation he required a percutaneous tracheostomy (performed by an anaesthetist) and ventilatory support for multiple post-operative complications including pneumonia, atelectasis, adult respiratory distress syndrome (ARDS) and gastro-intestinal bleeding.

On examination he was afebrile and had mild inspiratory stridor. There was a 1.5 cm sized ulcerated swelling in the subcricoid region. Flexible fibre-optic nasoendoscopy of the larynx showed a wire lodged in the larynx extending from the supraglottis through the vocal folds, passing anteriorly through the anterior tracheal wall to lie beneath the skin surface. Both vocal folds were normal in appearance and mobile. A lateral (Figure 1a) and A-P (Figure 1b) soft tissue neck X-ray showed a radio-opaque

wire extending from the level of the upper border of the C3 vertebra in the pharynx, passing through the larynx and exiting below the thyroid cartilage into the subcutaneous tissues of the neck. After gaseous induction with halothane and oxygen, a Negus laryngoscope was inserted and the wire was removed with laryngeal forceps without difficulty. The wire was coiled, measuring 20 cm in length and appeared to be a fragment of a Seldinger wire. The patient was then intubated with an oral endotracheal tube and the upper airways were carefully inspected. Following removal of the foreign body his stridor improved markedly and his neck wound healed promptly. He was discharged five days later. He required re-admission on two further occasions for laryngoscopy and bronchoscopy for episodic mild stridor. Mild tracheomalacia was diagnosed which resolved completely with time.

Discussion

Percutaneous tracheostomy is a simple and relatively quick method of performing a tracheostomy which is used for long-term ventilatory support and for the evacuation of tracheo-bronchial secretions (Hazard *et al.*, 1991). It is performed in the sub-cricoid position using the Ciaglia technique of passing a guide-wire into the tracheal lumen followed by dilatation of the tract and insertion of a full-sized cuffed tracheostomy tube into the trachea (Ciaglia *et al.*, 1985). It is generally not recommended in marked obesity, the presence of a goitre, children, emergencies and whenever the cricoid cartilage cannot be definitely palpated (Ciaglia *et al.*, 1985; Ciaglia and Graniero, 1992; Fisher and Howard, 1992). In recent reviews, reported complications were uncommon and most were minor. These included subcutaneous emphysema, minor skin haemorrhage, inability to insert the tube, stomal granulation formation, tube displacement, voice changes, pneumothorax, skin tethering, tracheomalacia, tracheal erosion and stenosis (Hazard *et al.*, 1991; Ciaglia and Graniero, 1992; Leinhardt *et al.*, 1992; Friedman and Mayer, 1993; van Heurn *et al.*, 1995; Whittet *et al.*, 1995). We add this

From the Department of Otolaryngology–Head and Neck Surgery, North Staffordshire Royal Infirmary, Stoke on Trent, UK.
Accepted for publication: 13 May 1997.



(a)



(b)

FIG. 1

Lateral 1(a) and AP 1(b) soft tissue neck X-rays showing a radio-opaque wire in the pharynx and larynx exiting into the subcutaneous tissues of the neck.

unusual complication of a retained fragment of a Seldinger wire to this list. However, it is a mystery why the wire points upwards from its presumed entry point in the subcricoid region. It is possible that it was originally downwards and then coughed into the position demonstrated in the X-rays.

References

- Bhat, N. A., Oates, J. (1996) An unusual foreign body in the larynx: a case report. *Journal of Laryngology and Otology* **110**: 1164–1165.
- Ciaglia, P., Firsching, R., Syniec, C. (1985) Elective percutaneous dilatational tracheostomy: A new simple bedside procedure; Preliminary report. *Chest* **87**: 715–719.
- Ciaglia, P., Graniero, K. D. (1992) Percutaneous dilatational tracheostomy. Results and long-term follow-up. *Chest* **101**: 464–467.
- Cohen, S. R., Herbert, W. I., Lewis, G. B. Jr., Geller, K. (1980) Foreign bodies in the airway: Five-year retrospective study with a special reference to management. *Annals of Otolaryngology, Rhinology and Laryngology* **89**: 437–442.
- Evans, J. N. G. (1987) Foreign bodies in the larynx and trachea. In *Scott-Brown's Otolaryngology*. 5th Edition. Vol. 6 (Kerr, A. G., Evans, J. N. G., eds.). Butterworths, London. pp 438–448.
- Fisher, E. W., Howard, D. J. (1992) Percutaneous tracheostomy in a head and neck unit. *Journal of Laryngology and Otology* **106**(7): 625–627.
- Friedman, Y., Mayer, A. D. (1993) Bedside percutaneous tracheostomy in critically ill patients. *Chest* **104**(2): 532–535.
- Hazard, P., Jones, C., Benitone, J. (1991) Comparative clinical trial of standard operative tracheostomy with percutaneous tracheostomy. *Critical Care Medicine* **19**: 1018–1024.
- Kent, S. E., Watson, M. G. (1990) Laryngeal foreign bodies. *Journal of Laryngology and Otology* **104**: 131–133.
- Leinhardt, D. J., Mughal, M., Bowles, B., Glew, R., Kishen, R., MacBeath, J., Irving, M. (1992) Appraisal of percutaneous tracheostomy. *British Journal of Surgery* **79**: 255–258.
- Seldinger, S. I. (1953) Catheter replacement of the needle in percutaneous arteriography: A new technique. *Acta Radiologica* **39**: 368.
- Rothmann, B. F., Boeckman, C. R. (1980) Foreign bodies in the larynx and tracheobronchial tree in children. *Annals of Otolaryngology, Rhinology and Laryngology* **89**: 434–436.
- van Heurn, L. W., van Geffen, G. J., Brink, P. R. (1995) Percutaneous subcricoid minitracheostomy: report of 50 procedures. *Annals of Thoracic Surgery* **59**(3): 707–709.
- Whittet, H. B., Commins, D. J., Waldmann, C. S. (1995) Skin tethering after dilatational percutaneous tracheostomy. *Anaesthesia* **50**(10): 892–894.

Address for correspondence:

B. N. Kumar,
Specialist Registrar in ENT,
North Staffordshire Royal Infirmary,
Stoke on Trent ST4 7LN.

Fax: 01782-416197