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Short Communication

Technique of tracheo-oesophageal puncture under local anaesthesia

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Abstract
Various techniques for performing a secondary tracheo-oesophageal puncture to enable insertion of a speech prosthesis in laryngectomized patients have been described. We describe a modification that allows a safe secondary tracheo-oesophageal puncture under local anaesthesia using standard equipment available in an ENT department.

Key words: Laryngectomy; Larynx, artificial

Introduction

The formation of tracheo-oesophageal fistulae and tunnels are well recognized techniques for giving the laryngectomee good, intelligible speech (Conley *et al.*, 1958). Initially, the main problem was of aspiration through the fistula causing recurrent pneumonia. In 1980, Singer and Blom overcame this problem by inserting a prosthesis with a one-way valve into the tracheo-oesophageal fistula (Singer and Blom, 1980). This allowed sufficient air flow from the trachea to the pharynx to produce a good, fluent voice whilst preventing aspiration.

Since the introduction of tracheo-oesophageal valves, various authors have modified the original puncture technique for problem patients or simplified the procedure (Maniglia, 1982; Mohr *et al.*, 1983; Ossoff *et al.*, 1984; Spofford *et al.*, 1984; Maniglia, 1985; Parker, 1985; Singh, 1988; Mazzara and Baredes, 1993). One of our laryngectomees who had a good voice using a Blom–Singer valve unfortunately lost his tracheo-oesophageal fistula and was not medically fit enough for a further general anaesthetic. We, therefore, developed a local anaesthetic technique for a secondary tracheo-oesophageal puncture and have subsequently used this procedure successfully on another patient.

Materials

All the items used are readily available in an ENT department: 10 per cent cocaine spray; 10 per cent xylocaine spray (10 mg lignocaine per spray – maximum dose 20 sprays); 2 ml of 0.5 per cent xylocaine and 1:200,000 adrenaline; 18 FG urinary catheter (Foley); 20 ml syringe; 16 G intravenous cannula (Viggo-Spectromed – 'venflon'); Mini-Trach II – Seldinger (Portex); 14 FG urinary catheter (Foley); (see Figure 1).

Method

The patient was positioned on an examination couch sitting at an angle of about 30° to the horizontal plane. Cocaine spray (10 per cent) was applied to the most patent nostril, and xylocaine spray administered generously to the pharynx. The trachea was also sprayed with 10 per cent xylocaine, and 2 ml of 0.5 per cent xylocaine and 1:200,000 adrenaline was injected at the proposed site of the tracheo-oesophageal puncture and along its tract.

After waiting a suitable time for the anaesthetic to act a 18 FG urinary catheter was lubricated and inserted through the nose into the oesophagus for a distance of 20 cm. The balloon on the urinary catheter should be positioned approximately level with the tracheostome. The balloon was then inflated slowly with air using a 20 ml syringe – about 15 ml of air produces an obvious bulging of the posterior wall of the trachea clearly seen on observation through the tracheostome. It was important that the balloon was placed in the correct position. The tracheo-oesophageal puncture site should be 5 mm posto-inferior to the superior mucocutaneous border of the tracheostome and the balloon was placed inferior to this level as shown by the bulging posterior wall of the trachea (Figure 2). This ensured that the potential space between the anterior and posterior walls of the oesophagus, at the site of puncture, was widely open. If the balloon was not placed in the correct position it needed to be repositioned by deflating the balloon and advancing or withdrawing the catheter before re-inflating.

The intravenous cannula was attached to a 10 ml syringe and inserted at the site of the puncture directly backwards, along the proposed tracheo-oesophageal fistula tract. The syringe was continually and gently aspirated to monitor the progress of the needle into the space above the inflated balloon in the oesophagus. On entering this space air could easily be withdrawn into the syringe. The syringe and needle of the cannula were removed. Using the Mini-Trach II set (Portex), a guide wire was inserted through the cannula, and was angled downwards, until resistance was felt when it abutted the balloon of the urinary catheter. The balloon was then deflated as the guide wire was advanced further down the oesophagus. The cannula was withdrawn and the first dilator (4 mm external diameter) was inserted over the guide wire. The first dilator was then withdrawn and the second dilater (5.3 mm external diameter) inserted. Following this the guide wire and dilator were removed. A 14 FG urinary catheter was then introduced into the fistula and advanced fully to its bifurcation. (If the fistula closed the guide wire was easily reintroduced and then followed by the dilators). Water (5 ml) was then

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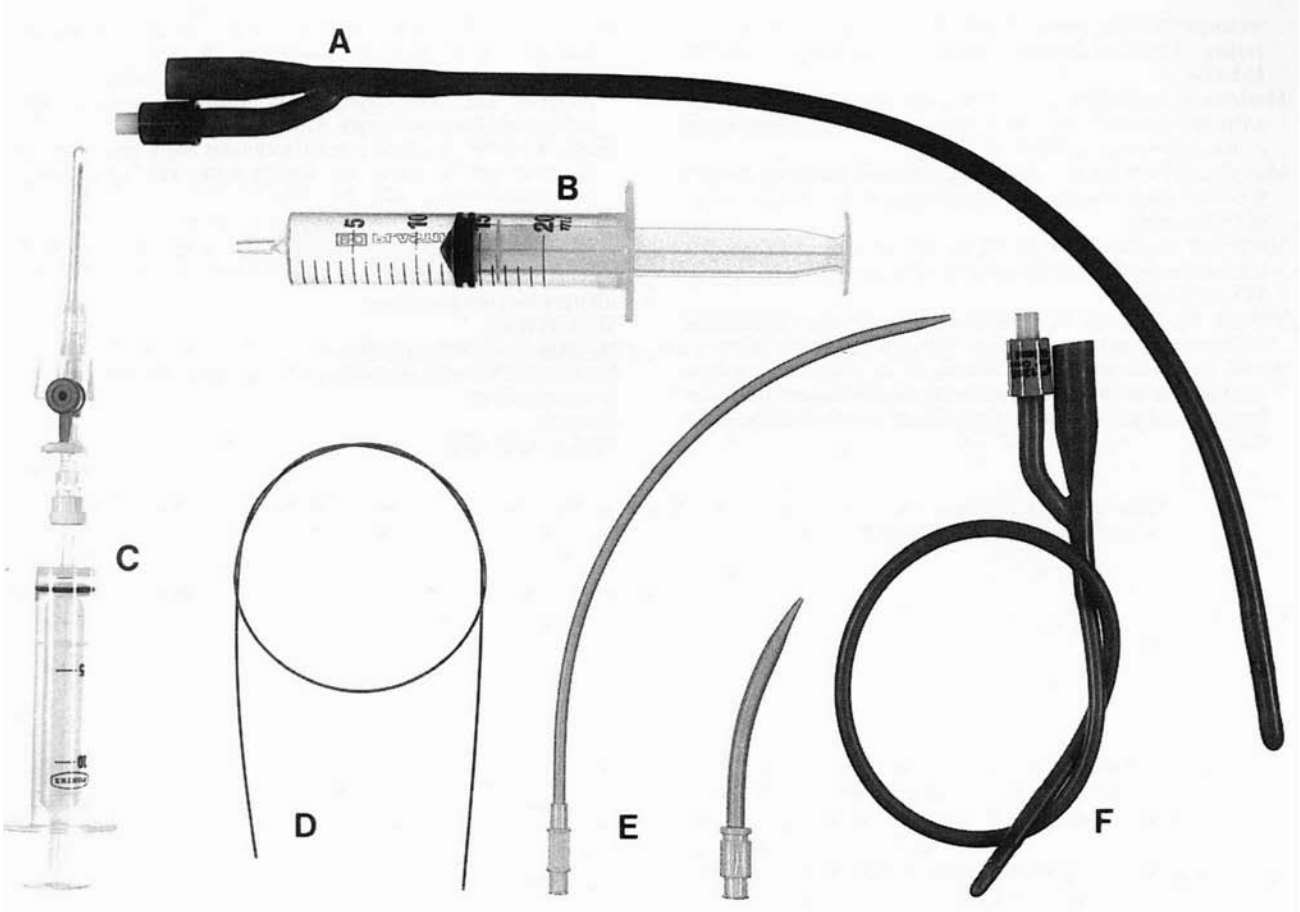

FIG. 1
Kit used for tracheo-oesophageal puncture: A = 18 FG urinary catheter; B = 20 ml syringe; C = 10 ml syringe and 16 G intravenous cannula; D = guide wire; E = dilators; F = 14 FG urinary catheter.

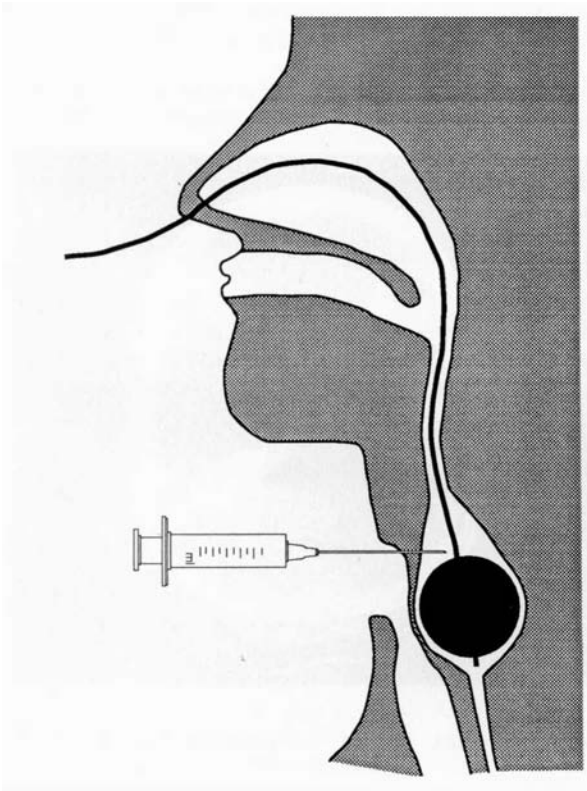

FIG. 2
Diagram showing the bulge of the posterior wall of the tracheostome whilst inserting the intravenous cannula into the potential space above the inflated balloon.

injected into the balloon to ensure that the balloon could not pass through the cardiac sphincter of the stomach. The upper end of the catheter was taped to the neck and left in place for 48 to 72 hours in order for the tract to mature.

At the end of this time the tract was gently dilated using a Blom–Singer dilator to allow insertion of a Blom–Singer valve.

Results

Two patients had this technique carried out on them. The procedure took about 20 minutes. Both reported minimal discomfort during the procedure and good, intelligible speech was acquired by both. There have been no complications.

Advantages of the technique

(1) It can be performed on an out-patient basis. (2) It is a safe technique. (3) It produces minimal discomfort. (4) It is possible to perform on patients unfit for a general anaesthetic. (5) It is possible to perform on patients with marked kyphoscoliosis or webbing of the neck where rigid endoscopy would be impossible.

Conclusion

A new local anaesthetic technique for the formation of a secondary tracheooesophageal fistula is presented. It is simple, safe, quick and cost-effective. It offers advantages over present techniques, especially for patients judged unfit for a general anaesthetic or where rigid endoscopy is impossible.

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