The Journal of Laryngology and Otology
February 1987. Vol. **101.** pp. 164–168

Blom-Singer puncture
(Practicalities in everyday management)

by

VALERIE J. LUND, F.R.C.S.,* ALISON PERRY, L.C.S.T.† and ANTHONY D. CHEESMAN, F.R.C.S. (London)

Introduction

The use of the tracheo-oesophageal puncture and insertion of a Blom-Singer prosthesis, either as a primary or secondary procedure in laryngectomees, has conferred undeniable benefit on large numbers of patients. Whilst the majority are trouble-free, a number of minor problems are encountered, particularly when patients are initially fitted with the voice prosthesis (Donegar *et al.*, 1981). These difficulties are easily overcome by the combined efforts of the otolaryngologist and speech therapist but clearly a consistent level of enthusiasm is required by all members of the team and in particular the patient, to ensure the continued success of the technique.

It is the aim of this paper to comment on problems encountered during a post-laryngectomy speech rehabilitation programme using the Blom-Singer puncture procedure; and to discuss their frequency and management.

Method and results

Sixty-one patients have received prostheses between 1982 and 1985. There have been 55 men and 6 women, of whom 50 have been followed-up for more than one year. Of the 61, 8 have been primary punctures, performed at the time of laryngectomy, and 53 secondary. The method of selection of the secondary punctures and the technique of pre-operative evaluation and surgical technique have been previously described (Cheesman *et al.*, 1985). Ten patients have failed post-operatively. Seven were unable to cope with the prosthesis (due to alcholic problems) and removed it themselves and 3 ceased to use it as they were unhappy with the quality of the voice. Ten patients have required re-puncture, which has been multiple in 4 cases.

Complications

The complications experienced by our patients may be broadly divided into procedural and functional.

General

Success of the procedure is largely dependent on the personal enthusiasms of all those concerned and patients may need considerable support initially to deal with cleaning and manipulation of the voice prosthesis. In patients with adequate manual dexterity this

* Senior Registrar, Charing Cross Hospital.
† Chief Speech Therapist, Charing Cross Hospital.
‡ Consultant Otolaryngologist, Charing Cross Hospital, London.

https://doi.org/10.1017/S0022215100101434 Published online by Cambridge University Press

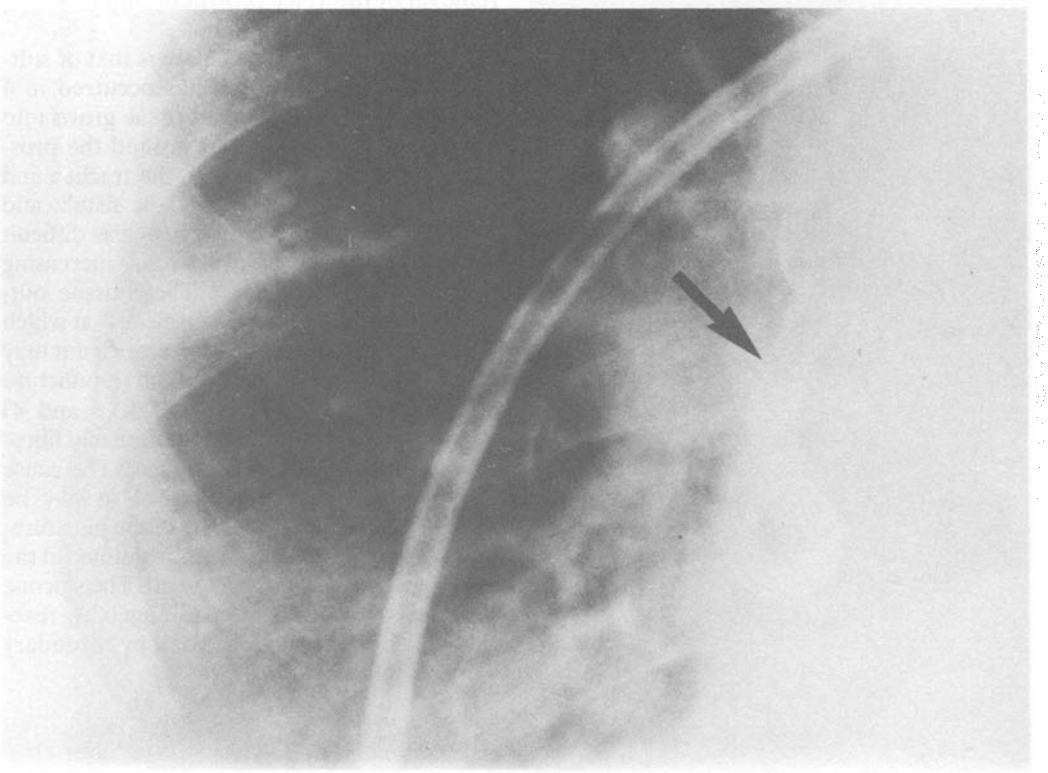


FIG. 1
Chest X-ray (PA) showing voice prosthesis in right main bronchus (arrowed).

is not usually a problem but it is important that the patient can visualize the fistula site. It is therefore important that the fistula is sited as superiorly as possible. Most patients require a change of prosthesis on average every 3 months, if they are taught to adequately clean the tracheostome, prosthesis and fistula daily.

Extrusion

It is extremely rare for voice prostheses to extrude spontaneously if they have been correctly sized initially. The majority are accidentally pulled out by the patients during prosthesis cleaning and manipulation. Some patients use an outer tracheostoma valve to allow 'hands-free' voicing. When the valve housing is removed or tracheostoma 'covers' changed, the flange of the underlying prosthesis may have become adherent and the voice prosthesis is dislodged. This has happened in at least 10 patients. It is important that the patient carries a 14 FG whistle tip red-rubber catheter at all times and is instructed on its insertion in this event. Many patients or their spouses are capable of inserting the catheter but if this is not possible, they must be encouraged to proceed with all haste to the ENT department as the fistula may close within 1–2 hours. Attending a unit unfamiliar with such procedures is usually unsatisfactory and leads to confusion, as many of our patients have learnt to their cost. Fistulae which have begun to stenose may be dilated with urethral dilators and catheters of increasing size until the voice prosthesis can be reintroduced. In 10 cases repuncture has been necessary due to complete closure.

Inhalation of prostheses.

This is fortunately a rare occurrence (2

https://doi.org/10.1017/S0022215100101434 Published online by Cambridge University Press

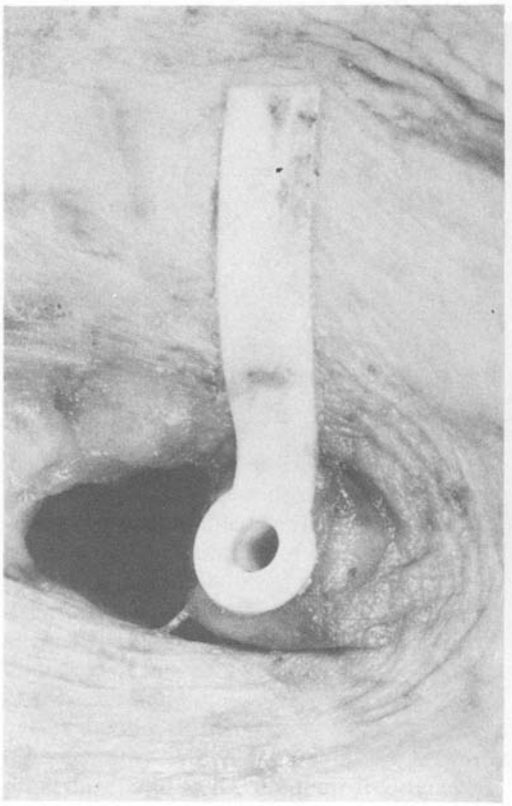


FIG. 2
Photograph of soft tissue overgrowth round tracheo-oesophageal puncture site.

patients) and patients are only potentially at risk when changing voice prostheses. They may partly insert the prosthesis, initiate coughing, panic and drop the prosthesis down the trachea, (Fig. 1) whence it is relatively easy to remove it under local or general anaesthesia with a bronchoscope.

Tissue reaction at fistula site.

Granulations may form around the tracheal opening of the fistula; this has occurred significantly in 3 patients and to a lesser degree in 8 patients. These granulations are associated with crusting and bleeding and may be due to changing prostheses too infrequently. The smaller granulations are usually managed by silver nitrate cautery (as an out-patient procedure) or by cryoprobe and occasionally removal of the voice prosthesis and insertion of the catheter for 48 hours.

*A more interesting problem is that of soft-*tissue overgrowth, which has occurred in 4 patients (Fig. 2). A trunk of tissue grows into the lumen of the fistula or around the prosthesis, pouting out into both the trachea and oesophagus at either end of the fistula and rendering use of the voice prosthesis difficult owing to occlusion of air flow and increasing the incidence of leakage. These tissue outgrowths must be removed surgically, at which time the catheter may be reinserted; or it may be prudent to close the fistula and re-puncture at a later date. Histology (Figs. 3 and 4) demonstrates chronic inflammation and fibrosis with ulceration along the tract. The cause of this growth is unknown but it may be related to the siting and angle of the puncture, particularly when the fistula is fashioned at the narrowest point of the party wall. The silicone prosthesis may stimulate a foreign body reaction which may be exacerbated by secondary bacterial infection or fungus.

Aspiration and dysphagia

Leakage through the voice prosthesis should not occur unless the prosthesis has been inadequately sized or is the standard 'duck-bill' variety which may protrude too far into the oesophagus or is old and wearing out. Unlike Singer and Blom (1980), we have not encountered any problem with fistula leakage. Two patients have experienced mild dysphagia (Fig. 5) as a result of the prosthesis occluding the oesophagus but this problem is easily overcome by the use of a low pressure prosthesis (which protrudes less far into the oesophagus), once video fluoroscopy has excluded the presence of any concomitant pathophysiology.

Discussion

A number of complications have occurred in our series of Blom-Singer puncture patients but these have been relatively few in number, and generally minor in nature. Most can be overcome by simple voice prosthesis reselection or minor surgery. Even when prostheses

https://doi.org/10.1017/S0022215100101434 Published online by Cambridge University Press

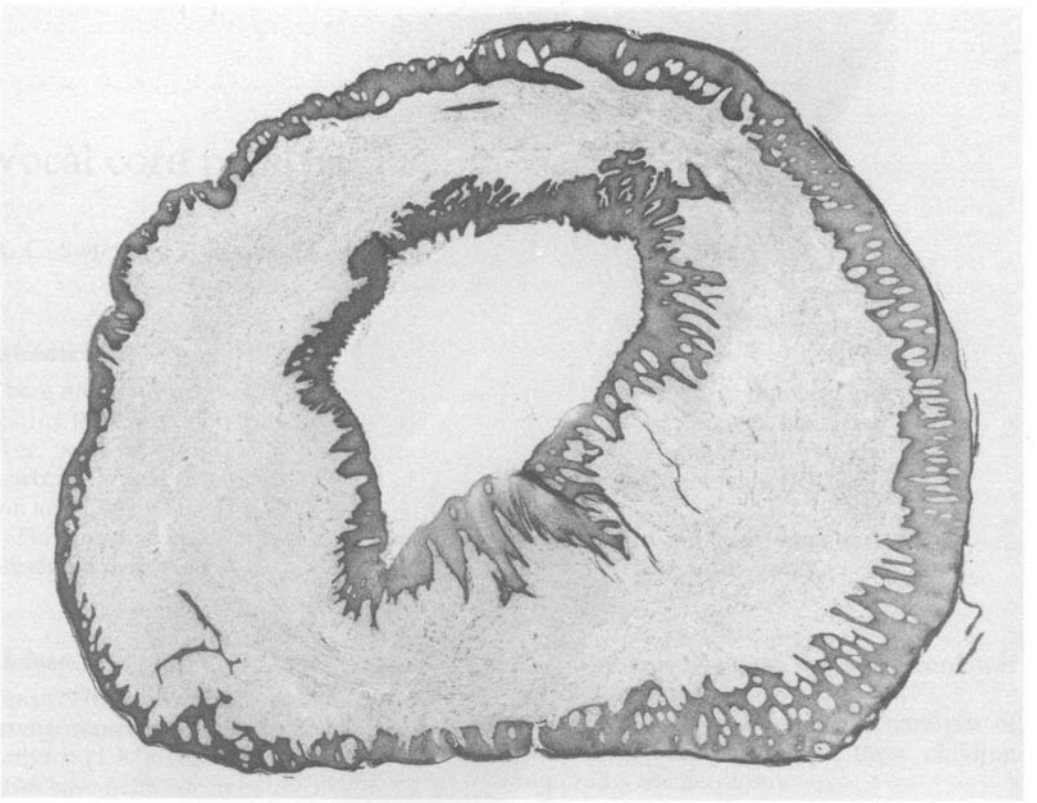


FIG. 3

Photomicrograph of transverse section taken through fistula track with soft-tissue overgrowth showing chronic inflammation and fibrosis. Haematoxylin and Eosin ×15.

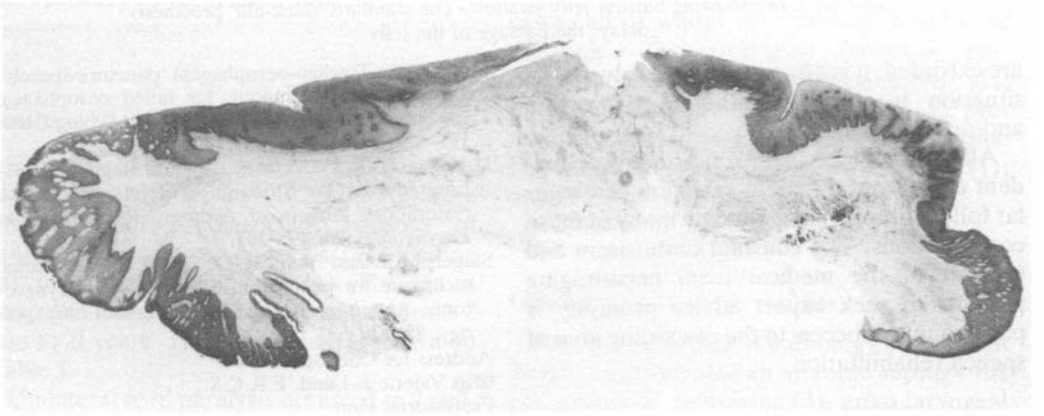


FIG. 4

Photomicrograph of longitudinal section taken through fistula track, showing changes as in Figure 3. Haematoxylin and Eosin ×10.

https://doi.org/10.1017/S0022215100101434 Published online by Cambridge University Press

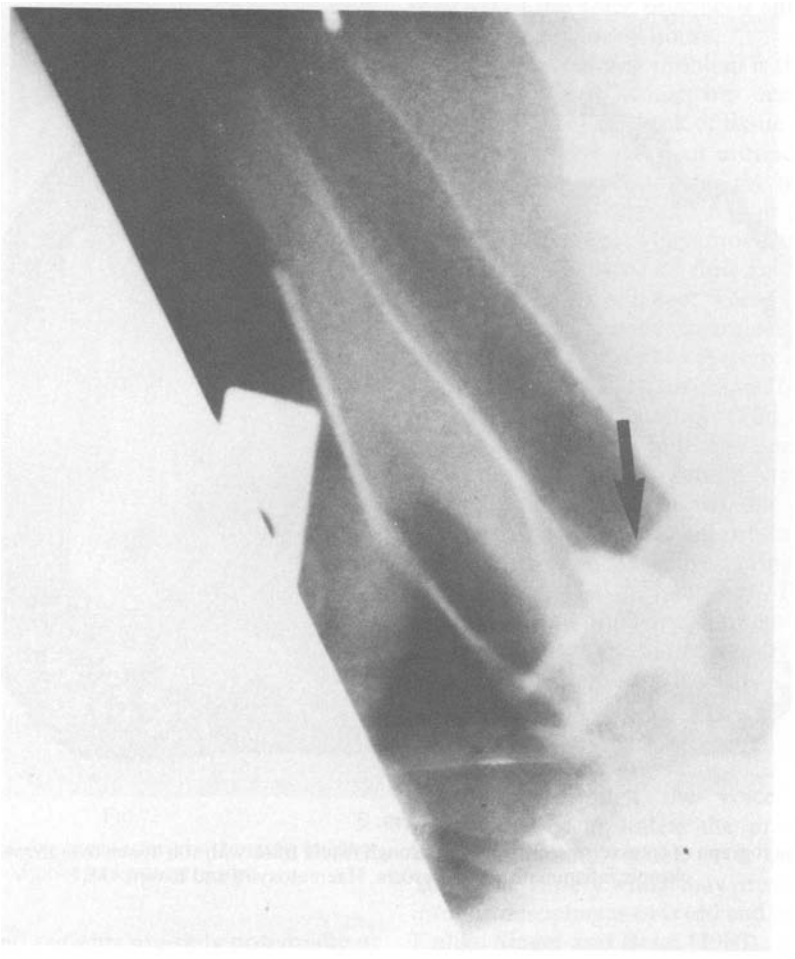


FIG. 5

Lateral X-ray showing barium jelly swallow. The standard 'duck-bill' prosthesis delays the passage of the jelly.

are extruded, it is often possible to salvage the situation by prompt catheter re-insertion and/or dilatation.

All programmes of this nature are dependent upon careful patient selection and regular follow-up which will obviate many of these complications. The constant enthusiasm and support of the medical team encouraging patients to seek expert advice promptly is paramount to success in the rewarding area of speech rehabilitation.

References

Cheesman, A. D., Knight, J., McIvor, J. and Perry, A. (1986) Tracheo-oesophageal 'puncture-speech': an assessment technique for failed oesophageal speakers. *Journal of Laryngology and Otology,* **100:** 191–199.

Donegar, J. O., Gluckman, J. L. and Singh, J. (1981) Limitations of the Blom-Singer technique for voice restoration. *Annals of Otology, Rhinology and Laryngology* **90:** 495–497.

Singer, M. I. and Blom, E. D. (1980) An endoscopic technique for restoration of voice after laryngectomy. *Annals of Otology, Rhinology and Laryngology,* **89:** 529–533.

Address for Correspondence:
Miss Valerie J. Lund, F.R.C.S.,
Professorial Unit,
Royal National Throat, Nose and Ear Hospital,
Gray's Inn Road,
London WC1X 8DA.

https://doi.org/10.1017/S0022215100101434 Published online by Cambridge University Press