

Recurrent tracheoesophageal puncture fistula closure using a previous flap as donor: a case report

Dushyant Jaiswal, Prabha Yadav, Vinay Shankhdhar, Rahul Dalal

Department of Plastic and Reconstructive Surgery, TATA Memorial Hospital, Parel, Mumbai, India

corresponding to Rahul Dalal, MBBS, MS, MCh (Plast), Flat No. K-302, Queen's Tower, New D. P. Road, Aundh, Pune 411007, Maharashtra, IndiaTel: +91 996 048 8898/91 020 258 84707; e-mail: dr.raahul.dalal@gmail.com

Received 28 June 2015

Accepted 11 September 2015

The Egyptian Journal of Otolaryngology
2016, 32:229–231

Tracheoesophageal puncture (TEP)-site fistula dysfunction is a serious complication of TEP prosthesis. We successfully addressed a recurrent TEP-site fistula dysfunction by utilizing the previously done deltopectoral flap. This avoided a fresh donor site. Utilization of sound plastic surgery principles helps in tackling these problems effectively.

Keywords:

deltopectoral flap, neotracheostoma, random pattern flap, tracheoesophageal puncture fistula, tracheoesophageal puncture prosthesis

Egypt J Otolaryngol 32:229–231

© 2016 The Egyptian Journal of Otolaryngology
1012-5574

Introduction

Tracheoesophageal puncture (TEP) with prosthesis was described by Singer and Blom in 1980 [1]. In this procedure a one-way valve is placed between the tracheostoma and the neopharynx, which allows air to be shunted on demand through the neopharynx and produce speech similar to esophageal speech.

There are various complications related to this procedure – namely, leakage through and around the prosthesis, hemorrhage, infection, extrusion of prosthesis, etc.

In such cases the prosthesis needs removal and closure of the TEP fistula.

Case report

A 64-year-old male patient with carcinoma of the larynx underwent total laryngectomy with bilateral neck dissection with TEP and prosthesis placement, followed by adjuvant radiation therapy. Eight years later he developed enlargement and dysfunction at the TEP site. Prosthesis removal and fistula closure were carried out with a two-layered closure and reinforcement with a deltopectoral (DP) flap cover over the esophagus.

Postoperatively there was breakdown of the DP flap and the fistula reformed. The neck tissues and esophagus were extremely fibrotic. Four months later fistula closure was performed by utilizing the DP flap already present at the fistula site along with creation of a neotracheostoma.

Operative technique

Circumferential incision was made around the tracheostoma. Dissection from the normal cartilaginous trachea anterior and lateral to the fistula site was carried out with minimal excision of the esophageal wall. Excision of the fistula track was

done. Securing of a single-layer horizontal esophageal closure using 4-0 PDS taking simple sutures with knots placed outside was carried out. End stoma was relocated at the inferior edge of the fistula site. Barrier vascularized tissue coverage of the raw area and esophagus was completed. For this a 6×2 cm random pattern flap superiorly from the distal part of the previously operated DP flap was harvested.

The flap donor area was closed primarily. The standby back-up plan was pectoralis major muscle flap with skin

Figure 1



Neotracheostoma formation and random pattern flap raising based superiorly on the previously operated deltopectoral flap.

Figure 2



Flap in position.

Figure 3



Flap final inset.

Figure 4



Follow-up 8 weeks postoperatively.

Figure 5



Radio-opaque dye study; no leak at the fistula site; follow-up 8 weeks postoperatively.

graft if the random pattern flap did not bleed adequately (Figs 1–5).

Discussion

In laryngectomized patients, tracheoesophageal speech is the endpoint for voice rehabilitation. There are various complications related to this procedure, such as prosthesis-related complications, which is seen in 77.3% of cases. Other common complications are leakage (82.5%), prosthesis displacement (41.2%),

intractable aspiration (29.4%), and aspiration of the prosthesis (23.5%) [2]. In such cases the prosthesis

needs to be removed and the TEP fistula needs to be closed.

Principles of fistula closure are complete excision of the fistula track, secure closure of the epithelial surfaces, and barrier vascularization between the two epithelial surfaces. The traditional surgical closure of a tracheoesophageal fistula includes fistula tract division and three-layer closure of the esophageal and tracheal linings with or without interposition of a pedicle regional skin or muscle flap [3].

Different methods of TEP fistula closure have been described in the literature: closure of the esophageal mucosa with inverted sutures and of the tracheal mucosa with everted sutures [4] and three-layered closure of a tracheoesophageal puncture site [5]; three-layer technique for closure by utilizing an interpositional dermal graft [6]; interposition of muscle between suture lines for leak-proof closure [7]. Use of a pedicled DP flap on the basis of a single perforator for the closure of fistulae has been published with good success rate [8].

We have tried to close a recurrent fistula by utilizing the locally available flap part and thus sparing a new flap surgery. This works perfectly on basic plastic surgery reconstructive principles where nothing is discarded, and it can be used efficiently for neoreconstruction if the tissue is viable. We have used an old flap as a donor for harvesting a new flap. Thus, the patient benefitted and his recurrent fistula problem could be resolved effectively.

Conclusion

Recurrent TEP fistula is a serious complication of TEP prosthesis, which needs prosthesis removal and fistula closure. Utilization of locally available flaps and sound plastic surgical principles help in tackling these problems effectively.

Acknowledgements

Dr Dushyant Jaiswal, Dr Prabha Yadav, and Dr Vinay Shankhdhar contributed to study concept. Dr Rahul Dalal and Dr Dushyant Jaiswal contributed to drafting and manuscript revision.

Conflicts of interest

There are no conflicts of interest.

References

- 1 Singer MI, Blom ED. An endoscopic technique for restoration of voice after laryngectomy. *Ann Otol Rhinol Laryngol* 1980;89:529–533.
- 2 Dayangku Norsuhazenah PS, Baki MM, Mohamad Yunus MR, Sabir Husin Athar PP, Abdullah S. Complications following tracheoesophageal puncture: a tertiary hospital experience. *Ann Acad Med Singapore* 2010;39:565–4.
- 3 Annyas AA, Escajadillo JR. Closure of tracheoesophageal fistula after removal of the voice prosthesis. *Laryngoscope* 1984;94:1244–1245.
- 4 Hosal SA, Myers EN. How I do it: closure of tracheoesophageal puncture site. *Head Neck* 2001;23:214–216.
- 5 Unal M. Three-layer closure of a tracheoesophageal puncture site :a technical note. *Adv Ther* 2006;23:733–738.
- 6 Rosen A, Scher N, Panje WR. Surgical closure of persisting failed tracheoesophageal voice fistula. *Ann Otol Rhinol Laryngol* 1997;106:775–778.
- 7 Judd O, Bridger M. Failed voice restoration: closure of the tracheoesophageal fistula. *Clin Otolaryngol* 2008;33:261–264.
- 8 Balasubramanian D, Iyer S, Thankappan K, Irish J. Tracheoesophageal puncture site closure with single perforator-based deltopectoral flap. *Head Neck* 2013;35:E60–E63.