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Tracheoesophageal Fistula Repair by Sternocleidomastoid Muscle Rotation: A Case Report

Sternokleidomastoid Kas Rotasyonuyla Trakeoözefageal Fistül Tamiri: Olgu Sunumu

Mehmet Emrah Ceylan[1*], Gözde Ceylan[2], Abdullah Dalğıç[3]

[1]Private Otorhinolaryngology Clinic, Davraz Yaşam Hastanesi, Isparta, Turkey
[2]Isparta State Hospital, Isparta, Turkey
[3]Department of Otorhinolaryngology, İzmir Training and Research Hospital, İzmir, Turkey

ABSTRACT

Application of voice prothesis is a common and useful method for providing talking after total laryngectomy. Due to problems like inability to use the prosthesis, infection of fistula, fluid escape around prothesis and extract of prothesis patients may reject usage of prothesis. Sixty-five year-old man, had been operated for subglottic larynx cancer one year ago. He had referred to our clinic for extracting voice prothesis Provox® (Atos Medical AB, Hörby, Sweden). He had complained about inability of usage voice prothesis. Surgical treatment for closure of fistula had been recommended. Rotation of the sternocleidomastoid muscle successfully closed the fistula.

Key Words: Tracheostomy, Tracheoesophageal Fistula, Laryngectomy

ÖZET

Total larenjektomi sonrası konuşmayı yeniden sağlamak için ses protezi uygulanması yaygın ve kullanışlı bir yöntemdir. Hastalar protezi kullanamama, fistül enfeksiyonu, protez etrafından sıvı kaçması gibi sorunlar nedeniyle protez kullanımını reddedebilir. Bir yıl önce subglottik larenks karsinomu nedeniyle ameliyat edilen 65 yaşında erkek hasta, Provox® ses protezinin (Atos Medical AB, Hörby, İsveç) çıkartılması için kliniğimize başvurdu. Fistülün kapatılması için cerrahi tedavi önerildi. Sternokleidomastoid kas rotasyonuyla fistül başarıyla kapatıldı.

Anahtar Kelimeler: Trakeostomi, Trakeoözefageal fistül, Larenjektomi

Introduction

Voice prostheses are widely used for voice rehabilitation after total laryngectomy. However, prosthesis-related complications include a patient's inability to use the device, local infection, leakage around the prosthesis, and removal of the prosthesis. Given these complications, some patients choose to discontinue use of the prosthesis, and the tracheoesophageal fistula must be closed. Several techniques for fistula closure have been described ranging from simple outpatient techniques, such as primary suture and cauterisation, to complex surgical procedures.

Here, we describe the use of a three-layer technique to close a tracheoesophageal fistula using the sternocleidomastoid muscle (SCM). No obstructions or stenosis were observed after surgery. According to our experience in one patient, the three-layer technique is a useful surgical procedure for tracheoesophageal fistula closure.

Case report

A 65-year-old male had undergone surgery for subglottic larynx cancer 1 year earlier. The patient complained that he was unable to use the Provox® (Atos Medical AB, Hörby, Sweden) voice prosthesis and was referred to our clinic for removal of the device. The prosthesis was removed in the clinic, and conservative treatment was recommended. However, 3 weeks later, the artificial tracheoesophageal fistula had not closed. Surgical treatment was recommended to close the fistula, and the patient consented.

***Sorumlu Yazar:** Mehmet Emrah Ceylan, Özel Davraz Yaşam Hastanesi ENT Clinic, Isparta
E-mail: mrhcyln@gmail.com, Phone Number: +90(530) 847 80 97, Fax: +9(0246) 232 45 15
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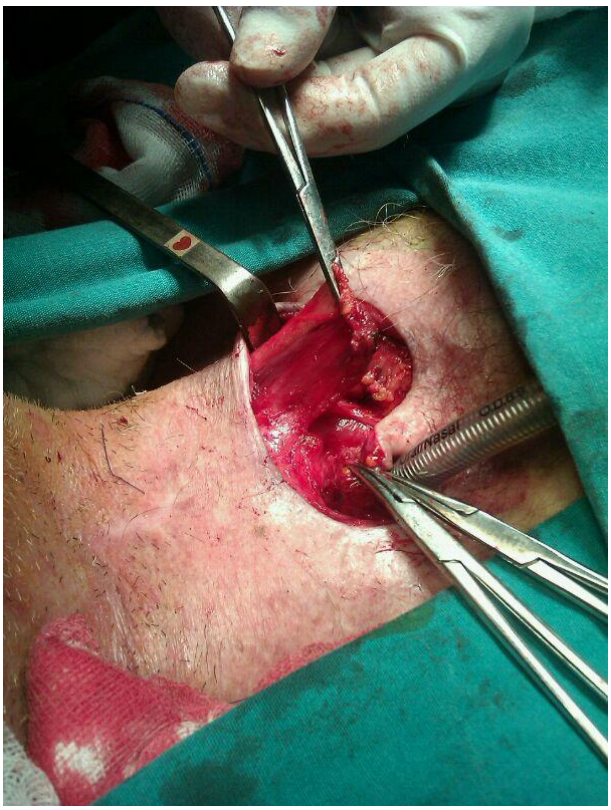

Fig. 1. Sternocleidomastoid muscle separation from medial adhesion site

Fig. 2. Sternocleidomastoid muscle's transposition

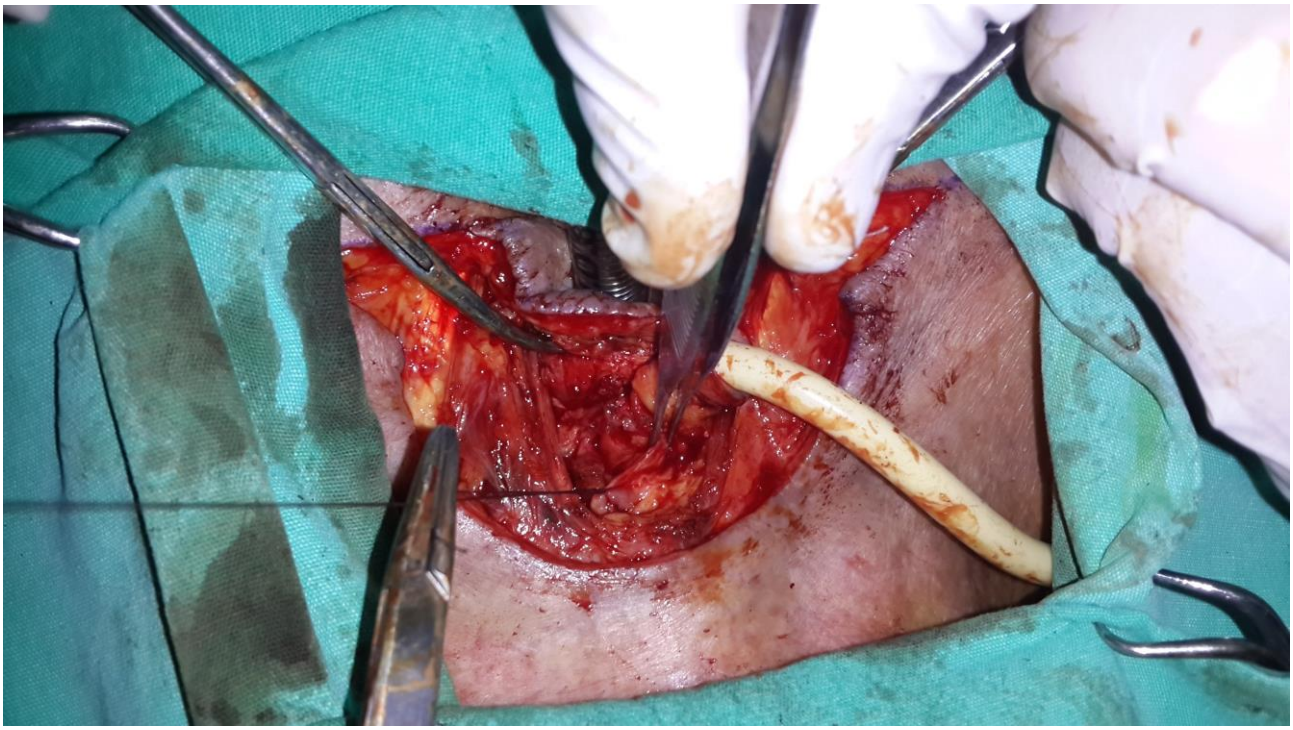

Fig. 3. Three layer fistula closure

An omega incision was made around the tracheostomy. The walls of the oesophagus and trachea were separated to expose the fistula tract. The oesophageal mucosa was closed with absorbable suture material. The left SCM was mobilised after medial excision from the sternal border. The muscle was rotated toward the fistula, placed 1 cm over the oesophageal opening, and sutured. The tracheal aperture was closed with absorbable sutures and the three-layer closure

technique was used to close the fistula *(Figure 1-3)*. No surgical complications were observed, and the patient began oesophageal speech therapy 2 weeks after surgery.

Discussion

Tracheoesophageal puncture and insertion of a voice prosthesis is a common procedure. However, in cases where patients are unable to use the voice prosthesis or complications related to the prosthesis arise, the device may need to be removed. It is necessary to close the fistula tract after the voice prosthesis is removed. Although conservative treatment and spontaneous closure is the treatment of choice (1), several techniques, including primary suture, cauterisation, and local injections, have been used to close the fistula (2,3,4). While the primary suture technique has had limited success, the two- and three-layer closure procedures are more effective (5,6). The sandwich technique involves insertion of the SCM between the tracheal and oesophageal walls. Although this technique has been successful, it is associated with complications including tracheal stenosis and oesophageal obstruction. Use of the SCM fascia can overcome these problems (7). In particular, previous radiotherapy may cause poor circulation in the tracheoesophageal walls, and the three-layer technique using muscle or fascia has a high closure rate in these patients.

We used a three-layer technique using the SCM to close a tracheoesophageal fistula without obstruction or stenosis. According to our experience in one patient, this surgical procedure is an effective method for tracheoesophageal fistula closure.

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