

# A Different Approach in the Treatment of Pharyngocutaneous Fistula: Closure Through the De-Epithelialized Skin Overlying Pectoralis Major Flap: Case Report

## Faringokutanöz Fistül Tedavisinde Farklı Bir Yöntem: Çevresi Dezepitelize Pectoralis Major Cildi ile Kapama

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### ABSTRACT

Pharyngocutaneous fistula (PCF) is a complication seen after total laryngectomy, and it is challenging for both the physician and the patient. Preoperative radiotherapy, malnutrition, anemia, medical comorbidities and local factors are the predisposing factors. Myocutaneous flaps are effectively used in treatment. A postoperative PCF developed in our case that had preoperative radiotherapy. It was treated with pectoralis major myocutaneous flap. The important feature of the approach is that the surgeons sutured the central skin island with de-epithelialized margins in a way to close the opening of the fistula, and the fistula region was supported by de-epithelialized part of the flap.

#### Keywords

*Myocutaneous flap; pharyngocutaneous fistula; radiotherapy; total laryngectomy*

### ÖZET

Faringokutanöz fistül (FKF) total larenjektomi sonrası ortaya çıkan, hem doktoru hem de hastayı sıkıntıya sokan bir komplikasyondur. Hazırlayan etkenler arasında ameliyat öncesi radyoterapi (RT), beslenme bozukluğu, kansızlık, eşlik eden hastalık ve yerel nedenler sayılabilir. Kaslı deri flebi kullanımı cerrahi tedavide etkili bir yöntemdir. Ameliyat öncesi RT almış ve ameliyat sonrası FKF gelişmiş hastamızda fistül tedavisi pektoralis major (PM) kaslı deri flebi ile yapıldı. Cerrahide uygulanan yöntemin en önemli özelliği çevresi dezepitelize santral cilt adası ile fistül açıklığının kapatılmış ve çevre dezepitelize cilt ile fistül çevresinin desteklenmiş olmasıdır.

#### Anahtar Sözcükler

*Myokutan flep; faringokutanöz fistül; radyoterapi; total larenjektomi*

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## INTRODUCTION

**P**haryngocutaneous fistula (PCF) is the formation of a passage between the pharynx and the skin. PCF is a common complication emerging following the total laryngectomy and its incidence rate was reported to be between 7.6% and 50%.<sup>1-3</sup> It was also reported that in the development of PCF there are such factors playing roles as the growth of the tumor, diabetes, liver disease, congestive heart failure, anemia, malnutrition, preoperative radiotherapy (RT), excessive homeostasis as a result of improper surgical technique, postoperative hypovolemia and bad wound care.<sup>1,2,4</sup> These factors cause deterioration in the tissue perfusion, the decrease in the partial pressure of the oxygen in the wound, impairment in the mechanisms which are against the resistance of the infection and the delays in wound healing.<sup>5</sup> There is a need to repair pharynx and neck through vascularised flap in the patients with mucosal and skin necrosis as a result of the deep neck infection depending on large fistulas. The most commonly used flaps are deltopectoral, latissimus dorsi (LD) and pectoralis major (PM) myocutaneous flaps.<sup>4,6,7</sup> In the story of the reported case, he is a PCF case with only one of the factors listed above RT and as a result of the salvage surgery he has a depleted neck vessel, in the closure of the fistula, pectoralis major myocutaneous (PMMC) flap and another different technique was applied.

## CASE REPORT

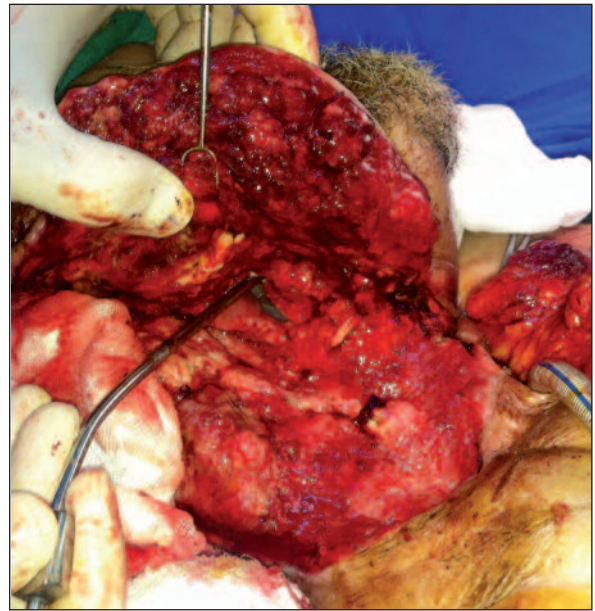
The 65-year old male patient was diagnosed as having T2N0M0 poor differentiated squamous cell carcinoma (SCC) of the supraglottic larynx in March, 2010. The patient received 67 Gray definitive RT. After 5 months, it was detected that the recurrence of SCC. Total laryngectomy and selective neck dissection (II-V levels on the right, II-IV levels on the left) was performed on the patient having no distant metastasis on positron emission tomography. After 15 months, we detected cervical metastasis under right jaw. Right radical neck dissection was performed and it was repaired through right PMMC flap. After 5 months, local recurrence was detected. The right carotid was blocked by the tumor in the carotid-cerebral angiography; however, the left carotid compensated the circulatory system in the brain. Accordingly, enlarged neck dissection and resection of the contents of right carotid sheath were performed. As the tumor was close to lateral pharyngeal mucosa, during the dissection

a 2 cm opening on the lateral pharyngeal wall emerged; it was repaired primarily through inverting suture immediately. On postoperative day 2, PCF was detected. In the following 20 days, fistula continued despite inverting suture, local flap rotation, debridement of necrotic tissues. This time fistula was repaired through left PMMC flap to treat persistent fistula (Figure 1). In this operation, the skin part PMMC flap (6x8 cm) was de-epithelialized except for the central elliptical island (2x4 cm) which was to close the opening of fistula (Figure 2 a-c). The central skin island was sutured on the debrided edge of the fistula through mattress technique. De-epithelialized part of the skin was sutured on lateral wall of pharynx and vertebrobasilar fascia, and thus the stress on the fistula line decreased. Finally, PM muscle was fixed on the surrounding tissue, the back side of PMMC flap was grafted with split-thickness skin and neck skin flaps were closed. The patient's endoscopic (Figure 3 a-d) and external (Figure 4) views were presented after postoperative month 4.

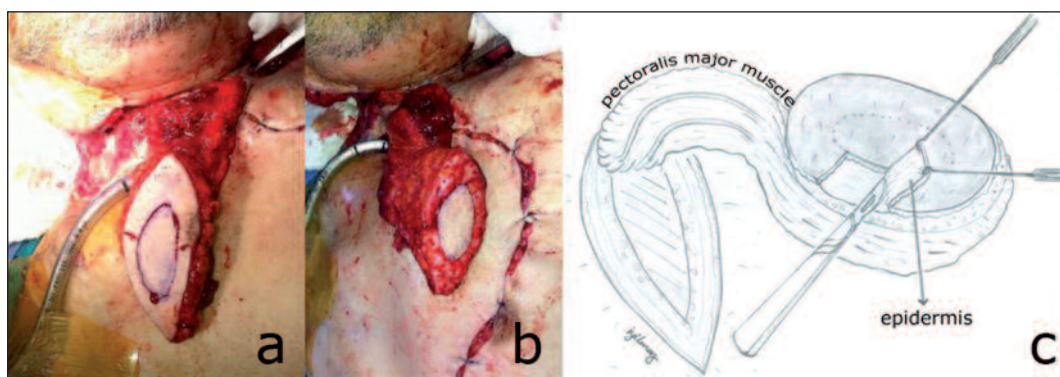
The patient approved informed consent form for publishing of his perioperative and postoperative pictures.

## DISCUSSION

In the surgical repair of the persistent fistula, PMMC flap and LDMC flap are among the most common



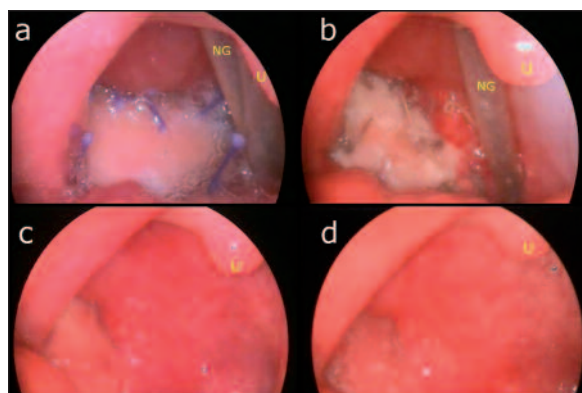
**Figure 1.** The intraoperative view of the fistula, the aspirator indicates the opening of the fistula.



**Figure 2.** a) PMMC flap was prepared, central skin island was drawn.  
b) The surrounding of the central skin island was de-epithelialized.  
c) The illustration of the de-epithelialization process.

choices. In the massive tissue defects, the closure of pharyngotomy through pectoralis flap and the closure of the surface of the pectoralis muscle through split thickness skin graft are presented as workhorse method due to both in terms of its cosmetic features and reliability in the reconstruction.<sup>4</sup> In the closure of the fistula, there are various techniques that have been identified. Their common characteristics are to make two epithelial surfaces get close without any tension and the tissue used is well-vascularised.<sup>8</sup> In addition, in order to lower the tension on the mucosal closure line, it was recommended that the dermal part should be suture onto the prevertebral fascia.<sup>9</sup> In our case we applied a technique, which has been recently encountered in the literature, we were able to not only close the epithelial surface through PMMC flap without any tension, but also lower the tension on mucosal closure line by suturing the de-epithelialized part of skin of the flap onto surrounding tissue and the fascia.<sup>10,11</sup> As was the case in our patient, the persistent fistula, which is hardly manageable and resulted from the preoperative RT as well as vessel depletion, which are known to increase the risk of fistula, was successfully treated.<sup>3,8,12</sup> Through this technique, it was possible to close the fistula line by the use of central skin island as well as enhancing the stabilization by the use of de-epithelialized skin part; furthermore, it was also guaranteed that the area would be vascularized through vascularized PM.

Free flaps are also reconstructive options in the closure of PCF. In the recent study by Jing et al., free muscle flap is at least comparable with pectoralis muscle flap for the closure of PCF.<sup>13</sup> According to their study, free flap has several advantages such as easy harvest and the pectoralis major flap can be conserved for further reconstructions.



**Figure 3.** The view of the central skin island from the mouth which is completely closed fistula; postoperative a) day 10, b) day 30, c) day 60, d) day 120. (U: uvula, NG: nasogastric tube).



**Figure 4.** The appearance of the patient in postoperative day 120.

Thus far, there have been some unsuccessful attempts in which there are some different types of techniques are used in managing the persistent PCF cases,

which are hard to close; however, the reported technique in our case could be different one which may be recommended to prefer in further cases.

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