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Delayed platysma myocutaneous turnover flap for repair of pharyngocutaneous fistula☆

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ABSTRACT

Introduction: Pharyngocutaneous fistula (PCF) is a common and serious complication after total laryngectomy. Numerous surgical and non-surgical treatment approaches have been described. Here we describe a platysma myocutaneous turnover flap for repair of PCF.
Materials and methods: Platysma myocutaneous turnover flap is described and two patients are used as examples.
Results: Repair was initially successful in both patients; however, one patient had recurrence of fistula after her cancer recurred at the stoma.
Discussion: Numerous surgical techniques have been described for repair of PCF. Here a turnover flap was used, a technique not previously described for this problem. The delay technique enhances the viability of the flap thought to be through numerous mechanisms.
Conclusion: The platysma myocutaneous turnover flap is useful for closure of pharyngocutaneous fistula when non-operative measures have failed.

1. Introduction

Pharyngocutaneous fistula (PCF) is a well-known complication of laryngectomy, occurring in 9%–35% of patients who have had previous radiation therapy for their laryngeal cancer [1]. Development of a PCF is further associated with several negative sequelae, including delayed oral feeding, longer hospital stays, and unfavorable social ramifications. Risk factors for the development of PCF are numerous and include previous radiation therapy, short interval between previous radiation therapy and surgery [2], advanced primary T and N stage, non-glottic primary site, resection of hyoid bone, high total radiation dose, large radiation field [1,3], intraoperative blood transfusions [4], presence of residual tumor [5], and concomitant neck bilateral neck dissection [3], among many others.

There are both non-surgical and surgical options for treatment of PCF but there is no consensus for the best treatment. Non-surgical treatment options include prolonged *nil per os* (NPO) status, acetic acid rinses, antibiotics and salivary bypass tubes. Surgical options include direct closure, local and regional flaps, and free flaps. The treatment choice depends on the size and location of the fistula, taking into account the patient's health status, radiation history, and neck tissue [6]. We advocate a delayed platysma myocutaneous turnover flap for the repair of PCF, a technique we believe has not been previously described.

2. Materials and methods

In our practice we have a high volume of patients who have failed chemoradiation for their laryngeal cancer. Often they require a salvage total laryngectomy for which we prophylactically add a pectoralis major flap (PMF), given impaired

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wound healing resulting from radiation which can lead to fistulas. When a PCF occurs despite the PMF, we advocate for a delayed outline platysma myocutaneous turnover flap with good results. We illustrate two such cases using this technique that led to complete closure of the PCF and successful resumption of oral feeds in both cases.

3. Patient selection

D.A. is a 78 year-old male who was referred to our practice for T2N0 left aryepiglottic fold squamous cell carcinoma. He was initially treated with laser supraglottic laryngectomy followed by radiation but unfortunately tumor recurred. He underwent a salvage total laryngectomy and PMF but soon developed a PCF. The defect was initially treated conservatively with Dakins packing to the fistula site, a salivary bypass tube and NPO status. The patient was non-compliant with his NPO status and had several other co-morbidities, such as diabetes, hypertension and psychiatric disorders. After several months, the defect persisted and measured 2 × 2 cm. A decision was then made to bring patient to operating room for delayed platysma myocutaneous turnover flap.

Similarly, P.B is a 77 year-old female with a history of T2N1 left true vocal cord cancer treated initially with radiation which failed to control disease. She was then treated with salvage total laryngectomy with PMF but went on to develop a PCF, likely from poor wound healing from radiation and prolonged steroids, which she had been taking for asthma. Like D.A, a salivary bypass tube was placed and she was made NPO with Dakins packing to the fistula site. Despite this, a 1.5 × 1.5 cm fistula persisted and she was ultimately taken to the operating room for a delayed platysma myocutaneous turnover flap.

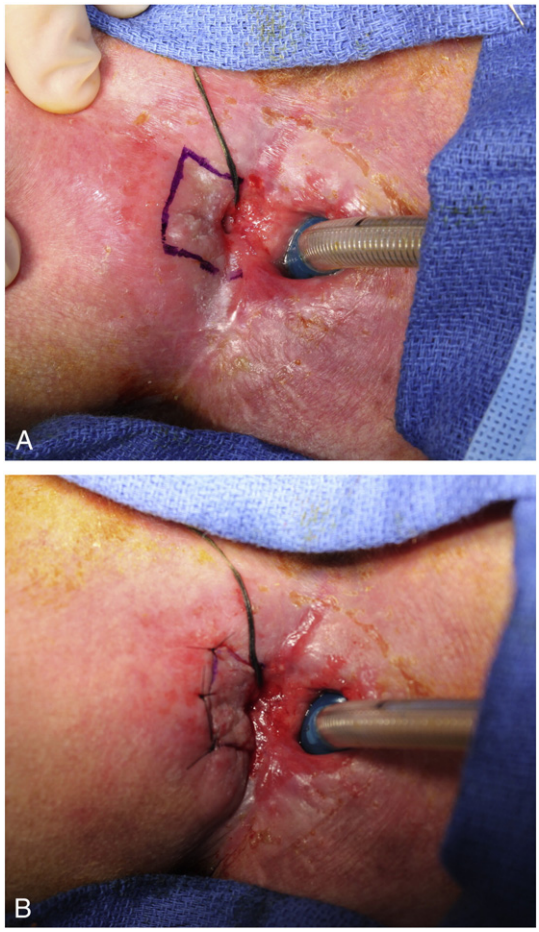

Fig. 1 – (A) Outline of flap shown raised and sewn back in place (B), which is performed in the stage one of the procedure.

4. Technique

Both patients were treated in similar fashions as outlined below.

Using a 15-blade, a U-shaped outline delay was incised superior to the fistula with the intention of using this as a turnover flap in 10–14 days in an attempt to definitively close the fistula. The outlined flap was then re-sutured in its normal anatomic position using three 5–0 nylon sutures in an interrupted fashion (Fig. 1).

Two weeks later, the patient returned for the second and final part of the procedure. The sutures of the previously outlined flap were removed and the outline delay was released and undermined toward the fistula. The circumference of the turnover flap was denuded of epithelium approximately 3 mm from the edge of the flap itself. A circumferential incision was made surrounding the fistula and the epithelium was dissected out toward the edge of the fistula in order to allow the epithelium to be reflected into the pharynx (Fig. 2A). The skin surrounding the fistula was also denuded 360 degrees to create sufficient imbrication for remnants of the originally placed PMF to later be placed in a layered fashion over the turnover flap. The fistula itself was then closed with interrupted 5-0 Maxon sutures for a watertight seal. The wound was then irrigated and the remnants of the PMF were then elevated. (In the case of DA, a second PMF was done due to lack of useable tissue from the originally placed PMF). The PMF muscle flap was then advanced over the turnover flap. The surrounding skin was undermined and the remaining defect was closed to make a new laryngectomy stoma (Fig. 2B).

5. Results

Both patients achieved resolution of their fistulae after their delayed outline platysma myocutaneous turnover flap. D.A. achieved a durable resolution of his fistula. Two months after P.B.'s turnover flap, she presented to the clinic with drainage from her stoma at the one o'clock position. An area of inflammatory tissue was noted at the site, which was biopsied and found to be recurrent squamous cell carcinoma.

6. Discussion

PCF is a challenging problem following laryngectomy. Numerous methods have been described to close PCFs, including direct closure, myocutaneous, fasciocutaneous and muscle