

CASE REPORT

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Surgical emphysema as an early sign for pharyngocutaneous fistula following total laryngectomy: a case report

Ahmed Amin Nassar¹ and Hazem Othman Ibrahim^{1,2*} 

Abstract

Background: Pharyngocutaneous fistula is the most common and troublesome complication after total laryngectomy. Many factors may be used in laryngectomy patients for the early diagnosis of pharyngocutaneous fistulae such as skin flap edema, neck erythema, salivary leak, postoperative barium swallow, and wound amylase level. Its diagnosis is mainly standing on a clinical basis.

Case presentation: This report described two cases of laryngeal carcinoma, which presented with a history of persistent hoarseness of voice and mild stridor and were diagnosed with a battery of clinical investigations and managed successfully with total laryngectomy and lateral neck dissection. Both patients suffered from postoperative surgical emphysema before developing pharyngocutaneous fistula.

Conclusion: Surgical emphysema can precede the occurrence of pharyngocutaneous fistula after total laryngectomy. Further studies are needed to confirm this finding.

Keywords: Pharyngocutaneous fistula, Total laryngectomy, Emphysema, Morbidity

Background

The reported incidence of pharyngocutaneous fistula (PCF) is about 13% in primary laryngectomy and may reach 25% in salvage laryngectomies [1–3]. Only a few studies had a rate of less than 10% [3–5].

Age, sex, TNM staging, prior radiotherapy, type of pharyngeal repair (T closure or horizontal closure), the technique of closure, suture material, preoperative tracheostomy, and postoperative margin status are all considered factors that may affect the incidence of pharyngocutaneous fistula [6, 7].

Although there are not much data about how to prevent the pharyngocutaneous fistula after total laryngectomy, it is generally agreed that most fistulas respond well to

conservative management in the form of local wound care, compression and drainage [8].

In this report, we describe two cases underwent total laryngectomy complicated with postoperative surgical emphysema before the pharyngocutaneous fistula.

Various studies have been performed to predict the occurrence of pharyngocutaneous fistulas as early as possible. Some of them have managed to diagnose PCF within an average of 5 to 10 days [6, 7].

Krause and Metson [3] noted the presence of a sinus tract 2 cm or longer on barium swallow as a predictor of a post laryngectomy PCF. Friedman et al. [9] studied the fever in the first 48 h after the surgery as an indicator of PCF and suggested that fever was an excellent tool for early identification of PCF. The relevance of wound amylase concentration for early detection of PCF has been shown in many studies [10].

Koob and his colleagues described the role of Bradykinin Receptor B1 and C-reactive protein as prognostic factors

* Correspondence: Hazem.Othman@residents.kasralainy.edu.eg; Hazem.othman.2014@gmail.com

¹Otolaryngology Department, Faculty of Medicine, Cairo University, Cairo, Egypt

²Giza, Egypt

for pharyngocutaneous fistula development after laryngectomy [11].

In our institute, we routinely do not employ any of the above techniques to detect fistula. Our diagnosis of the fistula is based on clinical or radiological findings such as skin flap edema, neck erythema, salivary leak, and the presence of sinus tract on barium swallow.

Neck swelling following total laryngectomy may not always be due to a fluid collection. It may be due to air collection, as demonstrated in these cases. Cervicofacial subcutaneous emphysema following total laryngectomy may arise secondary to an air leak from the neopharynx.

In this study, we noticed that surgical emphysema can precede the PCF and can be a good clinical predictor of PCF—if occurred—after removal of the drain.

According to the best of our knowledge, no other studies stated that surgical emphysema can precede the occurrence of pharyngocutaneous fistula.

Case presentation

Case 1

A 70-year-old male patient (A) reported a 12 to 18 months history of persistent hoarseness of voice and mild stridor to ENT outpatient clinic. Flexible laryngoscopy was performed and showed left glottic mass with a supraglottic extension (left aryepiglottic fold) and fixed left vocal cord. CT scan was done to evaluate the primary lesion and nodal spread which revealed left glottic mass with supraglottic and subglottic extensions T₃ N₀ M₀.

Shortly thereafter, patient A underwent direct laryngoscopy and biopsy under general anesthesia in the ENT operative theater, in our tertiary care hospital. The pathology revealed “invasive keratinizing squamous cell carcinoma grade II.”

Total laryngectomy and left lateral neck dissection (level II, III, and IV) through Gluck Sorensen U-shaped incision was done. After completion of the procedure, the patient started IV fluids for 24 h then shifted to nasogastric tube feeding the next day. The drain was removed on day 3. On day 5, the patient began to notice a gradual onset swelling in the left side of his neck and face. Physical examination showed a soft and non-tender lump with crepitus sensation in the left cervicofacial area with no associated skin erythema. His vital signs were normal, as were his inflammatory markers. Over the days that followed, however, the lump had grown further in size to involve the other side and the chest till the level of breast nipple (Fig. 1).

Based on the clinical finding, Postoperative pharyngocutaneous fistula was suspected, so videofluoroscopy was done to confirm the diagnosis (Fig. 2). Three days later, the emphysema resolved with a resultant salivary leak from the wound. The patient was managed conservatively. On day



Fig. 1 Postoperative surgical emphysema of patient A

11, the patient developed right-sided IJV rupture for which urgent neck exploration was done with successful IJV ligation. During the exploration, two pharyngocutaneous fistulas were detected at the site of the neopharynx (Fig. 3). The patient was referred to the ward with repeated wound dressing. Finally, the patient underwent a successful pectoralis major myocutaneous flap.

Case 2

A 60-year-old male patient (G) reported a history of persistent hoarseness of voice, mild stridor, and difficulty of swallowing to ENT outpatient clinic.

Flexible laryngoscopy was done and showed a large glottic and supraglottic (epiglottic) mass with fixed left vocal cord. CT scan was done and revealed glottic mass with supraglottic extension spread T₃ N₀ M₀. Shortly thereafter, patient G underwent direct laryngoscopy and biopsy under general anesthesia in the ENT operative theater, in our tertiary care hospital. The pathology

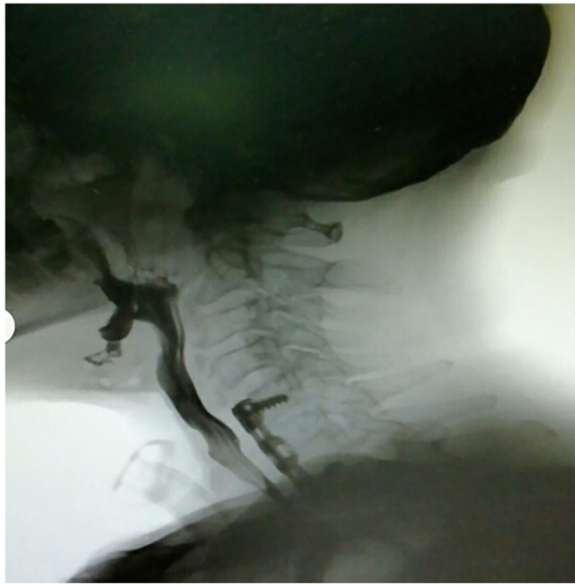


Fig. 2 Videofluoroscopy of patient A showed anterior leakage of the urografin contrast outside the neopharynx

revealed “invasive non-keratinizing squamous cell carcinoma.”

Total laryngectomy and bilateral lateral neck dissection (level II, III, IV) through Gluck Sorensen U-shaped incision were done. Postoperatively, the patient started intravenous fluids for 24 h then shifted to nasogastric tube feeding the next day.

The drain was removed on day 3 with subsequent developing bilateral surgical emphysema in day 5 and salivary leak from the wound (Fig. 4). CT neck

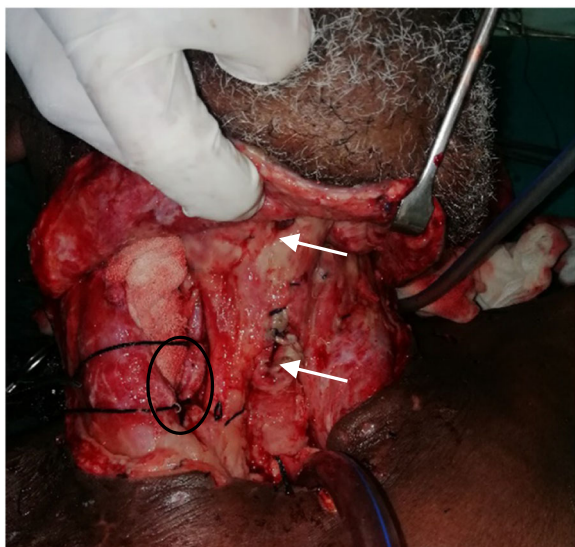


Fig. 3 Intraoperative left-sided ligated IJV (black circle) and 2 sites of pharyngocutaneous fistulas (white arrows)



Fig. 4 Postoperative surgical emphysema with left-sided salivary leak of patient G

with oral contrast was done and confirmed the presence of pharyngocutaneous fistula (Fig. 5). The patient was managed conservatively with a repeated tight dressing. The fistula closed and the patient was discharged home.

Conclusion

Pharyngocutaneous fistula (PCF) is the most common complication after total laryngectomy. Although many factors that result in PCF have been described, there is

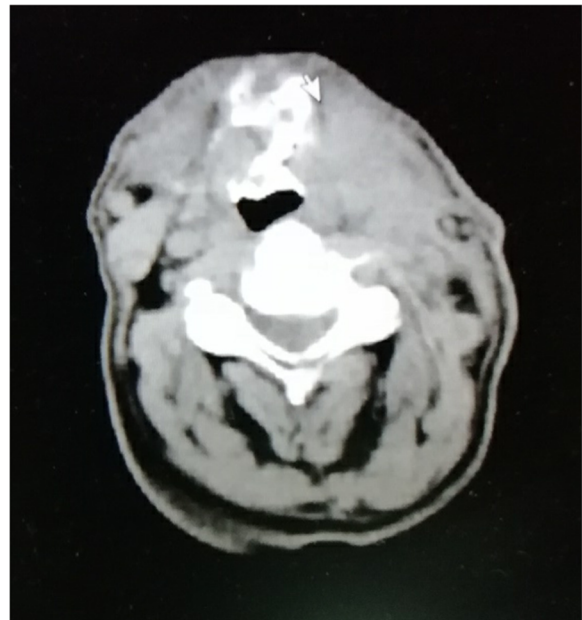


Fig. 5 CT neck with oral contrast of patient G showed leakage of the contrast outside the neopharynx

still no agreement on the most significant ones. Its diagnosis is mainly based on a clinical basis. It is generally agreed that most fistulas respond well to conservative management.

Surgical emphysema can precede the occurrence of PCF after total laryngectomy. Further studies are needed to confirm this finding.

Abbreviations

PCF: Pharyngocutaneous fistula; CT: Computed tomography

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None

Authors' contributions

A. A. N. made substantial contributions to the conception or design of the manuscript, data collection, and manuscript writing. H. O. I. gave final approval of the manuscript version to be published. All authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analyzed during this study had already been included in this manuscript. Patient's case file was retrieved from the medical record section of the institution. The clinical data had been collected from the prospectively maintained computerized database and the case file. The follow-up status was updated from the abovementioned manner.

Ethics approval and consent to participate

Ethics approval is not applicable to retrospectively treated individual case reports. The patient's informed written consent had been taken concerning participation for this particular case report.

Consent for publication

Written informed consent to publish the patient's clinical details information was obtained from the study participant.

Competing interests

The authors declare no competing interests.

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