

Sternocleidomastoid Flap Repair for Pharyngo-cutaneous Fistula Complicating Parapharyngeal Abscess: A Case Report

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ABSTRACT

Pharyngo-cutaneous fistulas (PCF) are commonly seen in major hypopharyngeal and laryngeal post-operative patients. Reports of PCF as a complication of deep neck abscess is scarce. The majority of post total laryngectomy PCF closure are achieved via conservative management, only large fistulas requires surgical closure. However, there is little evidence on closure of fistulas from abscess origin shall there be a failure of conservative treatment. We present a case of a female patient with multiple comorbid who had left parapharyngeal abscess complicated with PCF who have successfully treated sternocleidomastoid pedicle flap repair.

KEYWORDS: Pharyngocutaneous fistula, parapharyngeal abscess, sternocleidomastoid

INTRODUCTION

Pharyngo-cutaneous fistula (PCF) is a common complication post laryngectomy reported in variable ranges from 5 to 65 % [1]. However, it's uncommon after incision and drainage (I&D) of deep neck abscess. PCF increases morbidity, hospitalization, and mortality due to sepsis, aspiration, and mediastinitis. The majority of PCF close spontaneously and require only conservative management. There is another report on pharyngeal fistula post I&D of parapharyngeal abscess complicating tonsillitis, which was managed conservatively [2]. We report a case of parapharyngeal abscess post debridement complicated with PCF, subsequently underwent fistula repair.

CASE PRESENTATION

A 72-year-old female with underlying multiple comorbid (uncontrolled diabetes, end stage renal failure, and hypertension) initially presented to the emergency department with painful left neck swelling for two days associated withodynophagia, dysphagia, hoarseness, and fever. Upon examination, there was a tender and fluctuant level one to three swelling. Flexible nasopharyngolaryngoscopy (FNPLS) showed gross edema of the uvula, left arytenoid and bilateral pharyngeal walls, vocal cords were normal. Urgent contrast-enhanced computed tomography (CECT) of the neck revealed a left parapharyngeal abscess extending into the left submandibular and retropharyngeal spaces. Emergency I&D via transcervical approach was performed, and 25ml of pus was drained. Direct laryngoscopy showed no PCF.

Post op day three, the wound was still unhealthy, hence wound debridement was done where a small fistula 0.1cm x 0.5cm was found just posterosuperior to the left superior horn of thyroid cartilage. After the mucosa and constrictor muscles of the fistula were opposed with two interrupted sutures with polyglactin 4/0, the wound was packed with gentamycin dressing.

Despite conservative management, the recurrence of fistula was found on post I&D day ten. During dressing, we noted irrigation fluid coming out

from oral cavity. FNPLS revealed a fistula at the left pyriform fossa connecting to the left parapharyngeal space with left vocal cord palsy. Repeated CECT neck revealed a left PCF (1.5cm x 1.0cm) with a new abscess at the right parapharyngeal space measuring (2.3 x 2.4) cm (Figure 1). Swab culture and sensitivity (C&S) during wound dressing showed colonization of *Pseudomonas aeruginosa*. Hence, she was treated with intravenous cefoperazone for one week.

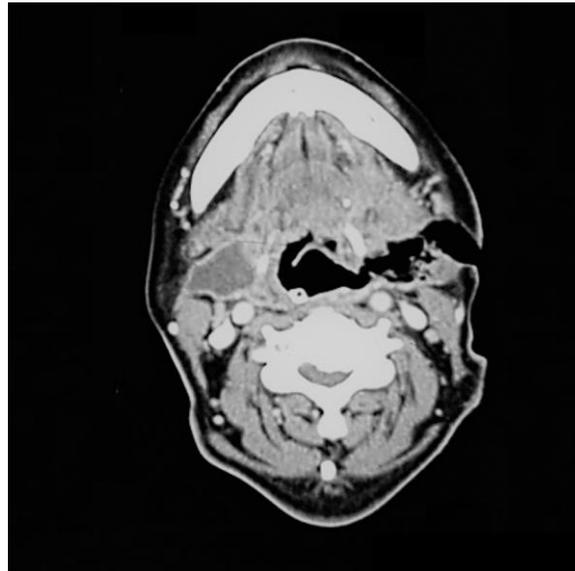


Figure 1 CECT neck showing left PCF and abscess in right parapharyngeal space.

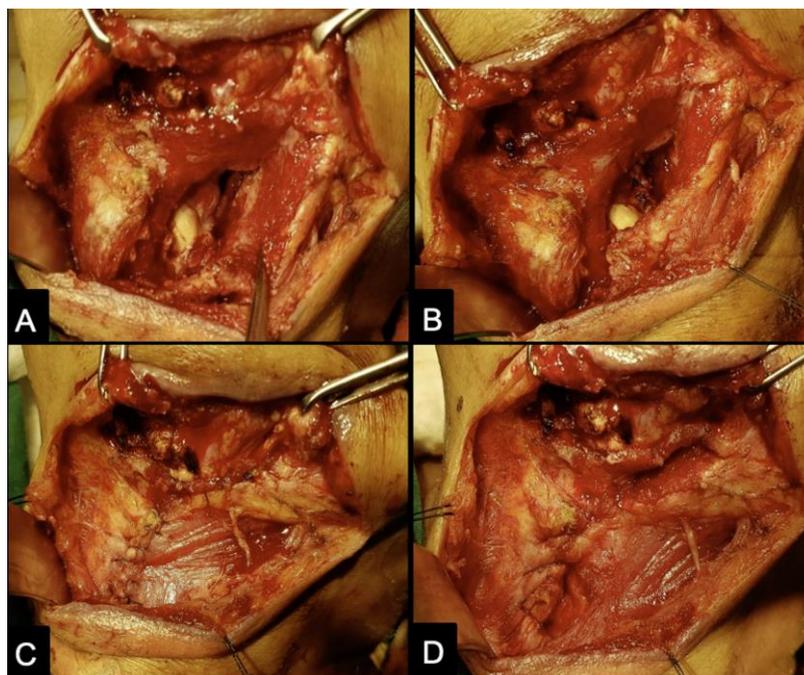


Figure 2 Suture in layers via continuous Polyglactin 4/0. A) fistula, B) pharyngeal mucosa and constrictor, C) sternocleidomastoid and strap muscles, D) platysma.

Second PCF repair was done on post I&D day 26 using slither of sternocleidomastoid (SCM) pedicle to plug the defect. Intraoperatively, there was a fistula measuring 1.5cm x 1.0cm, this was closed in layers with continuous polyglactin 4/0. Firstly, the inner mucosa and constrictor muscles, followed by SCM and strap muscles, lastly the platysma (Figure 2). The wound was washed with acetic acid prior to the second layer closure. A closed active drain was inserted, and subcutaneous tissue and skin were closed in a regular fashion. Drain was removed at day four post fistula repair, and she was discharged with nasogastric (NG) tube. FNPLS done post fistula repair one week, one month, three month, and six months post op showed no fistula recurrence, however, left vocal cord palsy was persistent. Barium swallow done on post op day 14 showed no barium leak however there was some aspiration. NG tube was only removed one month post repair after which she did not complain of difficulty in swallowing or discharges from the neck.

DISCUSSION

Case reports of PCF following drainage of deep neck infection are rare. More commonly, it is a complication post laryngectomy regardless of preoperative irradiation. In a case report by Seneviratne et al, successful closure of PCF from parapharyngeal abscess was achieved with conservative treatment via gastrostomy feed [3]. Post laryngectomy PCF, on the other hand, achieved spontaneous closure in 62- 86% with medical treatment, particularly small fistulas in non-irradiated patients [4]. This can be done via tube feeding, daily debridement of tissues, draining of exudates, reduction of salivation, maintenance of hemoglobin >12.5g/dl, adequate nutrition, hyperbaric oxygen, and steroids. In our patient, conservative measurement was inadequately carried out due to complication from multiple comorbid. Chronic inflammation and hypoxia of the neck and skin vasculature due to saliva flow to surrounding tissue will lead to fistula formation which increases the wound infection risk, inflammation of great vessels, and a vessel blowout [5].

Surgical closure for PCF should be performed if conservative management fails. The timing of repair is unclear where there was a variance of 40 days to three months. No previous literature was found in terms of timing for fistula repair post parapharyngeal abscess drainage. Traditionally, in post laryngectomy PCFs, surgical techniques range from primary closure to free tissue transfer. Among the studies, Madgy reported 100% success primary closure of PCF in six non-irradiated patients, however, it was not the case for irradiated patients where Mclean and colleagues reported recurrence in 1 out of 7 patients [6]. Guha et al, on the other hand, reported success in direct suture of pharyngeal mucosa with myocutaneous flap of three post laryngectomy patients with PCF of sizes between 0.5cm – 2.0 cm where there was no fistula recurrence [3]. Our patient developed PCF as a result from the wound breakdown of direct reparation of breached constrictor muscles. Poor tissue integrity due to ongoing infection subsequently reduced oxygen tension at the time of repair could have contributed to the development of wound breakdown, subsequently fistula formation, highlighting the importance of control of comorbid. Once she was optimized, similar results to Guha et al were reproduced where follow up of up to six months showed no recurrence of fistula via FNPLS. Hence, multiple co-morbidities particularly poorly controlled diabetes mellitus, long standing hypertension coupled with renal disease, and older age of the patient could've played a role in this patient developing PCF post deep neck abscess.

In the same study by Guha, no difficulty in swallowing was reported which was similar to our case. However, our patient still has persistent vocal cord palsy. In other cases of PCF secondary to deep neck infection, Yii et al also reported a case of persistent unilateral vocal cord palsy in a case of cervical necrotizing fasciitis with pharyngeal perforation [7], however in Seneviratne et al's report, patient did not develop vocal cord palsy [2]. Postulated vocal cord immobility in our patient could be the result of irritation of the recurrent laryngeal nerve by the inflammatory and toxic metabolites of the extensive infection.

CONCLUSION

Patients presented with a deep neck abscess with underlying multiple comorbid is at risk for PCF. Closure in layers with muscular flaps as plug can be considered as an option shall there be a failure of conservative management. There is no consensus to date on when surgical repair should be undertaken. Holistic management of patient as a whole by optimizing patients underlying diseases and tackling PCF at the same time results in a better outcome.

Conflict of Interest

Authors declare none.

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REFERENCES

1. Lakhera KK, Shenoy AM, Chavan P, Siddappa K. Pharyngocutaneous fistula incidence after PMMC patch pharyngoplasty for post laryngectomy defect reconstruction - predictive factors, Our experience at KMIO. *Indian Journal of Surgical Oncology*. 2015;6(3):223-6. Epub 2015/06/12. doi: 10.1007/s13193-015-0423-y. PubMed PMID: 27217668.
2. RW Seneviratne. AW. Pharyngo-Cutaneous fistula following drainage of a parapharyngeal abscess; a rare and challenging complication of tonsillitis. *Galle Medical Journal* 2015(19(2)):28-9. doi: <http://doi.org/10.4038/gmj.v19i2.7912>.
3. Guha G, Saha S, Kundu I. Surgical repair of postlaryngectomy pharyngocutaneous fistulas. *Indian Journal of Otolaryngology and Head Neck Surgery*. 2007;59(2):103-7. Epub 2007/09/14. doi: 10.1007/s12070-007-0032-3. PubMed PMID: 23120404.
4. Sumarroca A, Rodríguez-Bauzá E, Lop-Gros J, García J, López M, Quer M, et al. Repair of post-laryngectomy pharyngocutaneous fistulas using a pectoralis major flap. *Brazilian Journal of Otorhinolaryngology (English Edition)*. 2019;85(3):351-6. doi: 10.1016/j.bjorl.2018.03.002.
5. Gosain A, Chang N, Mathes S, Hunt TK, Vasconez L. A Study of the relationship between blood flow and bacterial inoculation in musculocutaneous and fasciocutaneous flaps. *plastic and Reconstructive Surgery*. 1990;86(6):1152-62.
6. Fink DS, Peña S, Hanby D, Kunduk M, McWhorter AJ. Repair of pharyngocutaneous fistula after total laryngectomy: A novel endoscopic approach. *Head Neck*. 2015;37(7):E81-4. Epub 2014/10/30. doi: 10.1002/hed.23911. PubMed PMID: 25351470.
7. Yii NW, Quinn SJ, Andersson LC, Niranjana NS, Kenyon GS. Cervical necrotising fasciitis with pharyngeal perforation: treatment and reconstruction. *Br J Plast Surg*. 1996;49(4):237-41. Epub 1996/06/01. doi: 10.1016/s0007-1226(96)90058-2. PubMed PMID: 8757674.