Recurrent Cervical Abscess Due to Pyriform Sinus Fistula—A Case Report

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The pyriform sinus fistula is rare congenital anomaly of either third or fourth branchial pouch, which most frequently presented itself by recurrent episodes of neck abscess for long time. Majority of patients with this anomaly presented with symptoms before 10 years and it is more common than has previously been commonly found on left side (93%). Clinically high index of suspicion, cannulation of the tract under general anaesthesia, Direct laryngoscopy and fistulogram have frequently been successful in identifying the presence of these embryological remnants. Surgical exploration of sinus tract with its total excision, guided with cannula inside its lumen is the definitive treatment.

Introduction

The cervical sinus usually disappears completely, but if it does not do so a cervical or branchial sinus persists. Majority (95%) of these anomalies are derived from branchial apparatus of second arch pouch and cleft and remaining 5% stem from the first, third, fourth arches.

These rare third and fourth cervical sinuses have their communication internally with hypopharynx in pyriform fossa. More recently these tracts have been linked to recurrent episodes of acute cervical abscesses acute thyroiditis, and retropharyngeal abscesses. In any case there is long and frustrating clinical course before correct diagnosis is made. We recently had opportunity to treat a girl having history of recurrent cervical abscesses due to pyriform sinus fistula, clinical presentation, diagnosis and operative management is discussed.

CASE REPORT

A 14 years old girl presented with burst abscess on left side of neck anteriorly. Five days back she developed painful swelling associated with fever and odynophagia, just before 2 days this swelling burst discharging pus, at the same time dysphagia and fever subsided. Past history suggests that she has had similar such episodes since childhood, first one occurring at the age of 6 months, she had undergone treatment in form of incision and drainage and antibiotics for frequent times, she had this type of recurrent abscesses at every 6 months to 2 years duration.

On physical examination, there was burst abscess with pus discharge on left side neck at junction of upper two third and lower third of sternomastoid muscle. At the same site skin showed a sinus surrounded by scars of previous surgeries. On palpation there was indurated swelling measuring 2 x 2 cm. Indirect laryngoscopy examination was normal. After routine preoperative workup and course of broad spectrum antibiotic, under general anaesthesia, sinus was examined and a thin polythene cannula was inserted through sinus, to our surprise it came out through upper aerodigestive tract and exited out from nostril. At the same time direct laryngoscopy examination revealed the internal opening of sinus at apex of left pyriform fossa.

A fistula tract was explored under general anaesthesia with cannula kept inside its lumen. The tract was medial to common carotid artery and passing through upper border of left lobe of the thyroid. The internal opening of fistula was at the apex of left pyriform fossa. The tract

penetrated the inferior constrictor muscle at the lower edge of thyroid cartilage and anteroinferiorly just lateral to recurrent laryngeal nerve at the level of cricoid cartilage. With sharp dissection complete fistula was excised and opening of pyriform fossa was closed by few interrupted sutures of 3/0 vicryl. This area was covered with near by strap muscle and secured with few stitches. Wound was closed in layers after keeping corrugated drain. Patient had uneventful postoperative recovery. On final histopathological examination fistula was lined by stratified squamous epithelium, surrounded by subacute inflammatory infiltrate.

DISCUSSION

There are only few reports that a pyriform sinus fistula causes recurrent anterior neck abscess. Tucker and Skolnick (1973) reported a case of recurrent neck abscess due to pyriform sinus fistula [8]. Miyauch et al (1981) reported that a pyriform sinus fistula is a remnant of the third branchial pouch, according to their anatomical and histological findings [5]. According to Tucker and Skolnick pyriform sinus fistula originated from embryonic remnant of the fourth branchial pouch [3, 8]. While the embryological anatomy involved in predicting the course of a third and fourth branchial fistula is complex and fascinating, the point may be moot, we feel that complete third and fourth branchial fistula may never be surgically demonstrated.

Miyauch et al have also described the clinical features of acute thyroiditis resulting from infection through a pyriform sinus fistula [5]. Delozier et al have presented an unusual case of retropharyngeal abscess and cellulitis because of pyriform sinus fistula [1].

The differential diagnosis of these lesion is that of any lateral neck mass. It includes lymphadenitis, cystic hygroma, atypical thyroglossal duct remnants, thyroid cyst, ectopic thyroid, tuberculous adenitis, lymphoma, branchiogenic cyst. In majority of reported cases

of pyriform sinus fistula followings are common features. (1) Onset in infancy or childhood except for few cases. (2) This congenital anomaly virtually always occurs on the left side (93% of reported cases). (3) Frequent recurrences before definitive treatment.

The diagnosis of pyriform sinus fistula require an high index of suspicion for its existence, when any patient presents with long history of recurrent abscess on left neck. The definite diagnosis in such cases can be easily made by cannulating the external opening with thin plastic catheter, preferably under general anesthesia, combined with direct laryngoscopy examination. Hiroshi Yamashita et al have successfully demonstrated pyriform sinus fistula tract on barium swallow study [2]. Miller et al have pointed out that

Clinical Photograph of the patient with cannula passed through pyriform sinus fistula

inflammation and reactive edema may preclude its demonstration with contrast material [4].

Surgical exploration of fistula following cannulating the opening of the tract to identify the course of the sinus in the operative field is advocated. Some have supported the instillation of methylene blue for the same purpose [1]. The

sinus tract should be followed to its opening into the pyriform sinus, ligated, transected and its opening sutured. If tract courses through thyroid gland a lobectomy after identifying left recurrent and superior laryngeal nerve is necessary. The true vocal local paralysis following excision of pyriform sinus fistula has been reported [6].

References

1. Delozier, H.L., Sofferman, R.A. (1986) : Pyriform sinus fistula : An unusual cause of recurrent retropharyngeal abscess and cellulitis. *Annals of otorhinolaryngology* 95 : 377-382.
2. Hiroshi Yamashita, Takkaki Noguchi, Mesahiro Takahashi (1995) : Recurrent Cervical abscess and pyriform sinus fistula *Journals of laryngology and otology* Vol. 109.
3. Michael S. Godin, Donald B. Kearns, Seth M. Pransky (1990) : Fourth Branchial Pouch Sinus Principles of Diagnosis and Management : *Laryngoscope* 100.
4. Miller, D., Hill, J.L., Chen-chin, S, et al (1983) : The Diagnosis and management of pyriform sinus fistula in infants and young children. *Journal of pediatric surgery* 18 (4) : 337-381.
5. Miyauchi A., Matsuzuka, F. Takai, Kimura, K. Kosaki : Pyriform sinus fistula: A route of infection in acute suppurative thyroiditis. *Archives of Surgery* 116 : 66-69.
6. Nancy, P., Aumont-Grasskopf, C, Bobin, S., et al (1988) : Fistulae of the fourth endobranial fistula. *Int. J. Pediatric Otorhinolaryngol.* 16 : 157-165.
7. Tovi, F, Gotol, A., Bar-Zir, J, et al : (1985) Recurrent Suppurative thyroiditis due to fourth branchial pouch sinus. *Int. J. Pediatric Otorhinolaryngol*, 9 (1) : 89-96.
8. Tucker H.M. & Skolnick M. L. (1973) : Fourth branchial cleft remnant, *Trans., Pa Am Acad Ophthalmo. Otolaryngol*, 77 : 368-371.