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Collauralfistula: A Different Surgical Approach

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Abstract

Pharyngeal pouches develop around the fourth week of embryological development. Incomplete formation of pouches leads to developmental anomalies.

As these are congenital anomalies, they are mostly asymptomatic and only noticed incidentally. Anomalies will present as a cyst, sinus or fistula. Cysts have an epithelial lining without external openings. Sinus tracts may communicate either externally with skin as a visible punctum or internally with the pharynx or larynx. Branchial cleft fistulae are true communications connecting the pharynx or larynx with the external skin.

Key words: skin; pharynx

Introduction:

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As these are congenital anomalies, they are mostly asymptomatic and only noticed incidentally. Anomalies will present as a cyst, sinus or fistula. Cysts have an epithelial lining without external openings. Sinus tracts may communicate either externally with skin as a visible punctum or internally with the pharynx or larynx. Branchial cleft fistulae are true communications connecting the pharynx or larynx with the external skin.

One such fistula is the Collaural fistula, which is the least common (less than 8% of all first branchial cleft anomalies) [3] and a very rare work type II first branchial cleft anomaly. In this fistula, there is a communication between the floor of external auditory canal and the neck (at the angle of mandible).

In this article we will be discussing about an 18-year-old female who presented with yellowish discharge from the neck and on further investigation was diagnosed with collaural fistula.

Case report:

An eighteen-year-old woman presented with complaints of yellowish discharge from the neck for the past 5 months. The discharge was foul smelling and copious. Not associated with any swelling, fever or blood-stained discharge. She had no ear symptoms. Patient had no known co-morbidities or any surgical history.

On examination, a small opening 0.5mm was seen in the floor of right External auditory canal (EAC) with an intact tympanic membrane. A 3x3mm fistulous opening was noted over the right anterior neck, close to the medial border of right sternocleidomastoid, below the angle of mandible. On applying pressure, mucopus was squeezed out. No swellings or lymph nodes were noted. A clinical diagnosis of collaural fistula was made.

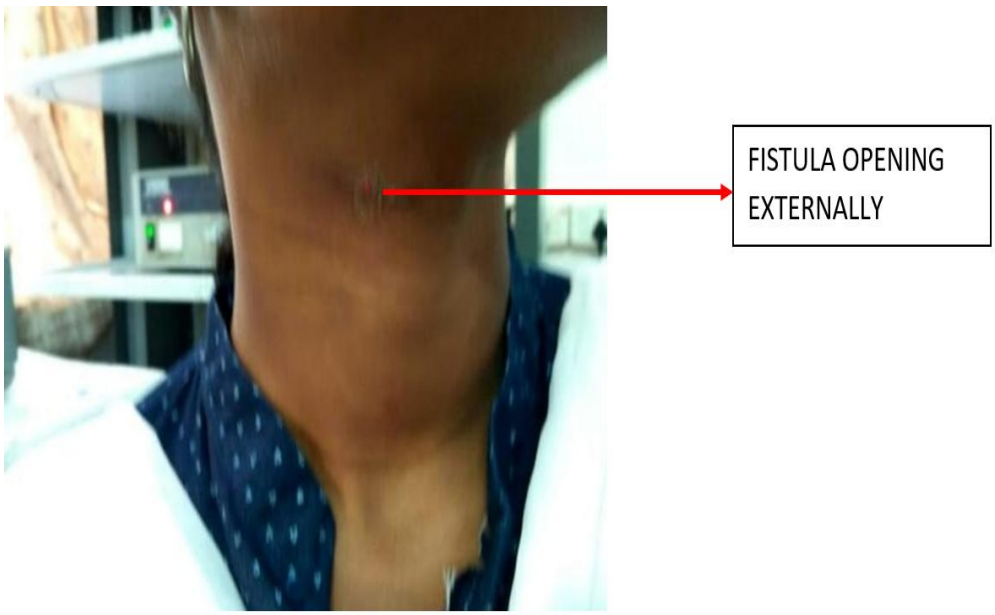

Figure 1: *Image of external tract opening*

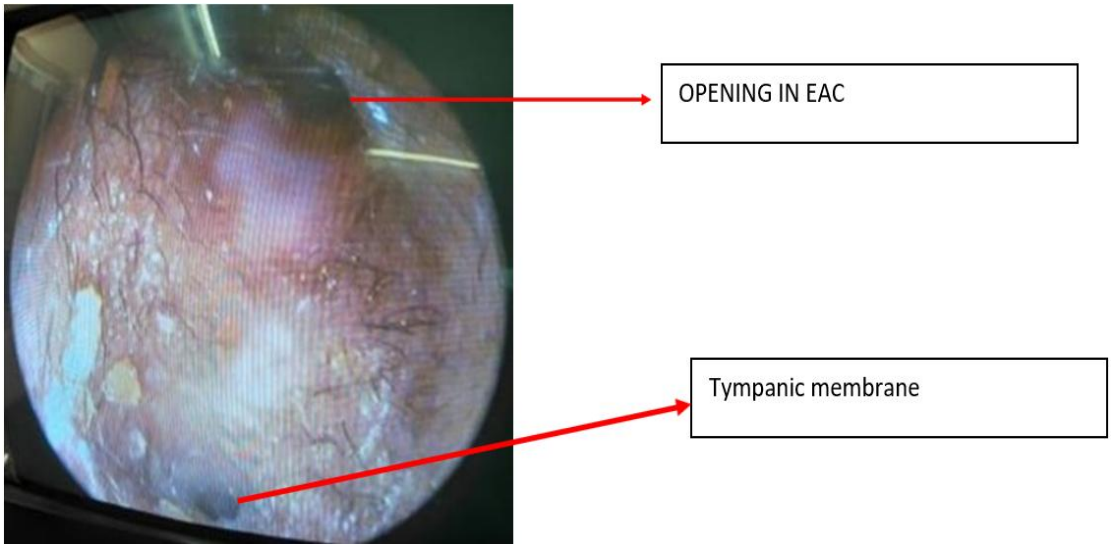

Figure 2: *Image of tract openings*

Further investigations were donefor confirmation of diagnosis. CT imaging was suggestive of a fluid filled tract extending from the inferior aspect of the junction of bony and cartilaginous portions of right external auditory canal through the medial aspect of right parotid gland, extending posterior to right submandibular gland upto cutaneous plane in the right side of the neck just inferior to hyoid bone with a calcific density distally. The tract was 70mm in length and maximum 10mm breadth.

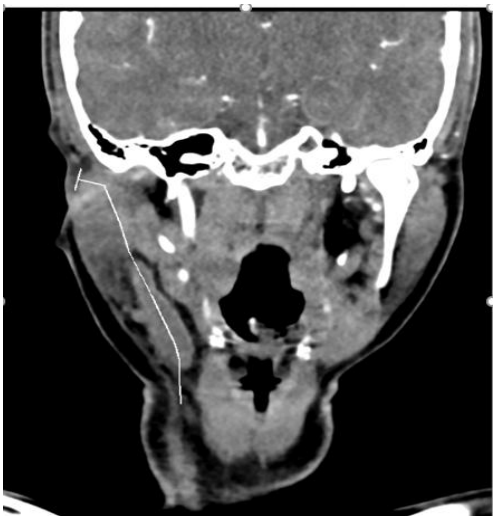

Figure 3: *Radiological findings of the fistulous tract. White line tracing the pathway of the tract in coronal view*

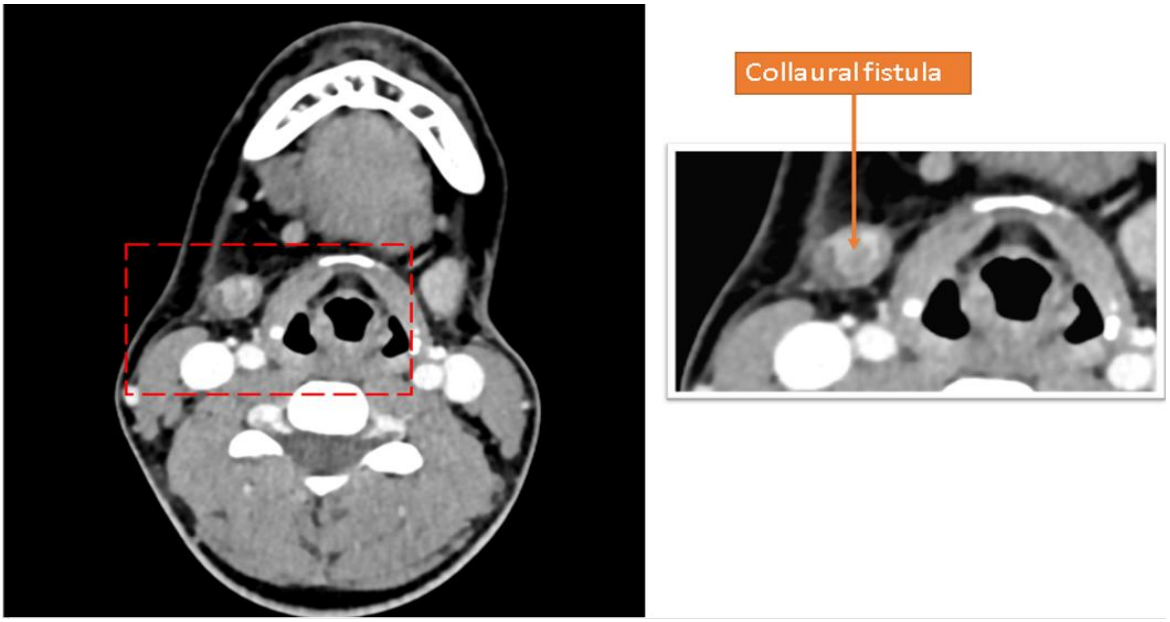

Figure 4: *Radiological findings of the fistulous tract. Towards the opening in neck*

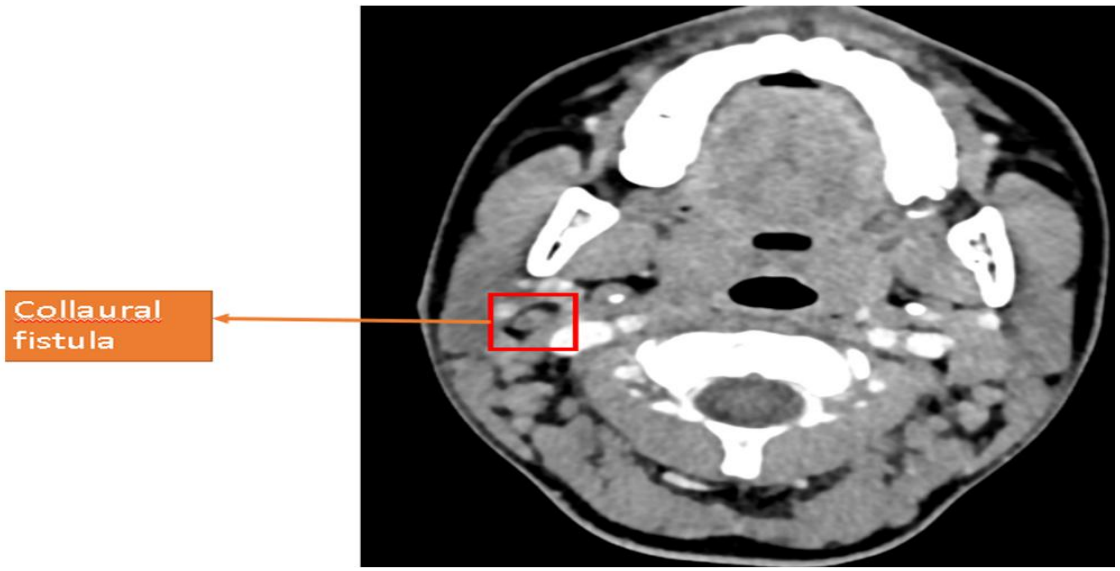

Figure 5: *Radiological findings of the fistulous tract. Opening in EAC*

Patient was then taken up for extraction of fistulous tract under GA. An elliptical incision was made in the right side of the neck around the fistulous opening. The tract was identified by probing and the use of methylene blue dye. Fistulous tract was delineated from surrounding tissue. A step incision of around 2 cm was made near the submandibular gland and the tract was pulled out via this incision. The tract was clamped just above the submandibular gland, right before its entry into parotid gland and sutured. The aural end of the fistulous tract was scarred by gentle scraping of the inner walls. The opening in EAC was occluded with a fat graft(fat was taken from the neck). The opening was further sealed using a rotation flap from ear canal mucosa.

Post operative period was uneventful. Patient had no complaints of recurrence of discharge or swelling till date.

Histopathological reports were suggestive of chronic inflammatory reaction of a sinus tract. In microscopic section, the tract was noticed to be lined by stratified squamous epithelium with pilosebaceous structures. Apocrine sweat glands, enlarged sebaceous units were present in the fibrocollagenous tissue around the tract.

This is a novel surgical method, in which part of the tract was left insitu (because of inaccessibility) without removal of parotid glands.

Diagrammatic representation of surgical steps:

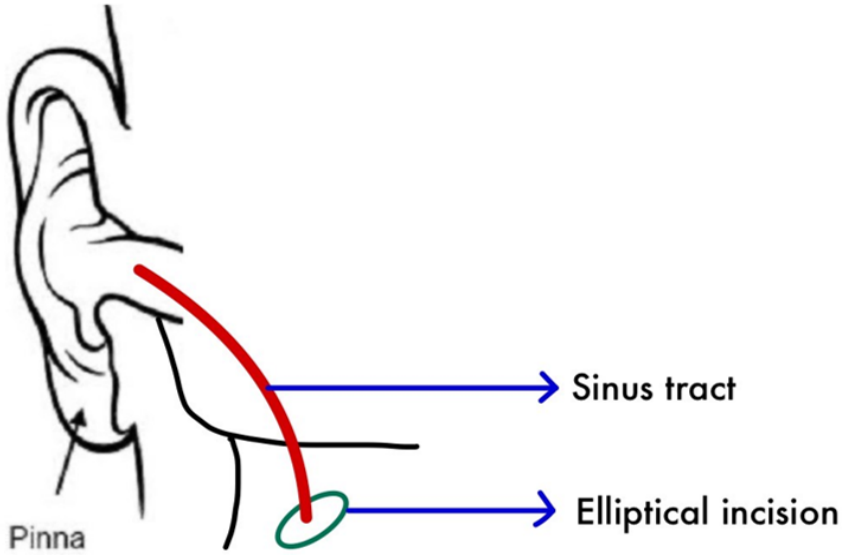

Figure 6: *Elliptical incision made around the fistulous opening*

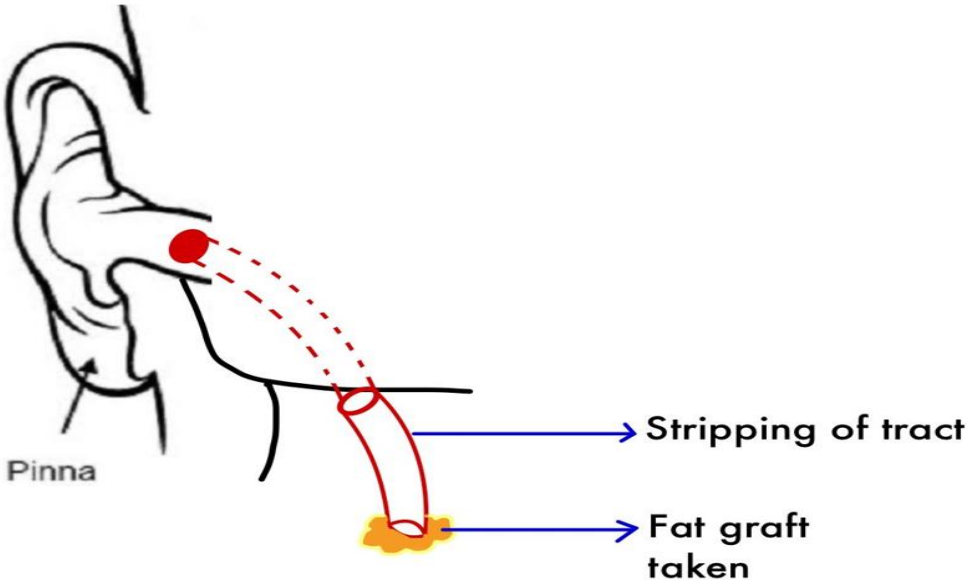

Figure 7: *Stripping of part of the tract. Fat graft taken from neck*

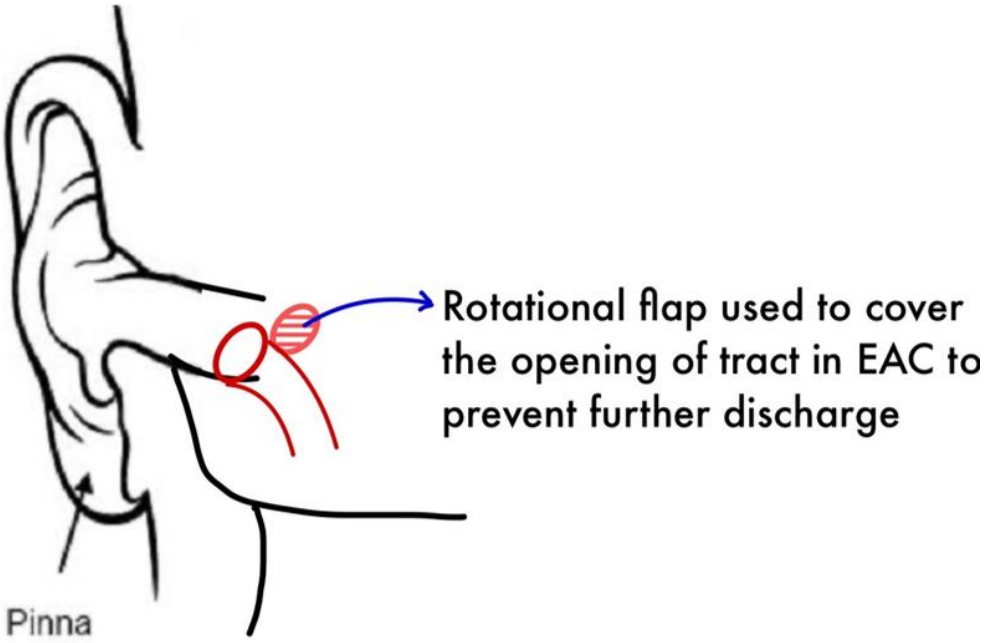

Figure 8: *Opening of tract occluded with fat graft and a rotational flap for further sealing*

Discussion:

Branchial cleft anomalies are the second most common head and neck congenital lesions seen in children of which second cleft origin makes up 95% of the anomalies [2]. The most common anomalies being the second cleft (40 -95% of branchial anomalies) with the first (5 to 25%), third (2 to 8%) and fourth (1%) being rare [2]. The first arch anomalies are further classified by the work classification system into two types; type I and type II. Type one, contain ectoderm only and are duplication of the membranous part of EAC. They contain only squamous epithelium and like in this patient are located in the post-auricular region or near the pinna. They are usually of cystic formation. While type 2 containing ectoderm and mesoderm together. They contain squamous epithelium, skin and cartilage. Both anomalies are closely related to the facial nerve and care should be taken during surgeries.

Patients usually present with a recurrent mass or draining sinuses in the post-auricular region or neck over the mandibular angle. Usually are present over the pochet's triangle (superiorly – EAC, anteriorly- mental region and inferiorly- hyoid bone). Other symptoms include swelling, pain, purulent discharge from the skin fistula.

Other diseases like benign parotid neoplasms and cysts, parotitis, second branchial cleft anomalies, otitis media, and causes of head and neck lymphadenopathy should be ruled out.

Investigations include a CT scan, which can help define the anatomy of the lesions and relationship to facial nerve, EAC and parotid gland. This is necessary pre-operatively due to the risk of facial nerve palsy. The course of the tractcould be superficial, deep or between the branches of the facial nerve.

Surgical removal is the treatment of choice. Immediate and complete excision of the tract should be done. Injection of methylene blue for better visualization of the tract, however the dye may leak into neighboring tissues and make identification of facial nerve difficult.

Conclusion:

First branchial cleft anomalies are rare congenital malformations that are often misdiagnosed. The present case had symptoms of repeated swelling and discharge from the neck skin fistula. Any fistulous tract Complete excision of the tract is the treatment of choice. However, in this patient, the aural end of fistulous tract fixed in the junction of bony cartilaginous part. So, 0.5 cm fistulous tract made blunt and left and closed by rotation flap of canal mucosa. we preserved the parotid gland with subtotal excision of the tract. During the follow up of 8 years, there were no complications or recurrence of the disease, hence proving that this surgical approach is effective.

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