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Case Report

Branchial Fistula : A Case Report

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Abstract

We report a case of complete branchial fistula in a 13-year-old boy which could be evaluated by a contrast study. The tract was completely excised and the patient had an uneventful recovery. Branchial fistulae are formed due to the persistence of the embryonic second branchial cleft. Complete fistulae with the internal opening in the region of the tonsillar fossa are not common and should be properly evaluated before going to surgical exploration.

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Introduction

Although the branchial apparatus was first described by VonBaer, anomalies in its development were credited by von Ascheron[1]. Branchial arches and their corresponding pouches develop from mesodermal condensations in the side wall of the embryonic pharynx. Branchial fistulas are uncommon anomalies of embryonic development of branchial apparatus. Second branchial arch and pouch anomalies are common anomalies of branchial apparatus[2]. During embryonic development, the second arch grows caudally, envelop the third, fourth and sixth arches and form the cervical sinus by fusing with the skin caudal to these arches. The edges of cervical sinus fuse and the ectoderm within the fused tube disappears. Persistence of ectoderm gives rise to branchial cyst. The branchial fistula results from the breakdown of the endoderm, usually in the second pouch. A persistent fistula of the second branchial cleft and pouch pass from the external opening in the mid or lower neck in the line of the anterior border of the sternocleidomastoid muscle, deep to platysma along the carotid sheath, then pass medially deep between the internal and external carotid arteries after crossing over the glossopharyngeal nerve and hypoglossal nerve. Finally, it opens internally in the tonsillar fossa usually on the anterior face of the upper half of the posterior pillar of the fauces or in the intratonsillar cleft[3]. Most of times it is a simple sinus opening, that extends up the neck for a variable distance. Complete branchial fistula with internal opening into tonsillar region is rare[2]. Although branchial fistulas may occur in any age group, commonly patients present to clinician in first and second decades of life[4]. These patients commonly present with persistent mucoid discharge from a fistula opening or infection in the lower part of neck with mucopurulent discharge[2]. Occasionally the fistula tract may be blocked by thick secretions or granulation tissue[4].

The Case and Imaging Interpretation

Thirteen years old male patient complained of frequent mucopurulent discharge from an opening

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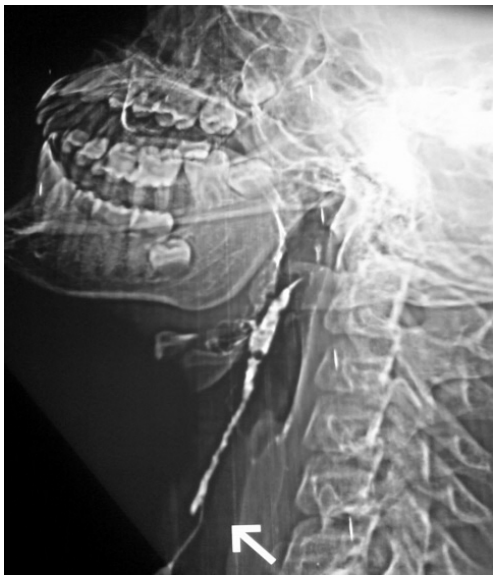
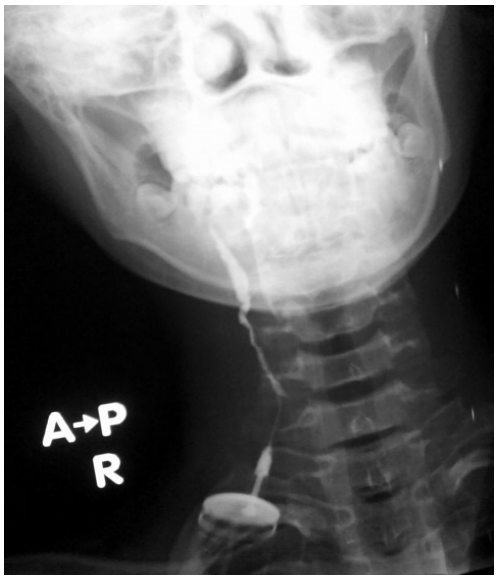
in right lower part of neck for three years. Patient's parents noticed an opening in lower part of right side of the neck since after birth. The patient noticed mucoid, purulent, sometime discharge from the opening. On physical examination, there was small punctum in the skin at the junction of upper two third and lower one third of anterior border of right sternocleidomastoid muscle. There are no similar openings or any other congenital anomalies in the neck. Full blood count and urine examination was normal.

A fistulogram was obtained by cannulating the external opening of the fistula in the neck using a 6F infant feeding tube, followed by gentle injection of water soluble contrast agent, Omnipaque 350 (Iohexol), The entire fistulous tract was delineated and the contrast was seen entering the lateral wall of the oropharynx in the tonsillar region.

The patient underwent excision of branchial fistula tract using transcervical approach and transoral approach under general anaesthesia. The post-operative course was uneventful. Histopathological examination showed branchial fistula tract lined with pseudostratified columnar epithelium. At 6 months follow up, the patient was asymptomatic.



Fistulogram - Fistulous tract demonstrated from the lower neck to tonsillar fossa



Fistulogram - Fistulous tract demonstrated from the lower neck to tonsillar fossa

Discussion

The treatment of choice for branchial fistula is surgical excision. Preoperatively, the patient should be examined for bilateral lesion and any other congenital anomaly. Surgery may be delayed in an infant with uncomplicated branchial fistula till the age of three years. If there is an infection it should be controlled before surgery. Computed tomography scanning and magnetic resonance imaging of the neck are useful mainly in delineating the relationship of surrounding neurovascular structures to the lesion[4]. Several surgical approaches have been described for the management of a branchial fistula[1-5]. Stepladder approach with two incisions in the neck gives exposure of the fistula tract with less tissue dissection. Visualization of a complete fistula up to the tonsillar region is rare [2,3]. Ford et al documented one case in their series of 98 fistulae in which the entire tract was visualised[2]. Treatment consists of complete excision of the fistulous tract. Using more than one incision may be necessary.

Histology of the sinus tract usually shows a lining of respiratory epithelium with submucosal lymphoid tissue. Squamous cell lining, and mixed respiratory and squamous lining may also be

seen[2]. The recurrence rates following surgery vary and up to 3% recurrences have been reported[2]. This is probably due to incomplete surgical excision. Till now with combined transcervical and transoral approach, there is no recurrence reported in the English literature[6].

Conclusion

Complete branchial fistula arising from second branchial arch is rare. Fistulogram alone can diagnose branchial fistula accurately. This is a case of complete branchial fistula, which was managed through combined approach using transcervical route and transoral route. Complete branchial fistulas are better managed by ENT specialists who are capable of performing the combined approach and fistulogram is a unique method for diagnosing it.

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