

Case Report

A RARE CASE OF DILATED BRANCHIAL SINUS IN A 6 YEAR OLD CHILD

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ABSTRACT

Branchial anomalies comprise 20% of paediatric congenital head and neck lesions. Branchial anomalies are classified as 1st, 2nd, 3rd and 4th branchial cysts, sinuses and fistulae. Here we report a rare case of dilated second branchial sinus in a 6 year old child which was confirmed by sinogram. The tract was completely excised and patient was successfully treated.

Keywords: Dilated Branchial Sinus, Sinogram

INTRODUCTION

The branchial apparatus consists of six paired mesodermal arches separated by invagination of endoderm on the inside and ectoderm on the outside known as pharyngeal pouches and branchial clefts respectively (Ford *et al.*, 1992). It has been estimated that 95% of branchial apparatus anomalies are derived from second arch, pouch and cleft. Most of the remaining 5% are derived from the first and third arches. In the embryo the second arch grows caudal to cover the third and fourth arches and second, third and fourth clefts eventually fusing with the lower neck. The buried clefts disappear with development. Branchial sinus develops when 2nd arch fails to meet the 5th arch leaving the remnants of 2nd, 3rd and 4th clefts in contact with surface by a narrow canal. Rarely a branchial sinus is found to have an internal opening as well, thus forming a true branchial fistula (O'Mara *et al.*, 1998). Most often these lesions can be diagnosed by thorough history and physical examination. Complete surgical excision is the treatment of choice.

CASES

A 6 year old girl presented with complaints of recurrent mucopurulent discharge from an opening in the right side of neck since 3 years. There was history of swelling at the site of the opening during episodes of upper respiratory tract infection.



Figure 1: External pinhead size opening

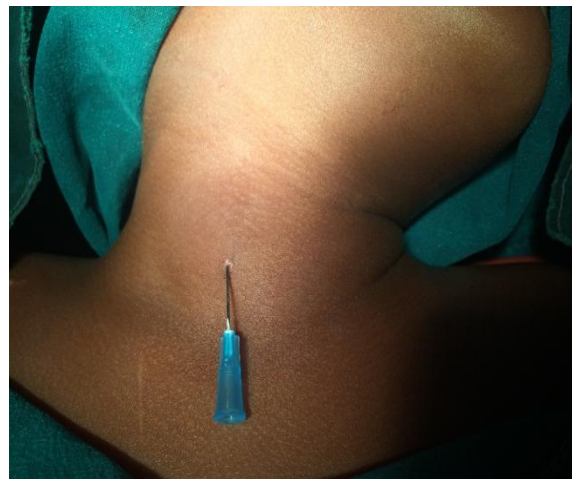


Figure 2: External opening at junction of upper 2/3rd and lower 1/3rd of sternocleidomastoid

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On examination, a pinhead sized opening seen at the junction of middle and lower third of right sternocleidomastoid at its anterior border with scanty mucous discharge on pressure [Figure 1, 2]. Examination of oropharynx did not reveal any visible opening in the faucial area. A sinogram showed a dilated tract about 4cm extending from the opening in the neck upwards ending blindly near the hyoid bone without communication with the pharynx [Figure 3]. A clinical diagnosis of branchial sinus was made.

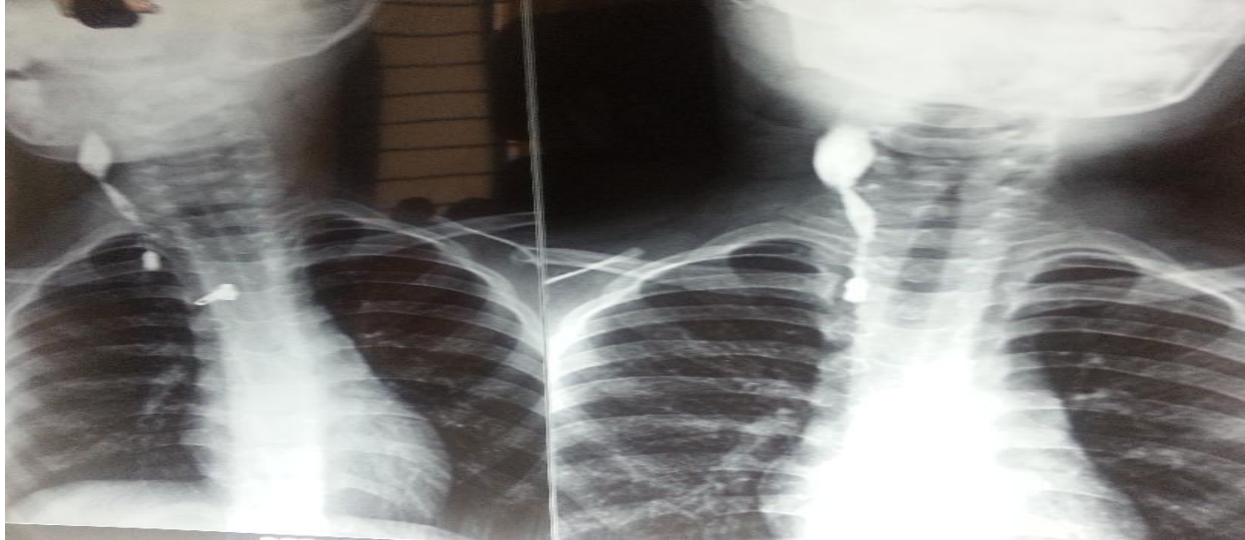


Figure 3: Sinogram showing the tract extending up to the hyoid bone

The child was planned for surgery under general anesthesia. An elliptical incision was made encircling the opening [Figure 4]. The tract was identified by separating the skin and fascia over it. The tract was made free of all its attachment and dissection was preceded ahead. The tract was observed to have a dilatation in the middle with proximal and distal constrictions. The sinus was excised completely [Figure 5]. Wound was closed without drain. Postoperative recovery was uneventful. Histopathological examination of the sinus revealed pseudostratified ciliated columnar epithelium [Figure 6].

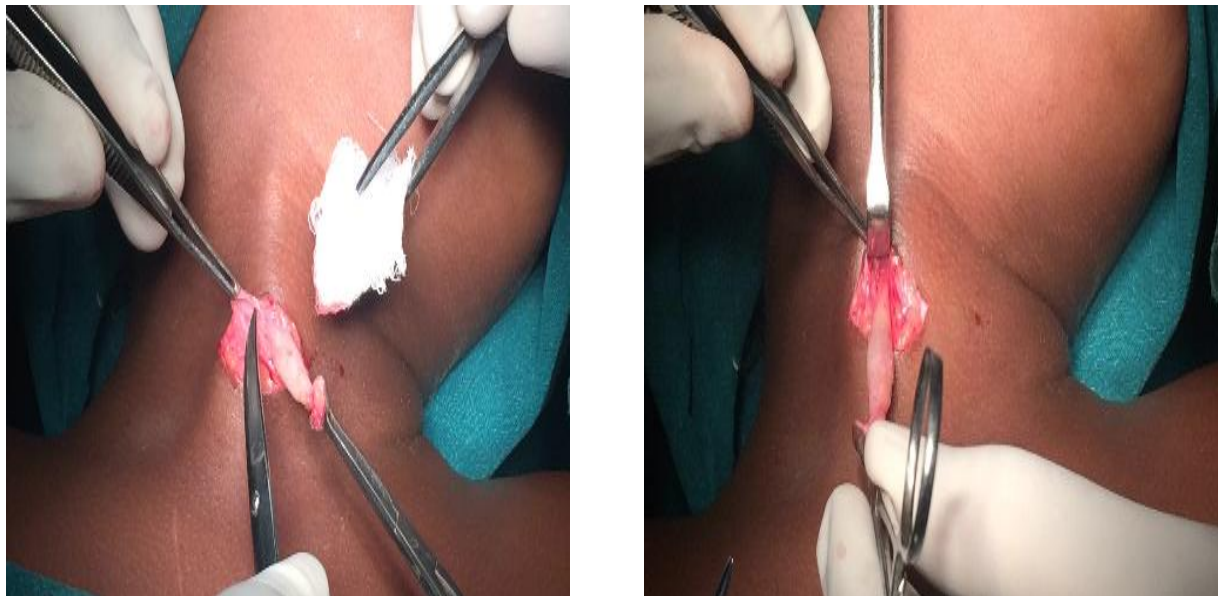


Figure 4: Intra operative pictures showing dissection of sinus tract from surrounding tissues

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Figure 5: Excised dilated sinus pseudo stratified

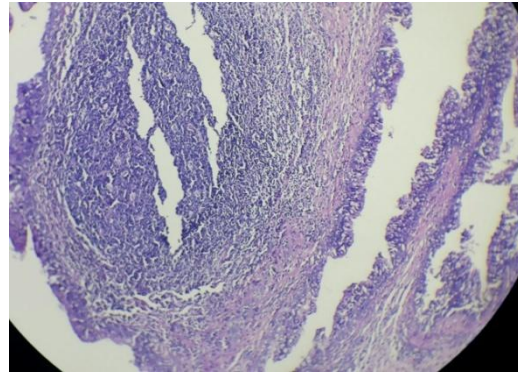


Figure 6: Histopathology showing ciliated columnar epithelium of the inner wall of sinus

DISCUSSION

Failure of the second arch tract to obliterate would result in the formation of a branchial sinus and fistula. Patients commonly present in the first two decades of life with intermittent, mucopurulent discharging sinus in the neck. History of recurrent infectious exacerbations and abscess formation may be present. The branchial cyst and sinus are more common in male (60%) (Morgan, 1997). Although bilateral branchial fistulas have been documented, unilateral right sided lesions are commonly seen. External opening is often situated between the upper two thirds and lower one third of sternocleidomastoid.

CT scan or ultrasound of neck and sinogram are useful investigations to trace the sinus tract. Recently, multidetector CT fistulogram has been described for diagnosis of branchial fistula (Ryu *et al.*, 2006). Pre-operative sinogram is a must for complete excision of sinus. Its course is deep to the platysma muscle between the second and third pharyngeal arch structures by ascending along the carotid sheath, passing medially between the internal and external carotid arteries above the glossopharyngeal nerve and below the stylohyoid ligament. The fistula opens into the pharynx usually in the region of intra tonsillar cleft of the palatine tonsil. Sometimes complete tract cannot be demonstrated because it may be blocked by secretion or granulation. During surgery the tract should be followed up through the neck as high as possible, and at this stage tonsillar fossa on the side of the sinus can be examined for the presence of an internal opening. A gentle traction applied on the tract from outside will show a dimple in the tonsillar fossa, in case the internal opening is present.

Histology of the sinus tract usually reveals respiratory epithelium with submucosal lymphoid tissue. Rarely, squamous cell lining, mixed cell lining, and branchiogenic carcinoma have also been documented. Tuberculous sinus should be considered possible differential diagnosis. Treatment of choice for branchial sinus is complete surgical excision of the sinus tract. Sclerosing agents are seldom used today due to the associated inflammatory reaction and the risk of necrosis with perforation into the pharynx (Yilmaz *et al.*, 2004). Two surgical methods are commonly used: The stepladder method and the stripping method. Stepladder approach with two incisions in the neck gives good exposure of the sinus tract with less tissue dissection. The tract has to be traced till the proximal end and excised completely to prevent recurrence.

Conclusion

We report a case of radiologically demonstrable dilated second arch branchial sinus in a 6 year old child. The child presented with recurrent discharging sinus in the neck. Thorough clinical examination and high resolution ultrasound in concurrence with sinogram confirmed the diagnosis and helped us in differentiating the sinus from other types of branchial cleft anomalies and also obviated the need of higher imaging modalities. The lesion was successfully treated by complete excision.

ACKNOWLEDGEMENT

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