INTRODUCTION

Developmental abnormalities of the branchial apparatus represent a common cause of congenital lateral neck mass. Most often this is seen in the pediatric population but certainly may present at a much later age. Branchial anomalies may present as a cyst or sinus. Rarely a branchial sinus is found to have an internal opening as well, thus forming a true branchial fistula. Infection frequently complicates successful long-term management. Most often these lesions can be diagnosed by thorough history and physical examination. Complete surgical excision is the treatment of choice; however, recurrences may be encountered especially in those patients with a history of prior surgery or local infection. This report describes a true branchial fistula in a young male.

CASE REPORT

A 17-year-old male presented in ENT Department of Combined Military Hospital, Lahore, with complaints of a whitish discharge from a small opening on the right lower neck since birth.

On local examination, a small opening was seen on the right side of neck almost at the junction of middle and lower third of neck just anterior to sternocleidomastoid. On pressing, it discharged a thick whitish material. No lymph nodes were palpable in the neck. Throat was examined for an internal opening but no opening was seen on naked eye examination.

Clinical diagnosis of a branchial fistula or sinus was made and fistulogram/sinogram was requested. It showed a tract, which traveled up, curved medially, possibly passing between the internal and external carotid arteries at the bifurcation and ended in the area of oropharynx (Figure 1). During fistulography, patient felt the taste of dye in his mouth shortly after it was injected through the opening in the neck.

Excision of the fistulous tract from external approach was planned under general anaesthesia. Due to vicinity of tract to carotid arteries, surgery was planned in liaison with vascular surgeon whose presence was requested during the operation to handle any complication resulting from dissection of the tract in the area of carotid arteries.

During operation, two horizontal incisions were made in the neck, one elliptical incision over the external opening and other high-up along neck crease (Figure 2). The elliptical patch of skin containing the external fistula opening was dissected from the lower incision. The dissected tract was then pushed-up to bring it out from upper incision. The tract was then carefully dissected passing between carotid bifurcation right upto pharyngeal wall (Figure 2). It was left attached there.

ABSTRACT

Remains of cervical sinus of His may persist as a branchial cyst. A branchial sinus is formed when 2nd branchial arch fails to meet the 5th pharyngeal arch. Peak age for presentation of cysts is in the third decade and that of the congenital sinuses and fistulae is at birth. Rarely a branchial sinus is found to have an internal opening as well, thus forming a true branchial fistula. We present a case of true branchial fistula with external opening on the lateral side of neck and internal opening near the lower pole of tonsil.

Key words: Branchial fistula. Fistulogram. Tonsil.
Unilateral tonsillectomy was then done on the right side and the tonsillar fossa was inspected for internal opening. It was found near the inferior pole. The tract was delivered into the oropharynx through its opening in the tonsillar fossa. It was then divided at its base and removed completely. Defect in oropharynx (right tonsillar fossa) was stitched. Before stitching the skin in layers, a drain was placed in the wound, which was charged with negative pressure. A nasogastric tube was also passed. Gross examination of the tract showed it to be about 4 inches long. The whole tract was sent for histopathological examination, which revealed an epithelial lined linear tract filled with mucous fluid, confirming the finding of branchial fistula.

**DISCUSSION**

The branchial apparatus contributes to major development of the head and neck, and a thorough understanding of embryology and anatomy is essential in treating these patients. Branchial or pharyngeal arches appear in the 4th and 5th weeks of development. These are 6 bars of mesenchymal tissue invaginated by 5 clefts of ectoderm externally and 5 pouches of endoderm internally. Second pharyngeal arch proliferates and overgrows 2nd, 3rd and 4th clefts to fuse with the 5th arch. Invaginated clefts form cervical sinus of His which later disappear.

Remains of cervical sinus of His may persist as a branchial cyst. A branchial sinus is formed when 2nd branchial arch fails to fuse with the 5th pharyngeal arch. Thus, it represents a remnant of cleft or pouch that has an external or internal opening. Rarely a rupture of mesenchymal membrane between the second pharyngeal cleft and pouch occurs at the same time during development, thus a fistulous tract connecting two epithelial surfaces is formed. Rarely, branchial apparatus fistulae related to other branchial clefts have also been described. These anomalies are more common in male (male to female ratio 6:4). Peak age for presentation of cysts is in the third decade and that of the congenital sinuses and fistulae is at birth. Sixty percent are on the left and 40% are on the right. Occasional bilateral branchial fistulae have also been described in literature. The external opening of sinus lies along the line joining the tragus and the sternoclavicular joint, i.e. along the anterior border of sternocleidomastoid. The branchial cyst may occasionally contain thyroid remnants from which papillary carcinoma may arise.

CT scan or ultrasound of neck and fistulography are useful investigations to trace the fistulous tract. Recently, multidetector CT fistulography has been described for diagnosis of branchial cleft fistula. This case was a rare variety of congenital branchial anomaly as it was a true branchial fistula with two openings. There was no mesodermal tissue separating the external and internal parts. Surgery was done in liaison with vascular surgeon keeping in view the rare but potentially fatal event like puncture or rupture of carotid vessels. It is recommended that all such cases of second arch branchial fistulae should be operated with similar vigilance and with all necessary precautions like arrangement of cross matched blood and presence of a vascular surgeon. Passing a nasogastric tube at the time of operation can minimize the chances of infection or recurrence of fistula. It can be safely removed after giving a trial of clear oral fluids at the end of one week.

**REFERENCES**


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