

Case Report

An intriguing case of a complete 2nd arch branchial fistula: a portal to the infectious world

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Received: 14 September 2022

Accepted: 13 October 2022

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ABSTRACT

Complete 2nd arch branchial fistulae are very rare congenital anomalies of head and neck. They arise due to the incomplete obliteration of the branchial clefts during embryonic period. In this article we report a case of type IV 2nd branchial cleft anomaly in a 15-year-old female. Explicit knowledge regarding its development, anatomy and accurate diagnosis, skillful complete excision of the tract is paramount in its management and to prevent recurrence.

Keywords: 2nd brachial cleft, Complete fistula, Fistulogram, Sternocleidomastoid, Excision

INTRODUCTION

Branchial anomalies are due to the aberrant persistence of the embryonic pharyngeal clefts. The 5th week embryo is characterised by the presence of 4 pairs of pharyngeal clefts. They represent 30% of the congenital neck lesions of which 80% present as cysts and rest 20% as sinus, fistula or cartilaginous remnants.¹ Cysts are epithelial lined with no external openings. Sinuses communicate either externally with the skin or internally with the pharynx, fistula connect both.

Of the 4 pharyngeal clefts, the 2nd arch branchial fistula should have internal opening at tonsillar fossa and external opening overlying medial aspect of sternocleidomastoid, such connections are often described as true or complete brachial fistula. Incidence of complete fistulas are extremely rare with only very few reported cases in literature, most fistulas present as incomplete.²

The minute external ostium of the fistula remains unnoticed initially. Spontaneous mucoid drainage from the external ostium along the anterior border of the sternocleidomastoid heralds its presence and initiates the parent's concern and is the reason for the patient's referral to the hospital.³

We report a rare case of complete 2nd arch branchial fistula in a 15-year-old, which was confirmed by a fistulogram and was treated successfully by complete excision of tract.¹⁰

CASE REPORT

15-year-old child presented to the surgical outpatient department (OPD) with complaint of discharge from the right side of neck for 3 months. O/E: pinhead sinus opening on the right side of neck along the anterior border of sternocleidomastoid at its lower 1/3rd, there was no sign of inflammation around the opening (Figure 1).

X-ray fistulogram using iodinated contrast media revealed a 11 cm linear fistulous tract extending from C7-T1 level to right palatine fossa, F/S/O right branchial fistula (Figure 2).

Magnetic resonance imaging (MRI) neck showed a linear fistulous tract ascending from its external opening at right lower anterior neck in subcutaneous planes between the right lobe of thyroid and anteromedial border of sternocleidomastoid. The tract is anterior to the carotid vessels and is reaching submandibular space behind the right submandibular gland and further extending into the

right parapharyngeal space traversing medially and opening into the oropharynx. F/S/O right branchial fistula (Figure_3).

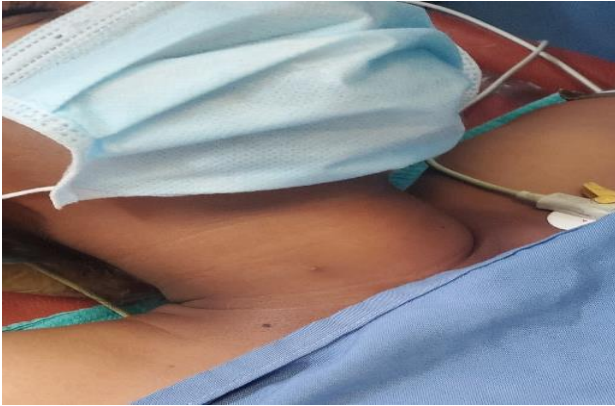


Figure 1: Sinus opening.

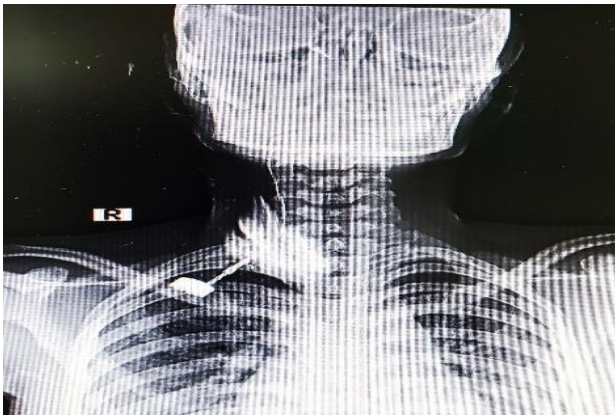


Figure 2: X ray fistulogram showing the fistulous tract.

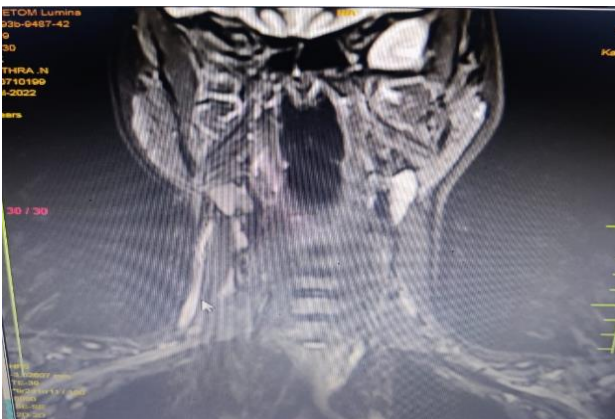


Figure 3: MRI Neck showing the fistulous tract.

Patient underwent excision biopsy which revealed 10 cm fistulous tract extending from junction of middle 1/3rd and lower 1/3rd of sternocleidomastoid along its anterior border to the tonsillar fossa (Figure 4). A small transverse elliptical incision (Figure 5) given around the external opening, incision deepened beneath the cervical fascia,

probe introduced, tract identified and dissected from surrounding fascia and structures. Internal opening noted at the tonsillar fossa. Tract ligated with 3-0 silk and excised.



Figure 4: Excision of tract.



Figure 5: Single incision approach.

Histopathological examination of the excised specimen revealed the tract is lined by columnar epithelium and focal squamous epithelial lining. Abundant lymphoid tissue is noted along with germinal centres surrounding the tract. Many congested blood vessels, fibrous tissue and muscular tissue are noted adjacent to the tract and was consistent with branchial fistula.

Patient recovered well and was discharged on the 2nd postoperative day. Patient was treated completely with the follow-ups showing no signs of recurrence.

DISCUSSION

The branchial apparatus was first described by Von Baer and its anomalies was first described by Von Ascheroni.⁴

There are 4 pairs of branchial clefts of which 2nd branchial cleft anomalies are classified into 4 subtypes by Bailey based on their location (Figure_6).⁵

Type I: Superficial, but located deep to platysma and cervical fascia, along the anterior border of the sternocleidomastoid.

Type II: Deep to the sternocleidomastoid, either anterior or posterior to carotid sheath.

Type III: Pass between the carotid bifurcation and lie adjacent to pharynx.

Type IV: Medial to carotid sheath, close to pharynx at the level of tonsillar fossa.

Fistulogram confirms the clinical diagnosis and is useful to know the length, location of tract and with a possible cyst as well.⁶

Complete surgical excision of tract is the treatment modality with either stepladder or single-incision approach, which as employed in the management of our case.⁷

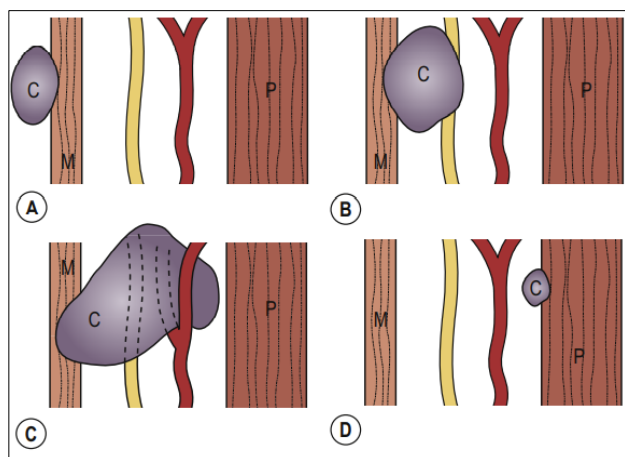


Figure 6: 4 pairs of branchial clefts of which 2nd branchial cleft anomalies are classified into 4 subtypes by Bailey based on their location.

CONCLUSION

We present the case of 15-year-old patient with complete branchial fistula who had undergone a surgical excision using a transcervical single-incision approach with good clinical and post-operative outcome.

Accurate diagnosis, radiological imaging and complete surgical excision results in complete cure of the branchial cleft anomalies and it remains the definitive treatment to ensure complete eradication and prevent recurrence.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Reddy KG, Venkat PRG, Teja KS. An intriguing case of a complete 2nd arch branchial fistula: a portal to the infectious world. *Int Surg J* 2022;9:1917-9.