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Second branchial arch anomaly: case series of two

Sanjaya Kumar Behera[1]*, Deepak Dalmia[2], Ashay Amlekar[3]

[1]Senior Resident, [2]HOD, Department of ENT and HNS, [3]DMO Pathology, Dr. BAM Central Railway Hospital, Byculla, Mumbai, Maharashtra, India

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***Correspondence:**
Dr. Sanjaya Kumar Behera,
E-mail: sanjayakumarbehera824@gmail.com

ABSTRACT

Branchial apparatus develop between the 3rd and 7th weeks of embryonic life. There are 5 mesodermal arches separated by invaginations of ectoderm and endoderm. During development the second arch grows caudally to cover the third and fourth arches and the second, third, and fourth pharyngeal clefts eventually fusing with the lower neck. The enclosed II, III, and IV clefts are called as the cervical sinus. If this process does not occur for some reason then it gives rise to branchial cyst, sinus or fistula. We are presenting two cases of second branchial arch anomaly. In first case there was bilateral branchial fistula with right side fistula associated with branchial cyst. In second case there was unilateral right side branchial fistula. We operated both the cases by giving step ladder incision. In second case we find fistulous track opening in the tonsillar bed. Both the patients recovered well with no recurrence since 1 year. Brachial cleft cyst is a common cause of soft tissue swelling in the neck of a young adult. They generally occur unilaterally and are typically seen in the lateral aspect of the neck. It is clinically apparent in late childhood or early adulthood. In older adults with this presentation, it is important to exclude metastatic lymphadenopathy, lymphoma or tuberculosis.

Keywords: Branchial fistula, Cyst, Excision

INTRODUCTION

The branchial arches are 6 in number. Each of these arches is made up of a core of mesodermal tissue covered on the outside by surface ectoderm, and on the inside by endoderm. Each of these arches has its own cartilagenous bar, muscular component, arterial, venous and nerve supplies. Each arch in addition to its nerve supply also receives branches from the nerve supplying the succeeding arch. During development the second arch grows caudally to cover the third and fourth arches and the second, third, and fourth pharyngeal clefts eventually fusing with the lower neck. The enclosed II, III, and IV clefts are called as the cervical sinus.[1] The buried clefts (cervical sinus) persist as cavities lined by ectoderm and gradually disappears with development. If this process does not occur for some reason then it gives rise to branchial cyst, sinus or fistula.[2]

CASE REPORT

Case 1

A male patient from Nagpur reported to us with chief complains of swelling in the right side of neck since 3 years associated with intermittent discharge from the swelling since 1 year. On clinical examination a swelling was present in the right side of neck of size approx. 3cmx1cm which was cystic, immobile. A sinus was present on the swelling. Ultrasonography report revealed

cyst in the neck of size approx. 3 cm×1 cm in lower 1/3rd of sternocleidomastoid muscle (Figure 1A). Fistulogram showed the internal opening of fistula in the tonsillar bed. We planned for surgical excision of the cyst with fistulous tract in to by giving stepladder incision. We inject the dye in the fistula and the dye came out in tonsillar bed (Figure 1B and 2A). The cyst with its tract was sent for HP study which came to be Branchial cyst with tract (Figure 2B).

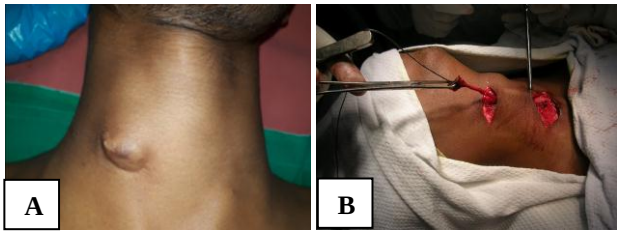

Figure 1A: Swelling on right side of neck, 1B: The fistulous tract was dissected.
With a fistulous opening and retracted by forcep.

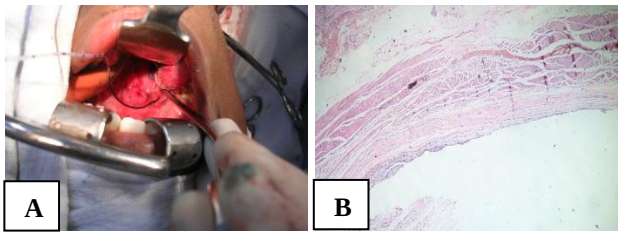

Figure 2A: The internal opening of the fistula of fistulous tract. 2B: Lining stratified squamous epithelium.

Case 2

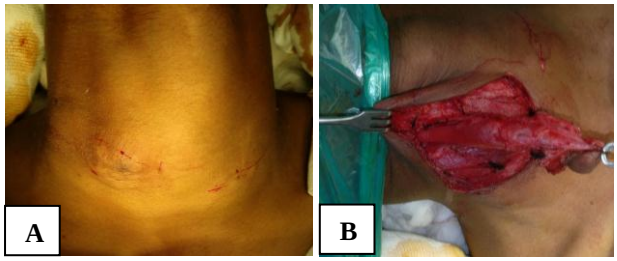

Figure 3A: Incision on both sides of neck, 3B: the cyst with fistulous tract, 3C: the excised cyst.

A 20 years male from Mumbai was presented to us with chief complain of swelling in right side of neck since 15 year which was associated with intermittent discharge since 3years. It was associated with discharge in left side of neck since 5 years (Figure 3A). On examination swelling of size 2.5 cm×1 cm was present in the right side of neck anterior to the lower 1/3rd of sternocleidomastoid muscle associated with a fistulous opening and there was a fistula in left side of neck. Ultrasonography of Neck showed Cystic swelling of 2.5×1 cm in the right side of neck. Fistulogram showed the internal opening of the fistula below the angle of mandible on right side. We planned for surgical excision by giving stepladder incision on the skin and sent it for HP study which came to be branchial cyst with fistula. On left side also we did a complete excision of the tract (Figure 3B, 3C and 4A).

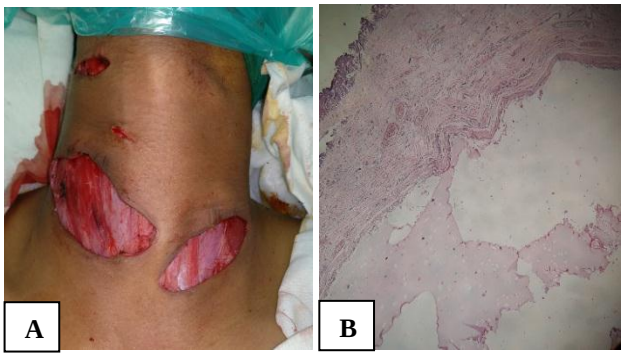

Figure 4A: After excision of the tract B: Fibocollagenous cyst wall.
On both the sides with mucinous content of cyst (4x)

DISCUSSION

Congenital abnormalities of the branchial apparatus can result in various abnormal conditions in the neck, including a cyst, a sinus or a fistula.[1] Patients with branchial fistula usually present in first two decades of life with intermittent discharge from the fistula. The external opening usually situated between upper 2/3rd and lower 1/3rd of the sternocleidomastoid muscle.[1-3,5] Two surgical methods are commonly used: The stepladder method and the stripping method.[1-3] Stepladder approach with two incisions in the neck gives good exposure of the fistulous tract with less tissue dissection.[1,2,4,6]

CONCLUSION

Treatment of choice for branchial fistula is complete surgical excision of the fistulous tract. The tract has to be traced till the internal opening and excised completely to prevent recurrence.

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Ethical approval: Not required

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