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## VARIANT TYPE OF PREAURICULAR SINUS WITH POST AURICULAR ABSCESS

### ABSTRACT

An 11-year-old female presented with the history of painful post auricular fluctuant swelling of left ear. On examination there was a small pit present at the crus of the helix of the left ear. Patient had a variant type of preauricular sinus in which the sinus tract extended beyond the external auditory canal and opened into the post auricular area. Excision of tract along with granulation tissue and cartilage was performed.

**Keywords:** Preauricular sinus, post auricular abscess, variant

### INTRODUCTION

Preauricular sinus is a common congenital external ear disease. It is asymptomatic in most of the cases. Normally the pit and the sinus remain in the area anterior to the imaginary line drawn between tragus and posterior part of ascending helix but rarely the sinus can pierce the cartilage and open in the post auricular area.<sup>1</sup> We present a case of a variant type of preauricular sinus presented with post auricular swelling due to extension of the tract in the postauricular area.

### CASE REPORT

An 11-year female who was apparently well one month back presented to the Out Patient Department (OPD) with painful post auricular swelling for 10 days. Pain was acute on onset, continuous, throbbing, non-radiating, exacerbated by pinna movement and pressure over the swelling and relieved by analgesics.



Figure 2: Pre auricular sinus at crus of helix

On examination, swelling was tender, erythematous, fluctuant located behind the left

ear (figure 1). There was also a small pit present at the crus of the helix of the left ear without discharge (figure 2). There was no fever, no ear discharge, aural fullness, hearing loss, ringing sensations, vertigo, facial deviations or associated cervical lymphadenopathy. On examination of the ear, nose, throat and other systems were within normal limits.



Figure 1: Post auricular swelling

The first impression for swelling behind the ear was that of infected sebaceous cyst and mastoiditis. The post auricular swelling did not resolve on oral antibiotics (Amoxicillin with Clavulanic acid for one week) thus the patient was admitted for intravenous (IV) antibiotic (Ampicillin, Cloxacillin and Metronidazole). On the third day of admission the abscess was drained percutaneously from the posterior cartilaginous wall from which approximately 2ml pus was aspirated. After one week the swelling and pain gradually subsided and the patient was discharged. After two weeks of discharge, she was planned for excision of the tract under general anesthesia (GA).

Methylene blue was injected after lacrimal duct probing through the opening of the preauricular

sinus to facilitate visualization of the tract during the tract excision. An elliptical incision was given encircling the opening. Skin and subcutaneous tissue were dissected carefully delineating the tract (figure 3). Intraoperative findings showed the sinus tract ascending from the root of the helix which then pierced the auricular cartilage and opened into the postauricular region. Tract along with granulations and soft tissues were removed.

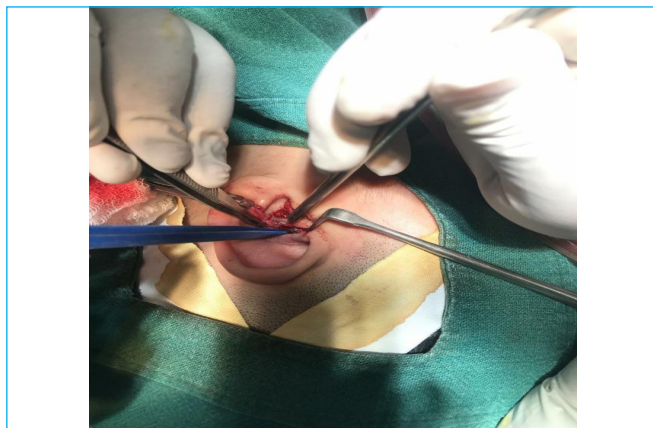


Figure 3: Intra operative excision of sinus tract

Final diagnosis of infected preauricular sinus with postauricular abscess was made. Histopathological examination was consistent with the post-operative diagnosis. The patient was kept on antibiotics (Amoxicillin with Clavulanic acid for 1 week) post-operatively and discharged the next day. No postoperative complications were evident in subsequent follow-ups (figure 4).



Figure 4: Post-operative wound status after 3 months.

## DISCUSSION

Preauricular sinus also referred to as congenital preauricular/auricular fistula, ear pit or preauricular cyst, is a common congenital malformation which is characterized by nodule, dent or dimple located anywhere adjacent to the external ear.<sup>2</sup> It was first described by Heusinger in 1864.<sup>3</sup> Fusion of six mesenchymal proliferative tissues known as

hillocks of His, three hillocks originates from the caudal border of the first branchial arch and three from the cephalic border of the second branchial arch results into definite auricle.<sup>4</sup> First branchial arch forms tragus and anterior crus of helix margin while the rest of the auricle is formed from the second branchial arch.<sup>1</sup>

Formation of preauricular sinus occurs due to incomplete fusion of the first arch hillocks or isolation of ectodermal folds during auricle formation or defective closure of most dorsal parts of the first branchial cleft.<sup>5</sup> Preauricular sinuses most often appear unilaterally and are sporadic. Most unilateral cases are right sided.<sup>6</sup> Bilateral (25-50%) form is inherited and is associated with deafness and as a part of syndromic disorders.<sup>4,7,8</sup> There are many syndromes associated with preauricular sinus such as: Brachio-Oto-Renal (BOR) syndrome, Brachio-Oto-Ureteral Syndrome, Brachio-Oto-Costal syndrome, Tetralogy of Fallot, Cat Eye Syndrome, Waardenburg's Syndrome etc.<sup>4</sup> Auditory testing and renal ultrasound are done in children with preauricular sinus as they are found to be associated with preauricular sinus. In our case the patient had left sided unilateral PAS.

Study done by Seong Jun Choi et al. described preauricular sinus as a classical and variant type based on the location of the pits relative to an imaginary line connecting the tragus and posterior margin of ascending limb of the helix. Classical groups had their pits and sinus located anterior and variant groups as those whose pits and sinus were located posterior relative to imaginary line. Out of 101 study patients only 10.9% had a variant form. Variant groups were divided into three types according to location of the pit.<sup>1</sup> Type 1 was present in our case where a pit was present in the middle area of the crus.

Another classification made by Jiaqui Pang et al classified postauricular sinus: Type 1 was present in our case where the sinus penetrates the cartilage and caused postauricular swelling, while sinuses that adhere to the cartilage and causes preauricular or auricular swelling or skin defects characterize type 2 swelling.<sup>9</sup>

Classically preauricular sinus is located anterior to the external auditory canal (EAC). Rarely, the fistula tract extends posterior to the external auditory canal.<sup>1</sup> Most preauricular sinus remains asymptomatic and require no treatment. Discharge is uncommon from sinus and may present either due to infection or desquamation of the debris. The main clinical features among variant types are postauricular pain and abscesses. In our case there was tender post auricular swelling with discharge in the late stage. However pus c/s came

out sterile after 24 hour incubation

Diagnosis of classical as well as variant PAS is made with physical examination and ear endoscopy without need for imaging. Misdiagnosis often occurs due to an unsuspecting site of swelling in relation to the pit. First impression was that of infected sebaceous cyst and mastoiditis due to the distant site of swelling in relation to the pit. Despite being asymptomatic in most of the cases, recurrent infection warrants surgical excision.

Surgical techniques are sinectomy, microscopic assisted sinectomy and supra-auricular approach. The recurrence rate was less in supra auricular approach and higher in simple sinectomy. Seong Jun Choi concluded dual approach for complete excision of the sinus tract to prevent its recurrence.<sup>1</sup> Wan Ju Huang et al describes choice of surgical management for preauricular sinuses according to severities. Here three approaches i.e. simple fistulectomy, local wide excision and figure of 8 method were tried. The author concluded simple sinusotomy is adequate in case of mild inflammation while PAS with greater severities, figure of 8 incision with extended fistulectomy has been suggested.<sup>10</sup>

If the sinus is preauricular and swelling is postauricular then the direction of the tract is supposed to be in the direction of line joining between them. Therefore, preauricular approach for excision of tract is not adequate as the cartilage penetration is narrow even for the small probe to get

inserted. This makes removal of the whole tract difficult unless the incision made is too large. Hence dual approach through pre and post auricular incision is better for excision of the sinus.<sup>1</sup> In our case only preauricular incision was given and sinus tract which was extending upto post auricular region was followed and excised completely.

For visualization of the tract microscope or methylene blue dye instillation and probing of the tract is done. But variant types have narrow tract compared to the classical, hence good visualization of the tract using methylene blue or a probe cannot delineate the tract. In variant type as the tract is attached to the perichondrium and cartilage it is difficult to remove the tract completely from the cartilage. Therefore, it is essential to remove the cartilage to which the sinus has adhered or penetrated otherwise recurrence is high.<sup>9</sup>

There is no concern about injury to the facial nerve during the surgery as compared to first branchial cleft anomalies. They have different embryological origin therefore the sinus area is limited to the area of the auricle and are distant

from the facial nerve

## CONCLUSION

Differentials for post auricular swelling such as epidermoid cyst, inflamed adenopathy, mastoiditis, anomalies of first branchial cleft comes to mind but post auricular swelling due to PAS without any discharging sinus makes its diagnosis difficult. Therefore, otolaryngologist must be aware of variant type of preauricular sinus. Although rarely the tract of preauricular sinus extends beyond external auditory canal, otolaryngologist must keep differential of variant type of preauricular sinus in a patient presenting with postauricular swelling with preauricular sinus.

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