



A Case Report of Postauricular Sinus Extending to Temporalis Fascia and Parotid Excised *Via* Unidirectional Approach

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Abstract

Postauricular sinus is an uncommon variant of preauricular sinus. We reported a 4-year-old girl with right post-auricular sinus with its opening was at the pinna crus helix. She had recurrent history of infection and required surgical excision. Two approaches were described as unidirectional and bidirectional excision approaches. The preferred approach depends on the variation of the sinus track and sac extension, bidirectional approach being the most common. In this case, the postauricular sinus sac extended medially to temporalis fascia and parotid. Nevertheless, the sinus was successfully excised via unidirectional method.

Keywords: Preauricular sinus; Postauricular sinus; Crus helix sinus; Unidirectional excision; Bidirectional excision

Introduction

Pre-auricular sinuses are common congenital anomalies. It is a congenital defect in the fusion hillocks of His during prenatal pinna formation [1-3]. It was first described by Heusinger in 1864 [1,4]. In different studies, preauricular sinuses reported prevalence rates vary from 0.1% to 10% of the population [2]. Reported prevalence rate were 0.1% to 0.9% in the United States, 0.9% in the UK, 4% to 6% in Asian and 4% to 10% in some areas of Africa [1,4,6]. Twenty-five percent to 50% of cases have bilateral preauricular sinuses. They may present in syndromic children sporadic or inherited or associated with hearing disorder [6,7].

Postauricular sinus is an uncommon variant of preauricular sinus. It is diagnosed when the sinus pit is posterior to the tragal imaginary perpendicular line [1-5]. Postauricular sinus prevalence rate is significantly less than preauricular sinus. In 2005, Chang et al. reported only 3 cases of infected post auricular cyst. Yeo et al. reported only 8 cases out of 206 cases with pre-auricular sinuses. Choi et al. [4] in 2007 had diagnosed 11 cases out of 101 patients. Recent study in 2019 has reported 20 patients were detected from 2009 to 2013 [5]. This is a case report of a girl with a postauricular sinus that extended to temporalis fascia and parotid region.

Case Presentation

We present a 4-year-old girl with recurrent episodes of right pinna swelling, redness and pain at the retroauricular and pre-auricular region since 3 years ago. There were a few episodes of fever and pus discharge from the swelling.

Despite repeated cycles of broad spectrum antibiotics, the pinna, retroauricular and preauricular swelling became more frequent. Incision and drainage was attempted at a private centre in January 2020. The patient was subsequently referred to our centre. Examination showed an infected right pinna swelling which extended to retroauricular and preauricular region. There was a sinus opening on the crus helix of the pinna which was posterior to the imaginary perpendicular line (Figure 1,2). There were no other neck swelling and no facial asymmetry. There was no pre-auricular sinus on the opposite ear. She did not appear syndromic and there were no similar symptoms in the family. Her hearing assessment was normal. The swelling subsided after a course of oral antibiotic. Our clinical diagnosis was recurrent infection of the right postauricular sinus. The patient was subjected for postauricular sinus exploration and excision.

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Figure 1: A: Right pinna showing sinus pit posterior to the tragal imaginary perpendicular line. B: Unhealthy preauricular skin.



Figure 2: Unhealthy skin of the retroauricular region and back of the pinna.



Figure 3: A: Methylene blue discolorations over the preauricular region which involved the parotid region, B: Surgical adequate exposure showing sac involving temporalis fascia, C: Elliptical skin sinus excision.

Intraoperatively, methylene blue was first introduced into the sinus. The bluish discoloration indicated that there was a large sac at the retroauricular region which extended to the preauricular region (Figure 3A). An elliptical incision was made surrounding the sinus opening overlying the crus helix. From there, we followed the sinus track and released it from the surrounding cartilage and skin. The crus helix, cymba and cavum concha were invaded by the sac. Due to the recurrent infection, the sac adhered to the pinna skin posteriorly. The sac also extended to the temporalis fascia (Figure 3B) which was partially excised.

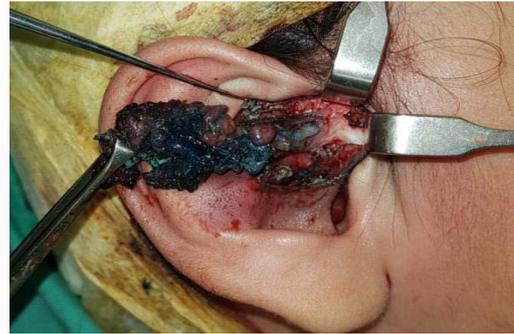


Figure 4: Fully excised postauricular sinus with minimal of parotid tissue (dotted circle).



Figure 5: Post-operative 1month wound healed with no obvious pinna deformity.

Anteriorly, the sac extended to the parotid region with minimal adherence to the superficial parotid. We managed to excise the sinus track along with the sac in a whole piece (Figure 4). There was no risk of injury to the facial nerve. Skin was closed primarily layer by layer.

Post-operatively, there was no hematoma and the facial nerve function was intact. She completed 2 weeks of antibiotic to prevent perichondritis. During follow up, the wound healed well (Figure 5). Histopathology report was consistent with sinus track and epithelial sac.

Discussion

The tragal imaginary perpendicular line is the landmark to differentiate the sinus opening between preauricular and postauricular sinuses. Postauricular sinus opening is posterior to the tragal line such as on the crus helix of the pinna [1-5]. The direction of the postauricular sinus track and sac is commonly towards retroauricular region. The signs or symptoms will show inflammation in the retroauricular region [1]. In our case, the patient had recurrent inflammation of both preauricular and retroauricular region despite her sinus opening was posterior to the tragal line.

Majority of patients with preauricular or postauricular sinus are asymptomatic. Most presented with recurrent of infections. A thorough history, head and neck examination is important in all cases. This includes seeking evidence of any associated anomalies. Other histories may include hearing or ear disorders in the family members, maternal history and any renal disorder [7].

Preoperative imaging such as fistulography is useful to identify

the extend of the sinus [1,7]. Tan et al. had reported that renal ultrasound is to be performed in all external ear disorder patients with dysmorphic features [7]. The article also quoted a study that hearing assessment findings may show conductive/sensorineural hearing impairment with isolated preauricular sinus. However, there was no strong evidence that all infants born with preauricular sinus should have hearing assessment routinely [7].

Most common pathogen isolated from the pus or specimen culture and sensitivity is *Staphylococcal* species. Other less common pathogens are *Proteus*, *Streptococcus* and *Peptococcus* species [7]. Histopathology findings preauricular sinus lined with squamous epithelium [1].

Excision of the postauricular sinus is indicated in recurrent infection. The main aim of the excision is to ensure complete removal of the epithelial linings to avoid recurrence. Probing, methylene blue injection and the usage of microscope is helpful in identifying the sinus track and the sac for more precise dissection [1-7]. In most cases of postauricular sinus, the medial limit of the track or sac was the temporalis fascia [7]. However, in our case, the sac extended to the parotid region (Figure 3B).

In postauricular sinus excision, there are 2 methods that were suggested in a number of articles. The 2 methods are unidirectional and bidirectional. The methods apply depends on the variation of the sinus track and sac extensions [1-7].

Unidirectional method is via exploring through the sinus pit. Bidirectional method excision is exploration through the sinus opening with another incision made via the retroauricular region [1-6]. The method chosen depends on surgeon's preferences and extension of the sinus track. However, bidirectional approach seemed to be a better approach [1-3]. The approach will aid in adequate exposure of the sinus tract and whole sac. Recurrence rate was reported nil in this method compared to 1% to 5% of recurrence rate in unidirectional method [2,4].

There are also other recommendations as an alternative of surgery, such as sinus tract destruction using sclerotherapy or electrodiathermy. However, there was no clear advantage of the outcome [7].

Conclusion

A thorough history, physical examination and hearing test should be performed to seek evidence of other congenital anomaly. Preoperative imaging may be performed depends on the clinical findings. Recurrent postauricular sinus infection warrants surgical intervention. Surgical approaches depend on surgeon's preferences and also the extend of the sinus track or sac. Postauricular sinus can extend anteriorly beyond the tragal imaginary perpendicular line. In this case, unidirectional approach was adequate for total excision. Complete excision must be performed to avoid recurrence. Probing, dye instillation in the sinus and surgical microscope may aid in the excision. Antibiotic is recommended to cover perichondritis due to cartilage manipulation during the surgery.

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