

Case Report

Reconstruction challenges for complicated preauricular sinuses: case reports

Anju E. Mathai*, Pushpendra Shekhawat, Hanaa Al Senaidi

Department of Ear, Nose and Throat, Ministry of Health, Sur, Sultanate of Oman

Received: 11 March 2023

Revised: 19 April 2023

Accepted: 02 May 2023

***Correspondence:**

Dr. Anju E. Mathai,

E-mail: dr.anjumathai@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Preauricular sinuses and pits are congenital anomalies located in or just in front of the ascending limb of the helix. Even though excising a sinus is a relatively minor surgical procedure, recurrence is not uncommon if an adequate resection is not done. Surgery is only indicated when it is complicated by recurrent infection or abscesses. Simple closure may not be possible when there is large tissue defect. In those circumstances local flaps will be required to cover the defect. In this article we report 2 cases which had large tissue defect after excision and closed with local rotational flaps. This provided good cosmetic outlook and no recurrences so far. There are not enough articles published so far with such kind of reconstruction techniques for preauricular sinus excision tissue defects.

Keywords: Preauricular sinus, Tissue defects, Reconstruction, Local flaps

INTRODUCTION

Preauricular abnormalities are believed to result from a failure of fusion of the primitive tubercles from which the pinna is formed. These defects are heritable and are common congenital abnormalities in children and young adults. These abnormalities have also been described as preauricular pits, preauricular fistulas, preauricular tracts and preauricular cysts. Management of this congenital anomaly is difficult due to the controversies regarding the surgical indications and tendency for recurrences or persistence. These sinuses can become infected leading to abscess which may burst spontaneously or are incised and drained. This causes scarring and fibrosis around the sinuses making it difficult for excision. The standard technique of excision involves an elliptical incision around the sinus opening and dissecting the tract. The use of methylene blue or probe may aid in the dissection. There is a great chance of leaving epithelial remnants behind leading to recurrence. Hence these sinuses must be widely excised including removal of all fistulous tracts in order to

reduce recurrence rates. However, the resultant large local defect poses cosmetic challenges.^{1,2} In this article, we present 2 cases which had large local defect after excision and needed local flaps for closure which provided good cosmetic outlook postoperatively as well as no recurrences noted so far.

CASE REPORT

Case 1

A 9-year-old girl presented to our clinic with history of right preauricular sinus with recurrent infection and abscess formation. She developed a chronic ulcer anterior to the preauricular sinuses in Figure 1. She underwent right preauricular sinus excision under general anaesthesia. The whole of the preauricular sinus tract and branching tracts was excised without leaving any breach in the tract, and small part of auricular cartilage was also excised with the tract. Chronic ulcer and sinus opening anterior to pinna was excised. The defect was turned into a rhomboid defect of 60 and 120 degree. A limberg flap was marked after

measurement of defect. Flap was raised and transported into the defect. Primary closure of skin defect and donor site was achieved without any tension on suture closure line (Figure 2). Postoperatively she was followed for 1 year and no recurrences noted so far (Figures 3 and 4).



Figure 1: Chronic ulcer in front of sinus.



Figure 2: Closure of defect with local rotational flap.



Figure 3: Follow up.



Figure 4: Follow up after 1 year.

Case 2

A 35-year-old female presented to out clinic with right preauricular sinus abscess which was initially incised and drained, wound healed. The skin at the site of previous incision was thin and scarred anteriorly to the sinus as shown in Figure 5. She underwent excision under general anaesthesia and intraoperatively a large tract with multiple branches going in all directions and deep tract going to parotid gland was also noted. Sinus tract with all branches was excised in toto with part of auricular cartilage also sacrificed (Figure 6).

Defect made from excision of overlying skin was converted to rhomboid. A rhomboid flap was raised and rotated to cover the skin defect as shown below (Figure 7). Postoperatively she was followed up and no recurrences were reported (Figures 8 and 9).



Figure 5: Preop showing scarring of skin.



Figure 6: Intraop large tissue defect after excision.



Figure 7: Reconstruction with rhomboid flap.



Figure 8: Follow up after 1 week.



Figure 9: Follow up after 1 month.

DISCUSSION

The external ear develops from three hillocks of mesoderm covered by ectoderm that form on each of the caudal and rostral lips of the first branchial groove. A preauricular sinus is thought to result from entrapment of ectodermal epithelium in the first branchial arch elements of the external ear. This congenital abnormality does not involve the depths of the first branchial groove, which contributes to the formation of the external auditory meatus and tympanic membrane. Preauricular sinuses therefore do not involve these latter structures or the facial nerve. They may lead to a subcutaneous cyst that is multi-branched and intimately related to the groove between the tragal cartilage and the anterior crus of the helix, to the extent that it is often difficult to separate the sinus from the cartilage or at least the perichondrium of the pinna. It lies at the level of, or above the arch of, the zygoma and its deep relation is the temporalis fascia. Preauricular sinus may be associated with various other congenital deficiencies such as deafness. Renal anomalies have been reported to be significantly more common in patients with a preauricular sinus (4.3 per cent) than in the general population (1 per cent).

The congenital preauricular sinus is usually asymptomatic. However, if recurrent infection occurs, complete surgical excision of the sinus is required. If the sinus tracts are not entirely removed, recurrence is likely to follow. Asymptomatic sinuses need no intervention but

symptomatic sinuses need surgical intervention. Surgical treatment options to deal with preauricular sinuses are: simple sinusectomy, microscopic assisted sinus tract excision, and supraauricular technique.³ Recurrence rate is very high in simple sinusectomy (19-40%). Prasad et al proposed a supraauricular sinusectomy technique. This technique reports a low recurrence rate of 5%. The cause of recurrence is usually due to difficult identification of tract in patients with recurrent infections with scarring and fibrosis of the preauricular soft tissue leading to inadequate removal of all the ramification of tract. Reconstruction with local flaps will be required for large tissue defect.^{4,5}

In the last 5 years there were 20 cases of preauricular sinus excision done in our secondary care hospital with primary closure. However, for the above 2 cases, surgical management was difficult as there was a large defect left behind after the excision of the sinus tract which needed local flaps for closure to aim at good cosmetic results.⁶ Postoperative follow up showed satisfactory results.

CONCLUSION

Rhomboid and Limberg flap reconstruction is a good technique following wide excision of complicated preauricular sinuses. The long term results are good. It can be safely performed with good results. It is a viable option for complicated preauricular sinuses and recurrent disease following multiple infections and drainage. The two patients which we did reconstruction with local rotational flaps showed no recurrences so far and good cosmetic results.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Akakpo K, Luck K, Chun RH. Use of a Cervicofacial Flap in Closing Large Defects Following Wide Local Excision of Complicated Preauricular Lesions. *Ann Otol Rhinol Laryngol.* 2020;129(12):1163-7.
2. Lee MJ, Yang HJ, Kim JH. Reconstruction techniques for tissue defects formed after preauricular sinus excision. *Arch Plast Surg.* 2014;41(1):45-9.
3. Leopardi G, Chiarella G, Conti S, Cassandro E. Surgical treatment of recurring preauricular sinus: supra-auricular approach. *Acta Otorhinolaryngol Ital.* 2008;28(6):302-5.
4. Tan B, Lee TS, Loh I. Reconstruction of preauricular soft tissue defects using a superiorly based rotation advancement scalp flap - A novel approach to the surgical treatment of preauricular sinuses. *Am J Otolaryngol.* 2018;39(2):204-7.
5. Yadav S, Kaur T, Singla V. Rhomboid Flap Reconstruction for Type 1 Postauricular Variant of Preauricular Sinus. *Indian J Otolaryngol Head Neck Surg.* 2023;1.

6. Yotsuyanagi T, Watanabe Y, Yamashita K. Retroauricular flap: its clinical application and safety. *Br J Plast Surg.* 2001;54:12-9.

Cite this article as: Mathai AE, Shekhawat P, Al Senaidi H. Reconstruction challenges for complicated preauricular sinuses: case reports. *Int J Otorhinolaryngol Head Neck Surg* 2023;9:505-8.