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# A study on newer technique for reconstruction of pre auricular soft tissue defect with temporo-parietal fascia flap (Khabeer's flap)

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## ABSTRACT

**Background:** A pre auricular sinus is a congenital abnormality, which occurs due to failure of fusion of primitive tubercles from which pinna develops. Pre auricular sinuses are usually asymptomatic and when symptomatic present usually as discharging sinus, associated with abscess formation anterior to root of helix. Symptomatic pre auricular sinus requires surgical excision to prevent recurrence and reinfection. Treatment of pre auricular sinus by conventional methods usually presents a dead space due to removal of sinus tract. The present study is to overcome this defect by a superficial temporalartery based temporo-parietal fascia flap or Khabeer's flap. The objective of this study is to describe a novel technique for excision of pre auricular sinus using supra auricular approach and using a temporo-parietal fascia flap for covering the defect created after excision of pre auricular sinus.
**Methods:** A prospective study was carried out in Department of Otorhinolaryngology, Gandhi Medical College/Gandhi Hospital Secunderabad from 2014 to 2017. All the patients admitted with symptomatic pre auricular sinus underwent surgical excision by supra auricular approach and at the end superficial temporal artery based flap was placed to fill the dead space.
**Results:** A total of 20 pre auricular sinuses were operated during the study period. There were no recurrences, no collection of serous fluid and no cosmetic defect post operatively in any of the study subject.
**Conclusions:** The newer approach was found to be safe as it does not confer any complications post operatively and can be used for management of pre auricular sinus.

**Keywords:** Pre auricular sinus, Supra auricular approach, Superficial temporal artery, Temporo-parietal fascia flap or Khabeer's flap

## INTRODUCTION

Preauricular sinuses represent a common congenital abnormality in children. Classically, a preauricular sinus manifests as a small opening, usually near the anterior limb of ascending helix.[1] Most common site of congenital pre auricular sinuses is the pre auricular region along the ascending crux of the helix.[2] This malformation is associated with a defect in the development of first branchial arch during the sixth week of gestation.[3]

The incidence of pre auricular sinus is around 0.3-0.9% among general population. Though rare malformation, it often exhibits autosomal dominant inheritance. Right sided sinuses are more common than left side and equal distribution is seen among both the genders.[4] The embryological basis for pre auricular sinus is incomplete fusion of mesodermal thickenings of first and second branchial arch during sixth week of gestation.[5]

Congenital pre auricular sinuses are often asymptomatic. Asymptomatic pre auricular sinus requires no treatment.

If infected it presents as discharging sinus and requires surgical excision. The goal of surgical treatment is complete excision of sinus tract to prevent recurrence. There are various surgical approaches for pre auricular sinus excision. Many authors, recently have advocated the need to identify and excise via supra auricular approach as treatment of choice so as to completely excise the tract as it is associated with lower recurrence rate.[6]

The major drawback of wide excision via supra auricular approach for pre auricular sinus is creation of large soft tissue defect/ dead space. This defect leads to collection of serous fluid or discharge thus increasing the chances of infection. Hence, to overcome this, a novel technique was adopted. In this surgical technique the pre auricular sinus and its tract was first excised by supra auricular approach and then a temporo-parietal fascia flap was rotated onto defect so as to fill the dead space.

### *Objective of study*

- To describe the novel technique for excision of pre auricular sinus using supra auricular approach and using a temporo-parietal fascia flap for filling the defect created after excision of pre auricular sinus.

## METHODS

### *Study design*

An observational study to evaluate the outcome of supra auricular approach with superficial temporal artery based temporo-parietal fascia flap technique for management of Pre auricular Sinus.

### *Study area*

Department of Otorhinolaryngology, Gandhi Medical College/ Gandhi hospital- Tertiary Care Centre, Secunderabad, Telangana.

### *Study duration*

3 years (2014 - 2017). All the cases were followed up for a period of 6 months.

### *Study subjects*

Symptomatic pre auricular sinus patients requiring surgical excision

### *Sample size*

A total of 20 cases of symptomatic preauricular sinus cases were admitted in the hospital during study period. All the sinuses were excised via supra auricular approach and the defect/dead space after excision was closed with Superficial temporal artery based temporo-parietal fascia flap.

A thorough history and head and neck examination was performed for all patients. Surgeries were conducted in an infection-free interval and under local anesthesia. Written consent was obtained from each patient according to the policy of the hospital. Ethical clearance was taken from the institutional ethics committee and data was analyzed using MS Excel and Epi info.

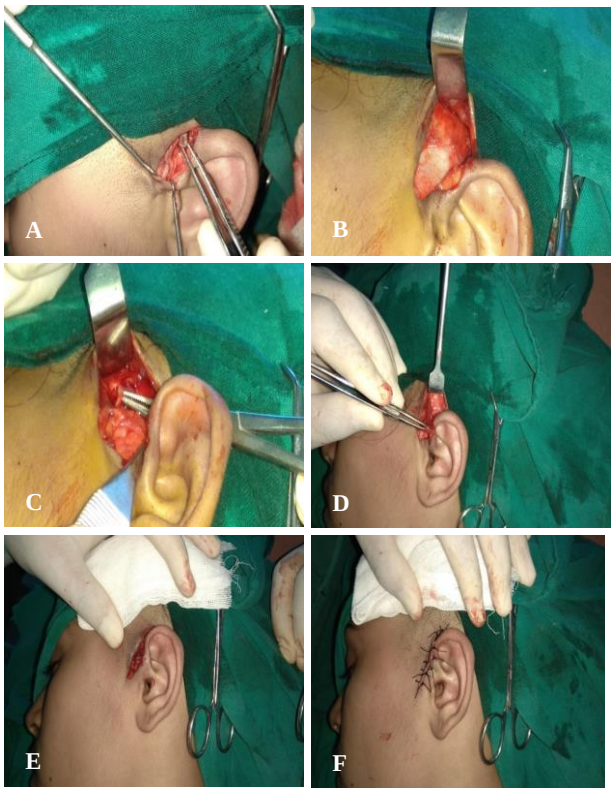


**Figure 1: (A) Incision given and sinus tract dissected; (B) complete excision of sinus tract; (C) identification of branch of superficial temporal artery; (D) temporo parietal flap (Khabeer's flap); (E) flap rotated onto defect; (F) closure with 3'0 silk.**

### *Surgical technique*

- The preauricular area was infiltrated with xylocaine 2% and epinephrine 1:100000 to reduce intraoperative bleeding.
- A vertical elliptical incision was made around the orifice of the sinus. Then, the incision was extended supra-auricularly.
- Dissection was carried out to identify the temporalis fascia which is the medial limit of the dissection and continued over the cartilage of the anterior helix which was considered as the posterior margin of dissection.
- Tissue superficial to the temporalis fascia was removed together with the pre auricular sinus.
- After dissecting out the tissue, temporo-parietal fascia flap based on superficial temporal artery was harvested.

- Flap is rotated onto the defect, which is formed after removal of soft tissue between skin and temporalis fascia, and is sutured with catgut.
- Skin is closed with 3-0 silk.

## RESULTS

In the present study a total of twenty patients were operated for symptomatic pre auricular sinus. The outcome of the newer technique was evaluated in terms of recurrence rate, infection and cosmetic defect.

**Table 1: Distribution of study population according to age, gender and site of sinus.**

| | Number | % |
|---|---|---|
| **Age group (in years)** | | |
| 6-10 | 4 | 20 |
| 11-15 | 5 | 25 |
| 16-20 | 8 | 40 |
| 21-25 | 3 | 15 |
| Total | 20 | 100 |
| **Gender** | | |
| Male | 8 | 40 |
| Female | 12 | 60 |
| Total | 20 | 100 |
| **Laterality** | | |
| Right | 14 | 70 |
| Left | 6 | 30 |
| Total | 20 | 100 |

In the present study, 40% of study subjects were in the age group of 16-20 years, 25% were in the age group of 11-15 years. Around 20% of study subjects were in the 6-10 years age group and 15% of study subjects were in the 21-25 years age group. The youngest study subject was 7 years old and the oldest study subject was 22 years old.

Sixty percent of study subjects were females and 40% were males. Almost 70% of study subjects had a right pre auricular sinus and 30% had a left pre auricular sinus.

In the present study, none of the study subjects developed any complications. The recurrence rate following the newer technique was zero. There was no infections reported post operatively among the study subjects. None of the study participants developed any serous fluid collection post operatively. This technique offered best cosmetic result among the study participants.

## DISCUSSION

In the present study, maximum cases (65%) were from the age group of 11-20 years and 20% of study subjects were in the age group of 6-10 years. These findings were similar to a study conducted by Gupta et al where 42.3% of cases were in the age group of 11-20 years.[7] The study findings differed to a study conducted by Vijayendra et al and Attallah where maximum incidence of pre auricular sinus was in the age group of 1-10 years.[2,8]

The present study findings in relation to gender and laterality of sinus were similar to a study conducted by El Aassar et al, where 67% of study subjects were females and 46.5% of them had right preauricular sinus.[6] The study findings differed from Gupta et al findings, where left pre auricular sinus (46.15%) was slightly commoner than right pre auricular sinus (42.3%).[7]

In the present study, none of the study subjects developed any complications. The recurrence rate following the newer technique was zero. There was no infections reported post operatively among the study subjects. None of the study participants developed any serous fluid collection post operatively. This technique offered best cosmetic result among the study participants. This can be attributed to the rich blood supply to the skin in the posterior auricular area.[9,10]

This supply is derived from an arterial arcade situated in the auriculo cephalic groove between the auricular cartilage and the skull, below the auricularis posterior muscle. This arterial arcade is formed by the auricular branch of the posterior auricular artery and the posterior branch of the superficial temporal artery.[11] Therefore, a fibro fatty tissue or superficial temporal artery based flap, can be used to cover the defect or dead space created due to excision of sinus.

This flap is especially useful in

- Filling of defects after excision of pre auricular sinuses.
- Recurrent cases need wider clearance to excise all the tracts and scarred tissue which in turn leads to large defects. This flap can be helpful to fill such large defects as well.

As this flap is very useful in avoiding dead space, preventing infection and providing good cosmoses, it can be considered in all the cases of pre auricular sinus infection. It was not reported anywhere in literature before this study and is an innovative method, it is aptly named after the author as “Khabeer’s flap”

The present study findings of no recurrences were similar to a study conducted by Leopardi et al where there were absolutely no recurrences following supra auricular approach and which concluded use of supra auricular approach for excision of pre auricular sinus as treatment of choice rather than simple sinusectomy.[3]

## CONCLUSION

From the present study it can be concluded that an excision of pre auricular sinus can be best done by Supra auricular approach followed by filling of defect with

superficial temporal artery based temporo-parietal fascia flap for better cosmetic appearance, no/least recurrence and to avoid serous fluid collections. Super added infections can also be avoided if serous fluid collection is avoided.

***Recommendations***

This procedure can be performed easily and hence can be recommended as treatment of choice for newly diagnosed cases of pre auricular sinus and also for recurrent pre auricular sinuses

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