



## COMPARISON OF SURGICAL OUTCOMES BETWEEN SUPRA AURICULAR APPROACH TECHNIQUE AND STANDARD TECHNIQUE FOR PRE AURICULAR SINUS

ENT

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### ABSTRACT

#### OBJECTIVE

The recurrence rate after excision of pre auricular sinus is known to be high. Various surgical techniques have been described to prevent recurrence. In this line, this study aimed to evaluate the surgical outcomes of the supra-auricular approach technique with standard technique.

#### STUDY DESIGN

Prospective study

#### MATERIALS AND METHODS

A total of 45 patients with pre auricular sinus were conveniently selected for this study. The patients were divided into two groups. 24 patients were operated with supra-auricular approach technique and 21 with the standard technique. The recurrence rate of these two groups was statistically analyzed using Student t test and the results were discussed. Statistical package for Social Sciences (SPSS) software was used for the analysis.

#### RESULTS

The surgical outcomes of 45 patients with symptomatic pre auricular sinus revealed that the overall recurrence rate was found to be 11.11%. With the performance of standard technique the recurrence rate was recorded as 23.81% and on the other hand, the supra auricular approach showed a nil recurrence.

#### CONCLUSION

The supra-auricular approach for excision of pre auricular sinus has no recurrence rate when compared to the standard technique and hence concluded that supra-auricular approach was found better for adoption.

### KEYWORDS

#### INTRODUCTION

Pre auricular sinus is a common congenital abnormality of the pre auricular soft tissues. Vanheusinger first described this condition in 1864<sup>1</sup>. The estimated incidence of this condition is 0.1 -0.9% in the United States, 0.47% in Hungary, 0.09 % in England, 2.55% in Taiwan and 4-10% in some areas of Africa. Pre auricular sinus is more often unilateral and occasionally bilateral. It occurs more commonly on right side<sup>3,4</sup>. This condition is usually asymptomatic, exhibited as a small opening at the anterior margins of the ascending limb of helix superior to the auricle.

Pre auricular sinus tracts are usually very narrow and the sinus course in subcutaneous tissues is not constant. They may arborize and follow a tortuous course with many ramifications. Infected pre auricular sinus may present with facial cellulitis, abscess formation or ulcerations located anterior to the ear. Recurrent infection involving the pre auricular sinus should be managed by complete surgical resection of the surgical tract with its ramifications. Incomplete removal of sinus tract will give rise to recurrence. Many surgical procedures have been described to reduce the recurrence rate after excision. Against this background, the surgical outcomes of supraauricular approach technique<sup>5,13,24,32,34</sup> were compared with standard technique.

#### MATERIALS AND METHODS

Informations pertaining to this study were collected from patients attending the ENT Outpatient Department, Stanley Medical College Hospital, Chennai for a period of two years. Totally, 45 patients with pre auricular sinus were conveniently selected for the study. The study group were of various age groups of both sexes and the general characteristics related to them were tabulated and recorded using the conventional methods of tabular and percentage analyses. The selected patients were subjected to detailed clinical head and neck examinations. Out of 45 patients 24 patients were operated on supra auricular technique and 21 to the standard technique. All the patients were followed up for a period of 6 months and the results on the recurrence rate of these two groups were documented. The recurrence rate of these two groups was statistically analyzed using Student t test and the results were recorded for discussion. Statistical package for Social Sciences (SPSS) software was used for the data analysis.

#### SURGICAL TECHNIQUE

##### Standard technique

Simple Sinectomy (Fig 1) is the commonly used standard procedure for excising preauricular sinus. The aim of the surgery is to remove all vestiges of squamous epithelium. Under general or local anaesthesia an elliptical incision was made around the sinus opening and dissection was proceeded by identifying the sinus tract and its ramifications under visual and palpatory guidance. The tract can simply be identified by its glistening white color. All ramifications were meticulously dissected and excised in toto (Fig 2).



Figure 1. Simple sinectomy incision



Figure 2. Dissection of the sinus tract

##### SUPRAAURICULAR APPROACH

This surgical approach (Fig 3) is based upon the theory that the sinus tract is almost always included in the subcutaneous tissues between the temporalis fascia and perichondrium of helix cartilage. This procedure involves a post auricular extension of the elliptical incision around the pre auricular sinus opening. The incision is deepened till the temporalis fascia comes into view (Fig 4). Temporal fascia is considered as medial limit for dissection in this procedure. All the tissues superficial to the temporalis fascia were removed together with the pre auricular sinus. The dissection continues over the cartilage of anterior helix which is regarded as posterior margin of the dissection. A portion of the cartilage along the base of the pre auricular sinus was excised (Fig 5). The dead space is closed in layers and compression dressing should be applied.



Fig 3. Supra auricular approach



Fig 4. Dissection of temporalis fascia

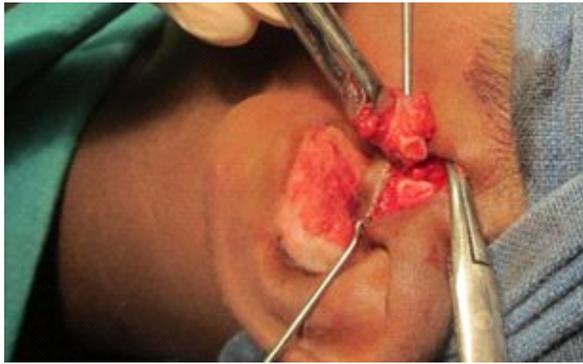


Fig 5. Excision of cartilage

**RESULTS**

**a. General characteristics of the study group**

From the study, it was found that the patients under investigation comprised predominantly with females (57.27%) and the age and the study group with pre auricular sinus varied from 5 to 25 years (Table 1& 2).

**Table 1. Sex distribution**

| Sl.No. | Sex    | No. of patients | Percentage |
|--------|--------|-----------------|------------|
| 1.     | Female | 26              | 57.27      |
| 2.     | Male   | 19              | 42.2       |
| Total  |        | 45              | 100.00     |

**Table 2. Clinical presentation**

| Sl.No.    | Clinical Presentation                                | No. of patients | Percentage |
|-----------|--|-----------------|------------|
|           | Recurrent discharge from sinus opening               | 18              | 16.36      |
|           | Abscess/Cellulitis                                   | 15              | 13.64      |
|           | Previous h/o incision & drainage                     | 07              | 6.36       |
|           | Previous h/o excision                                | 04              | 3.64       |
|           | Associated auricular abnormality (pre auricular tag) | 01              | 0.91       |
| Sub Total |  | 45              | 40.91      |

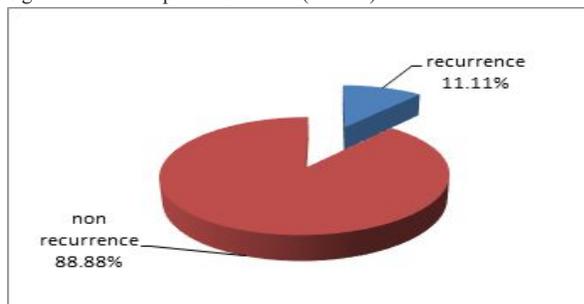
**Table 3. Location of preauricular sinus**

| Sl.No. | Location of preauricular sinus             | No. of patients | Percentage |
|--------|--|-----------------|------------|
| 1.     | Anterior margin of ascending limb of helix | 34              | 75.55      |
| 2.     | Superior to auricle                        | 09              | 22.2       |
| 3.     | Centre of crus helix(variant type)         | 02              | 4.4        |
| Total  |  | 45              | 100.00     |

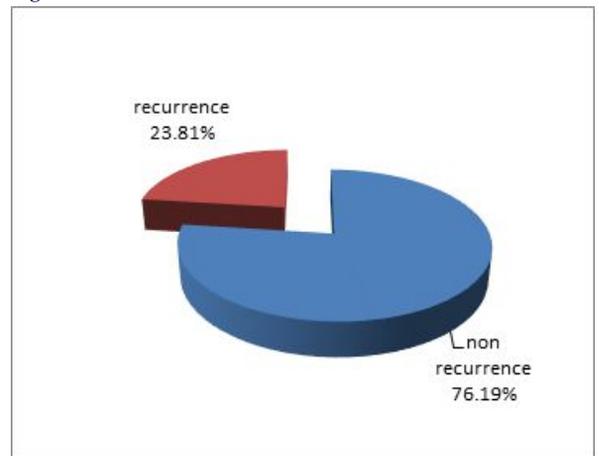
Based on the clinical presentation and the common location of the sinus opening were observed in the anterior margin of ascending limb of helix.

**Recurrence rate**

The study on recurrence rate revealed that out of 45 cases operated, the overall recurrence rate was observed as 11.11 % i.e. in 5 cases (Fig 6). Based on the surgery performed, it was found that the recurrence rate was 23.81% in patients (Fig 7) underwent simple sinectomy and on the other hand, no recurrence was observed among patients who adopted supra auricular approach technique. The statistical inference of Student t test performed to assess the significance over the two methods of surgery showed that both methods were found to be significant with a p value of <0.05 (Table 6).



**Fig 6. Overall recurrence rate**



**Fig 7. Recurrence rate (standard technique)**

**Table 4. Recurrence rate (standard technique verses supra auricular approach)**

| Procedure                                    | Recurrence | No recurrence | P value |
|--|------------|---------------|---------|
| Group A (n = 21)<br>Simple sinectomy         | 5          | 16            | < 0.05  |
| Group B (n = 24)<br>Supra auricular approach | 0          | 24            |         |
| Total  | 5          | 40            |         |

**DISCUSSION**

Pre auricular sinus results from abnormalities in the fusion of the hillocks of His during auricular development. They are blind-ended sinuses that result from incomplete fusion and the inclusion of epithelial tissue forms a skin lining to the sinus. These lesions present as a pit like depressions anterior to the root of the helix and superior to the level of the tragus. Variant type of pre auricular sinus has been reported in various studies

Pre auricular sinuses are commonly asymptomatic and when it is symptomatic surgical resection of sinus is required. Inadequate removal of the sinus tract will lead to recurrence. Previous history of infection, incision and drainage will produce scarring fibrosis and obliteration of normal tissue planes and make future excision more difficult. To prevent recurrence the sinus must be excised in its entirety. Various surgical techniques have been described for the excision of preauricular sinus<sup>5,10,13,16,22,31</sup>. The standard simple sinectomy showed higher recurrence rate (1-45%)<sup>5,13,14</sup> in various studies. Prasad .et.al<sup>12</sup> (1990) and Yoe .et .al<sup>13</sup> (2006) described that the supra auricular approach, a new surgical technique, has lower recurrence rate when compared to other techniques. In the present study, we found no recurrence rate with supra auricular approach technique whereas, 23% recurrence rate was observed in those patients operated by simple sinectomy technique.

**CONCLUSION**

Supra auricular approach has no recurrence rate when compared to simple sinectomy. Hence it could be safely used as a primary procedure and in patients with distorted tissue planes.

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