

## “Surgical outcome of different surgical approach in pre-auricular sinus- A retro-spective study”

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**Type of publication-** Original Research Article

**Conflicts of interest-** Nil

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### **Abstract**

**Background-** This study entitled “Outcome of different surgical technique in pre-auricular sinus- A retro-spective study”.

**Aim and objective-** to summarize the clinical feature, compare the long-term results of the preauricular sinus excision by simple sinectomy and supra-auricular approach and to evaluate the recurrence rate of supra-auricular approach.

**Method and material -** This retrospective study was conducted in the department of ENT, Bundelkhand medical college and hospital Sagar MP after due clearance institutional ethics committee. This study was conducted on 102 patients of pre-auricular sinus which were previously operated in ENT department from duration april 2019 to april 2022. All patients were divided in two groups on the basis of surgical approach 1) Group A ( n=32) - patients in which simple sinectomy was done. 2) Group B (n=70) - patients in which supra-auricular approach

used. We analyzed the ratio of male to female, age group of the highest prevalence and recurrence rate. All the patients were followed up for at least 3 months after operations. The statistical analysis and comparison were performed utilizing SPSS. The significance level was set at  $P < 0.05$ .

**Result** – in our study male to female 1:1.8, common in teenage 11-20 year age, unilateral was more than bilateral (left side preauricular sinus about 50%), recurrence rate was more in simple sinectomy than supra-auricular technique.

**Conclusion**- Supra-auricular approach had significantly lower recurrence rate than tract sinectomy approaches, so it is recommended to make it the standard primary procedure for preauricular sinus excision besides its use in recurrent cases.

**Keyword**- preauricular sinus, simple sinectomy, supra-auricular technique.

### Introduction-

Preauricular sinus, first described by Heusinger in 1864, is a benign, congenital malformation of the preauricular soft tissue and located at the anterior margin of the ascending limb of the helix.<sup>(1)</sup> The incidence varies globally and is estimated to be 0.1%–0.9% in the United States, 0.9% in England, and 4%–10% in some areas of Asia and Africa.<sup>(2)</sup> Preauricular sinus is more often unilateral (about 50%) and sporadic. The right side is more often involved and females more than males. Bilateral cases are more likely to be inherited.<sup>(3)</sup>

When inherited, the pattern is of incomplete autosomal dominance with reduced (around 85%) penetrance.

Research in China has mapped a possible locus for congenital preauricular fistula to chromosome 8q11.1-q13.3.<sup>(4)</sup>

The majority of patients with preauricular sinus are asymptomatic and it requires no treatment.<sup>(5)</sup> Recurrent or persistent infection of the preauricular sinus should be excised during a period of quiescence.

The standard technique for excision of the preauricular sinus is to excise an ellipse of skin around the orifice and to dissect out the individual tract, the simple sinusectomy. Most postoperative recurrences result from incomplete removal of the epithelial lining. The recurrence rates of simple sinusectomy have been reported between 9% to 42%.<sup>(6)</sup> The more radical technique supra-auricular approach was made by Prasad *et al.* in 1990.<sup>(7)</sup> Supra-auricular approach was based on the theory that a fistula is almost always included in subcutaneous tissues between temporalis fascia and perichondrium of the helix cartilage. Therefore, all the tissue superficial to the temporalis fascia is removed together with preauricular sinus. A portion of the cartilage along the base of the preauricular sinus should also be excised.<sup>(8)</sup> Supra-auricular approach reported low recurrence rate of 5%.<sup>(7)</sup>

The main goals of this study are to (1) summarize the clinical features of preauricular sinus (2) compare the long-term results of the preauricular sinus excision by simple sinectomy and supra-auricular approach. (3) Evaluate the recurrence rate of supra-auricular approach.

### **Method and material-**

This retrospective study was conducted in the department of ENT, Bundelkhand medical college and hospital Sagar MP after due clearance institutional ethics committee. This study was conducted on 102 patients of pre-auricular sinus which were previously operated in ENT department from duration april 2019 to april 2022.

Record of this patient was found from record keeping room. All patients were properly informed by telephonic contact and speed post. About 120 patients record were found but only 102 patient were ready for came to follow. Patient those were came to follow, properly examined, history of recurrence taken.

All patients were divided in two groups on the basis of surgical approach

- a) Group A ( n=32) - patients in which simple sinectomy was done
- b) Group B (n=70) - patients in which supra-auricular approach used.

### **Method-**

Pre-auricular sinus was excised by simple sinectomy using methylene blue.<sup>(9)</sup> The pre-auricular sinus was first filled with methylene blue. Then, a vertical elliptical skin incision was made around the sinus orifice followed by naked eye dissection of the sinus tract and excision of the entire length of the sinuses. While patients treated by the supra-auricular approach on which 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 that was the medial limit of the dissection and continues over the cartilage of the anterior helix that was regarded as the posterior margin of dissection. Tissue superficial to the temporalis fascia was removed together with the pre-auricular sinus. Dead space obliterated by layered closure. Skin sutured with 3'0 vicyl and ethelone. Mastoid dressing applied and removed after 24 h along with the drain. The patients are given a course of antibiotics and anti inflammatory drugs for 7 days. Suture removal done after 7 days. Cosmesis was very good.

We analyzed the ratio of male to female, age group of the highest prevalence and recurrence rate. All the patients were followed up for at least 3 months after operations.

The statistical analysis and comparison were performed utilizing SPSS. The significance level was set at  $P < 0.05$

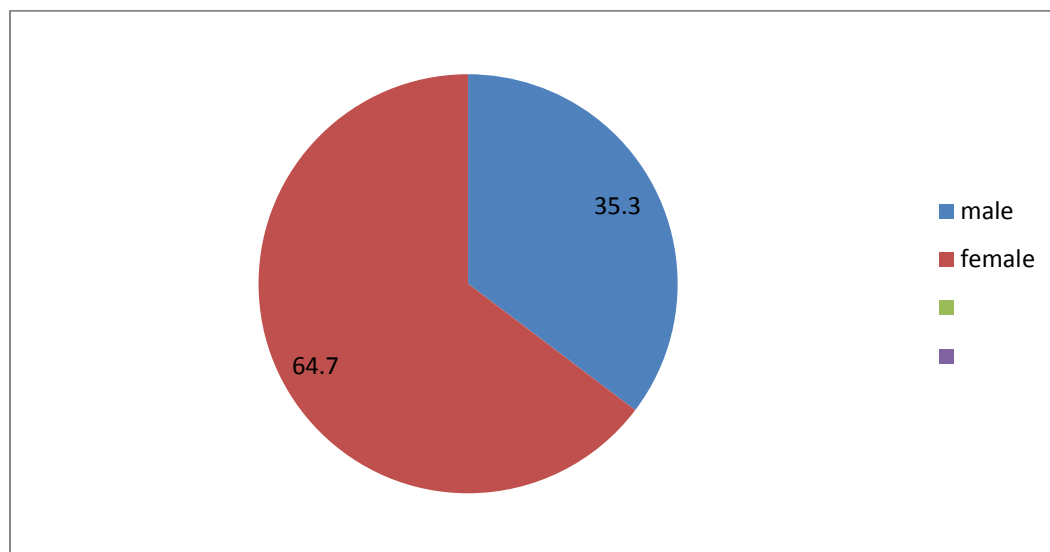
**Results-**

	Age groups	No of patients	Percentage(%)
1	1-10	21	21

In this retrospective study 102 patients of pre-auricular sinus which was previously operated, were included in this study.

Out of 102 patients about 35.3% (36/102) male and 64.7% (66/102) were female. Male to female ratio 1:1.8.(figure no 1.)

**Figure 1 sex distribution of the patient**



Out of 102 patients 21% (21/102) patients were belong to age group between 1-10 year, about Table –1. Age distribution of patients

50% (51/102) patient belong to age group 11-20 year, about 17.65% (18/102) patients belong to age group 21-30 year, 8.82% (09/102) patients belong to age group 31-40 year and 2.94% (03/102) patients were belong to age group >40 year. (Table no 1.)

2	11-20	51	50
3	21-30	18	17.65
4	31-40	9	8.82
5	41-50	3	2.94
total		102	100

Out of 102 patients about 17.65% (18/102) patients were presented with bilateral pre-auricular sinus while 82.35% (84/102) patients had unilateral presentation. About 50% (51/102) patients were presented left side and 32.35% (33/102) patients were presented right side. ( table no 2.)

## 2. Laterality of sinus

	Laterality	No of patients	Percentage (%)
1	Bilateral	18	17.65
2	Unilateral	84	82.35
3	Right	33	32.35
4	Left	51	50
Total		102	100

Out of 102 patients 32 patients were operated by simple sinectomy while 70 patients were operated by supra-auricular approach. The recurrence rate in simple sinectomy was 25% (08/32) while 5.7% (4/70) in supra-auricular approach. (Table no 3, figure no 2)

Figure no -2 Recurrence rate in both the technique

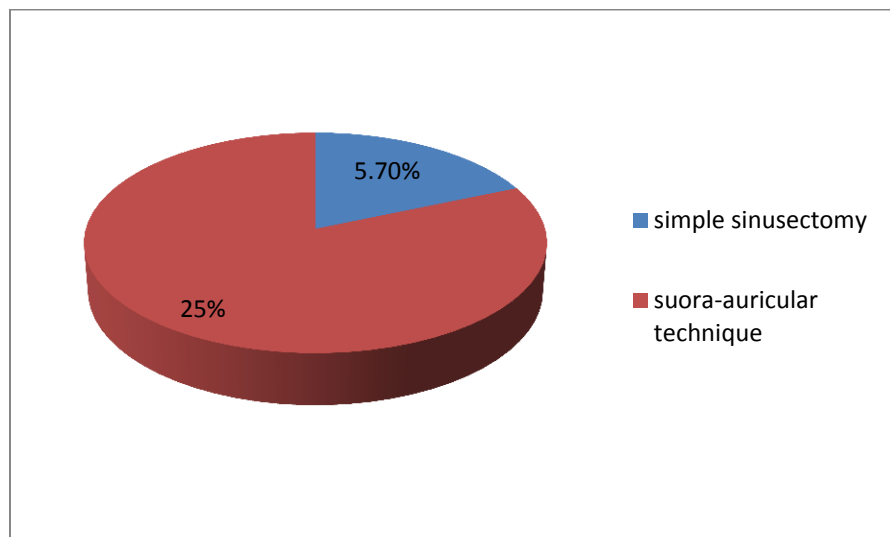


Table 3 Recurrence rate

Surgical technique	Recurrence rate (%)	Sample size
Simple sinusectomy	2.5	32
Supra-auricular approach	5.7	70
P value <.05		

### Discussion-

In this retrospective study pre-auricular sinus were more common in female than male and male to female ratio 1:1.8. In our study prevalence of preauricular sinus was highest in teenage group 11-20 year (about 50%) than other one. Jimoh *et al.*<sup>(3)</sup> have studied about the prevalence of preauricular sinus among Nigerians and reported that the prevalence was higher in 1–18 years old. Gupta *et al.*<sup>(10)</sup> have reported 42.3% in teenage group.

In this study prevalence of unilateral pre-auricular sinus were more than bilateral. Left side were more common than right. According to O'Mara W *et al.*<sup>(11)</sup> and Jimoh *et al.*<sup>(3)</sup> more common on right side.

In our study 32 cases were operated by simple sinectomy. Out of that in 8 patients showed recurrence while 70 patients were operated by supra-auricular technique. Only 4 patients showed recurrence. Recurrence were more common in those patients who had previous history of incision and drainage or infectios episode.<sup>(12)</sup> Incomplete excision of the preauricular sinus

tract(s) and the presence of residual viable squamous epithelium might be considered the main cause of recurrence after excision of preauricular sinus.<sup>(13)</sup>

In our study, the supra-auricular approach had the lowest recurrence rate (5.7%). These results are in similar with Prasad *et al.*<sup>(7)</sup> (5% recurrence) and Lam *et al.*<sup>(14)</sup> (3.7% recurrence rate) on using the supra-auricular approach for excision of preauricular sinus and also agree with the systematic review done by El-Anwar and El-Aassar<sup>(15)</sup> who found that the recurrence rate was 4/333 (1.2%) with the supra-auricular approach after reviewing nine researches using this technique. Another systematic review done by Bruijnzeel *et al.* reported 2.2% recurrence rate after supra-auricular approach.<sup>(16)</sup>

In our study, simple sinectomy with methylene blue technique had a high recurrence rate (25%). These results are comparable to Lam *et al.*<sup>(14)</sup> and Currie *et al.*<sup>(6)</sup> who reported a recurrence rate of 32% and 19%, respectively, using the simple sinectomy technique.

Supra-auricular approach is simple, effective technique, with negligible recurrence and with no need for extra assisting tool (microscope, probe, or magnifying loop). Hence, it is better to be used regularly as standard procedure for preauricular sinus excision, especially that it showed no significant complications and less postoperative scar formation.<sup>(12)</sup> Furthermore, it is the ideal technique particularly for recurrent cases or cases doing sinectomy after abscess incision and drainage. Thus, it would be helpful for surgeons to be familiar with this approach.

### Conclusion

Supra-auricular approach had significantly lower recurrence rate than tract sinectomy approaches, so it is recommended to make it the standard primary procedure for preauricular sinus excision besides its use in recurrent cases.

**Conflict of interest-** No

**Funding Source-** Nil

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