

Preauricular Sinus: A Three Years Experience and Appreciation.

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Abstract:

Background:

Preauricular sinus (PrAS) is a common congenital malformation of the external ear which affects mainly children. Symptomatic Preauricular sinus and also asymptomatic for unusual scar mark, surgery is the mainstay of treatment. Due to variation of presentation and recurrence, different types of surgical procedures are practiced by the surgeons for the treatment of Preauricular sinus. The aim of our study is to compare the relative frequency and incidence of Preauricular sinus and also find out the best surgical procedure for it.

Method:

It is a cohort retrospective study of 44 cases of Preauricular sinus in the department of otorhinolaryngology and Head-Neck surgery, cumilla medical college, Bangladesh from 01-07-2016 to 31-06-2019. All 44 patients were clinically diagnosed as Preauricular sinus and confirmed by history, examination and investigations. Special investigations were included Audiological investigation and Ultrasonography of renal system.

Results:

Incidence of Preauricular sinus out of 1,16,128 patient in outpatient department were 44 (0.05%) and out of inpatient routine operative 2738 patient were 1.61%. 40 patient(90.90%) were treated by traditional sinusectomy and rest of 4 patients (9.10%) were treated by extended supra auricular sinusectomy procedure. Relapse was taken place in 2 patients (4.54%). Gender issuance shows in case of female was 24(54.54%) and male was 20(45.46%). Age distribution exhibit in case of children was 34(77.27%) and adult was 10(22.73%). Anatomical site allocation reveal that right side was 22(50%), left side was 20(45.45%), bilateral was 2(4.55%) whereas unilateral was 42(95.45%). Presenting features display non-infected putty like discharge was 21(47.72%), infected abscess was 19(43.18%) and asymptomatic was 4(9.1%). Syndrome related with Preauricular sinus wasn't found in our study.

Conclusion:

As a congenital disease children were more affected in Preauricular sinus. Incidence and recurrence is always countable in perspective of treatment. As surgery is the principle of treatment, it should be perfect without any recurrence. We appreciate the supra auricular approach for excision of Preauricular sinus which is the best method to complement the patient's wishes.

Key Words: Preauricular Sinus (PrAS), Congenital, Recurrence.

Introduction:

The outer ear begins to develop at six weeks of gestation. Auricle or pinna develops from a series of six tubercles or Hillock's which form round the margin of the first branchial cleft. External auditory canal formed the ectoderm of the first branchial cleft. The six cartilaginous tubercles or Hillock's fuse to form the pinna in which three from the first branchial and three from the second branchial arch. A blind ended PrAS results from the incomplete fusion of tubercles or Hillock's. The inclusion of the epithelial tissue forms a skin lining to the sinus and may cause recurrent discharge and infection. The anatomical position of the PrAS is variable due to its developmental errors. Sinus opening or pits may be seen at the level of tragus, above or below it. If the sinus is at the level or above the tragus it is usually single abnormality, if below the level of tragus it may be involved multiple area of auricle, external auditory canal which is reflection of first branchial cleft anomalies. At this situation fistulous tract may be developed between auricle and external auditory canal. Family history may be seen in some cases. Some syndromes are related to PrAS. One of the most important is branchio-oto-renal syndrome is diagnosed as an inherited autosomal dominant disorder includes structural defects of external ear, PrAS and renal disorders.^{1,2} PrAS may be unilateral or bilateral. It may be thinking in mind that bilateral PrAS sometimes present with hearing loss. So management also needs to assess the hearing and renal impairment. The auricle is one of the most complex part of the ear. Its developmental variations causes minor to major abnormalities.³ The deformities include complete absence (Anotia), Peanut ear (Microtia), Macrotia (Large ear), Bat ear (Abnormally Protuding ear), Cryptotia (Upper third of pinna embedded under the scalp), Preauricular Tags (Skin covered tag) and PrAS.⁴ Among these developmental abnormalities PrAS remain asymptomatic throughout the life may need plastic surgery for cosmetic purpose.⁵ As PrAS embryologically developed from first and second branchial arch, the anatomical location of the sinus is superficial to the temporalis fascia and is placed superiorly closely related to the parotid gland and facial nerve. Usually all cases of sinus tract is coinjoin with the auricular cartilage.⁶

Method and Materials:

It is a cohort retrospective study of 44 cases of PrAS in the department of Otorhinolaryngology and Head-Neck surgery Cumilla Medical College, Bangladesh from 01-07-2016 to 31-06-2019. During these three years period total outpatient were 1,16,128 and in inpatient department 2,738 routine operations were performed. Incidence of PrAS out of these patients were calculated. All 44 patients were clinically diagnosed as PrAS and confirmed by history, examination and investigations. Special investigations include audiological investigations such as pure tone audiometry, impedance audiometry and stapedial reflex test and ultrasonography of renal system. We were following the two method of operations. One was traditional Sinusectomy and another is Extended Supra auricular approach for Sisusectomy. In traditional method we use metylene blue dye to locate the extension of tract, an elliptical incision was given surround the sinus opening and excise the sinus tract by dissection method. In supra auricular approach we extended the previous incision superiorly and posteriorly into the postauricular sulcus and dissection carried out upto the lateral border of temporalis fascia which is medial limit of the sinus tract and continuous the dissection over the auricular cartilage up to the anterior helix regarded as posterior and lateral limit of the sinus tract as the dissection should be carried out up to it. All tissue superficial to temporalis fascia and the sinus tract removed in toto. The epithelial lining of the sinus tract usually amalgamate with the perichondrium or the cartilage. So a portion of auricular perichondrium or cartilage was excised from the base of the sinus tract.⁷ The apropose evidence was collected such as age, sex, presenting features, operative procedures, postoperative follow up and complication.

Results:

During these three years period 1,16,128 patients were attended in the outpatient department with distinctive disease entity. Incidence of PrAS among them was 44(0.05%); Table-1. 2,738 routine operations were carried out during that time in which PrAS was 44(1,61%); Table-2. Traditional sinusectomy procedure executed upon 40 patients(90.90%) and extended supra auricular approach for sinusectomy procedure brought to pass only 4 patients(9.10%); Chart-1. 2 patients(4.54%) came with postoperative relapse which operations were accomplished by traditional sinusectomy method; Table-3. Gender issuance was near between female and male in which female was 24(54.54%) and male was 20(45.46%); Chart -2. The mean age of the patient was 14.5 years whereas lowest one was 3 years and highest one was 60 years. Though it is congenital malformation, in our study adult was 10(22.73%) and rest of cases were children 34(77.27%); Chart-3. The children age is up to 18 years according to WHO and UNICEF.

Table-1

N-1,16,128

Incidence of PrAS in outpatient department:

Serial Number	Study Group	Result	Percentage
1	Total Outdoor Patient	1,16,128.	
2	PrAS Patient	44.	0.05%

Table-2

N-2,738.

Incidence of PrAS in routine operative inpatient department:

Serial Number	Study Group	Result	Percentage
1	Total operation Executed	2,738.	
2	PrAS Patient	44.	1.61%

Chart-1

Methods of operation:

(N-44; Traditional Sinusectomy-40; Extended Supra auricular Approach-4)

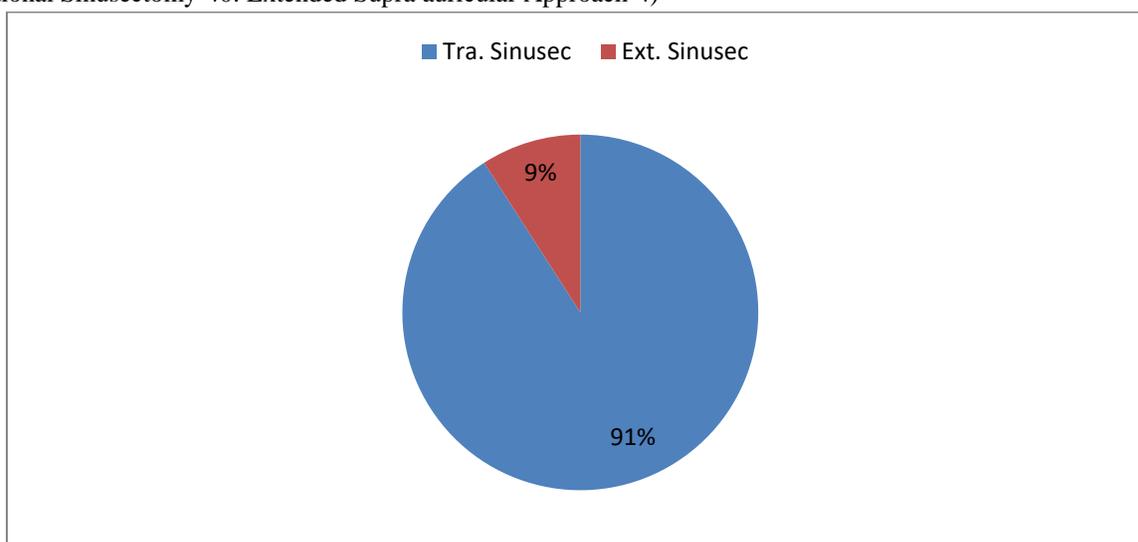


Table-3

N-44

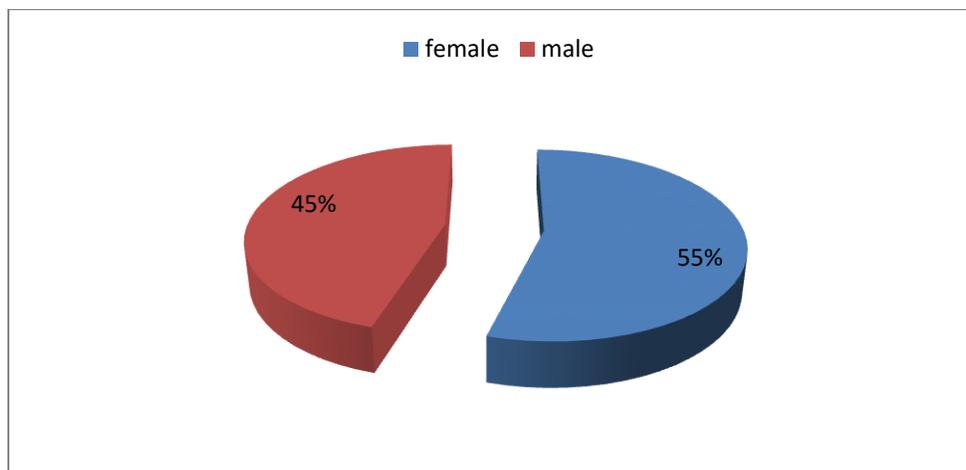
Relapse after operation:

Serial Number	Study Group	Result	Percentage
1	PrAS Patient	44	
2	Relapse(Trad. Sinusectomy proc.)	2	4.54%.

Chart-2

Gender Issuance:

(N-44; Female-24(54.54%): Male-20(45.54%)



Anatomical site allocation of PrAS at right side was 22(50%), left side was 20(45.45%), bilateral was 2(4.55%) whereas unilateral was 42(95.45%); Table-4. Presenting features of PrAS were non-infected putty like discharge was 21(47.72%), Infected, painful swelling with abscess formation was 19(43.18%) and symptomless pit was 4(9.1%); Chart-4. All investigation revealed normal hearing and normal renal function of all our cases.

Table-4

N-44

Anatomical Site Allocation:

serial number	Study group	result	percentage
1	Right	22	50%
2	Left	20	45.45%
3	Bilateral	02	4.55%
4	Unilateral	42	95.45%

Chart-3

Age Distribution

(N-44; Children-34[Up to age 18 years]:Adult-10Above 18 yr.)

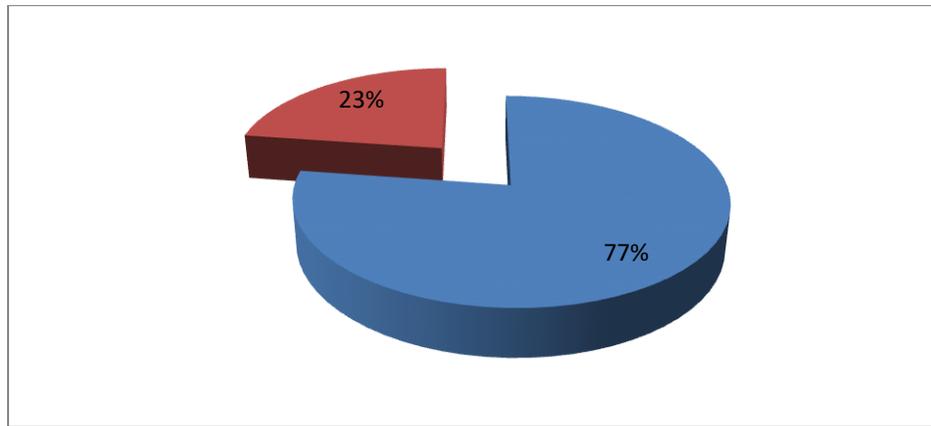
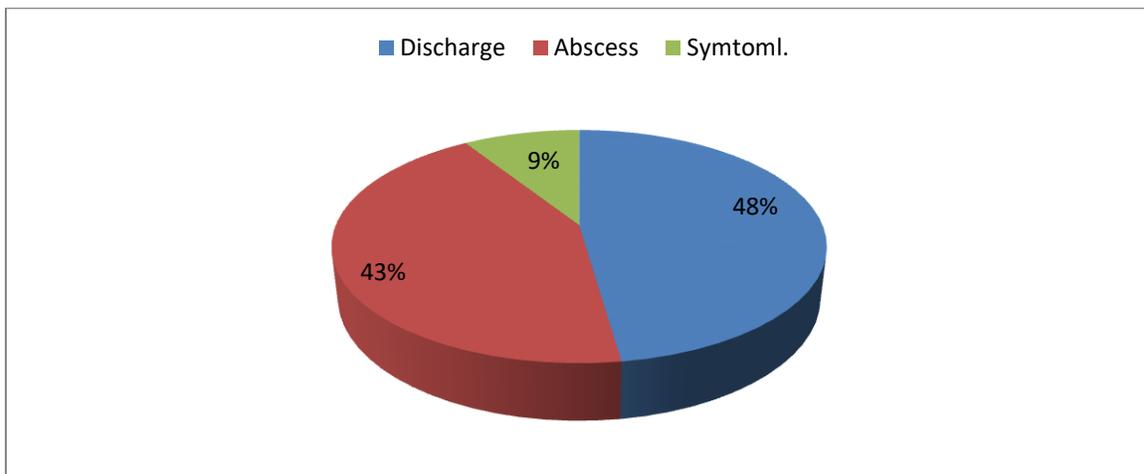


Chart-4

Presenting Features:

(N-44; Putty like Discharge-21:Infected Abscess:19:Symptomless-4)



Discussion:

The auricle or pinna has a very complex embryological formation and the final place of migration occurs after many more differentiation. As a congenital malformation PrAS manifest like a small tattoo mark in front of external ear above or below the tragus near anterior limb of ascending helix. When it present below the tragal cartilage it may be present with other congenital anomalies or syndromes. Heusinger , an eminent surgeon first noticed in 1864 that PrAS is a common congenital disorder.⁸ Some studies shows that the sinus develops as a result of isolated ectodermal folding during embryological development of pinna.⁹ Incidence of PrAS in our study group was 0.05% to 1.61% which is near to incidence of USA(0.9% to 0.1%), UK (0.9%) and Taiwan(1.6% to 2.5%) but reverse to our study in different parts of Africa(04% to 10%).¹⁰ Gender epidemiology shows female preponderance in our study which is supported by Curric et al series.¹¹ Some other studies shows male and female are equally affected.¹² Further records appraisalment that males are affected more than females which are just contrary our study.¹³ As congenital malformation, children are more enduring the PrAS. In our recitation more than one third were enduring from PrAS which was acceptance by all other series.¹⁴ More than 95% was unilateral in our discussion which is towards to Scheinfeld NS study.¹⁵ Right side

was more common than left which were also appraised by Paulozzi LJ et al series.¹⁶ Presenting complaints were non infected putty like discharge spontaneously or pressing over the opening of sinus were 21, infected painful swelling with the abscess formation were 19 which was backed by Chang PH et al series.¹⁷ Whereas asymptomatic were 4 which also acceptance by Huang XY perusal.¹⁸ In our discussion hearing impairment or renal pathology were not recorded which was supported by Adegbiyi WA et al study.¹⁹ About treatment of patient, 40 were treated followed by traditional sinusectomy procedure which was practiced by almost all our surgeons but extended supra auricular approach for sinusectomy was practiced by few surgeon which was only 4 in our study were clench by Mohamed EG et al discussion.²⁰ Relapse after operation was 2(4.54%) patient which was occurred same in Gan EC practice.²¹ These two patients were treated by traditional sinusectomy procedure. The relapse cases were managed by extended supra auricular approach of sinusectomy.²² The cases were healthy after post operative period.

Conclusion:

Most of our patient was children and presenting with various types of clinical features. Most of them were unilateral and in the right side of the external ear. Surgical excision is the mainstay of the treatment of symptomatic PrAS. The traditional approach of sinusectomy was yet practiced by most of our surgeon in which relapsing was more than extended supra auricular approach. But supra auricular approach was used for recurrence cases only. So it is recommended to make the supra auricular approach of sinusectomy procedure as a primary treatment of all cases. It may be make the trainees and young surgeons familiar with the procedure and technique and interested to execute the surgical method for their PrAS patient.

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