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**EDITORIAL**

# PREAURICULAR SINUS

The preauricular sinus is one of the most common congenital malformation of pinna reported by Van Heusinger in 1864[1]. The preauricular sinus is also termed as preauricular fistula, preauricular pit, preauricular tract and preauricular cyst.

Preauricular sinus is inherited in an incomplete autosomal dominant pattern. The sinus may be unilateral in fifty to seventy five percent cases and left side is more commonly involved .

The pinna develops from the first and second branchial arches which comenses on 38th day of foetal life. Three nodules of mesenchymal proliferation develop from each arch. Which are covered with ectoderm. These branchial arches are separated by ectodermal banchial clefts externally and endodermal pharyngeal pouches internally. These noduls are termed as Hillock's of His.

These arches fuse and form the pinna which is complete by 20th week. The first arch contributes

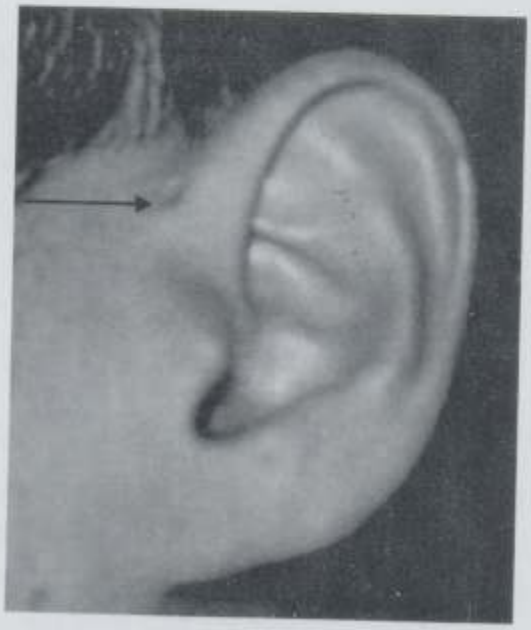

**Fig. 1: Congenital Preauricular Sinus**

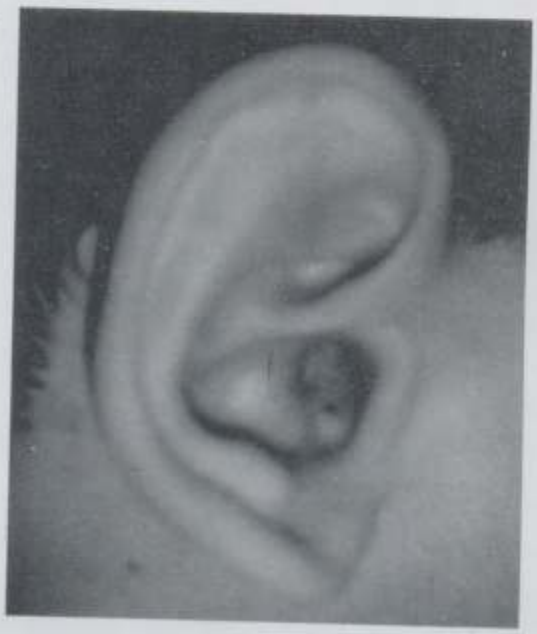

**Fig. 2: Preauricular Sinus in Inferior Canal Wall**

| Syndrome | Clinical features |
|---|---|
| Branchio-Oto-Renal (BOR) Syndrome [4, 5] | Structural defects of the outer, middle, or inner ear and associated conductive, sensorieneural or mixed hearing loss, preauricular sinus, renal anomalies, lateral cervical fistulas, cysts, or sinuses; and/or nasolacrimal duct stenosis or fistulas |
| Branchio-Oto-Ureteral Syndrome [6] | Sensorineural hearing loss, preauricular sinus and duplication of ureters or bifid renal pelvices |
| Branchio-Otic-Syndrome [7] | Branchial anomalies, preauricular sinus, and hearing loss with no renal dysplasia |
| Branchio-Oto-Costal Syndrome [8] | Conductive deafness, bilateral commissural lip and preauricular sinuses, unilateral branchial fistula and rib anomalies |
| Tetralogy of Fallot and clinodactyly[9] | Tetralogy of Fallot, characteristic appearance, preauricular sinus and fifth finger clinodactyly |
| Steatocytoma multiplex [10, 11] | Facial steatocytoma multiplex associated with pilar cyst and bilateral preauricular sinuses |
| Rare syndrome of bilateral defects [12] | Bilateal cervicalbranchial sinuses, bilateral preauricular sinuses, bilateral hearing impairment |
| The deafness, preauricular sinus, external ear anomaly and commissural lip pit syndrome [13] | commissural lip pits, pinna dysplasia, preauricular sinus and mixed or conductive hearing loss |
| Cat Eye Syndrome [14] | Coloboma of the iris, preauricular sinus, imperforate anus and down slanting palpebral fissures |
| Waardenburg's Syndrome [15] | Typical features of Waaredenburg's syndrome with exception of the white forelock (poliosis), but with additional anomalies including syndactyly, absence of the fourth left toe, bilateral preauricular sinus and dacrocystitis |
| Floating-Harbour Syndrome of unusual phenotype [16] | Floating-Harbour syndrome, trigonocephaly due to metopic suture synostosis, preauricular sinus, hypoplastic thumb, subluxated radial head and Sprengel deformity |
| Trisomy 22 mosaicism (46,XX/47, XX. +2) restricted to skin fibroblast [17] | Growth failure, microcephaly, hypertelorism, epicanthal fold, preauricular sinus, congential heart defect, hypotonia and delayed development |
| Full Trisomy 22 [18] | Primitive and low set ears, bilateral preauricular sinues, broad nasal ridge, antimongoloid palpebral fissures, macroglossia, enlarged sublingual glands, cleft palate, micrognathia, clinodactyly of the fifth finger, hypoplastic finger nails, hypoplastic genitalia, short lower limbs, bilateral sandal gap and deep planter furrows |

**Syndromes associated with preauricular sinus[2]**

to the tragus and part of anterior crus of helix. Congenital aural sinus or fistula are formed during devlopment by virtue of trap of squamous epithelium. Commonly found in preauricular region anterior to ascending crus of helix. It may also be found opening at the anterior end of superior part of sterno -cleido mastoid muscle or in the floor of external auditory canal(fig.2). Post auricular sinus having this opening on the aural cartilage has been observed usually located posterior to an imaginary line that connects the tragus with the posterior margin of the ascending

| | Male | Female | Total |
|---|---|---|---|
| 1-5 years - | 3 | 4 | 7 |
| 5-10 years- | 2 | 7 | 9 |
| 10-15 years- | 6 | 13 | 19 |
| 15-20 years- | 11 | 24 | 35 |
| 20 years above | 1 | 3 | 4 |
| | **23** | **51** | **74** |

**Table I : Agewise Distribution**

| Silent | Cellulitis | Ulcer | Total |
|---|---|---|---|
| 49 | 18 | 8 | 75 |
| Anterior | Posterior | Inferior | Sinus |
| 71 | 2 | 1 | 74 |

**Table II : Type of Sinus**

| Hearing In normal limits mild / severe | | Sensoneural hearing loss mild/ severe | |
|---|---|---|---|
| 5 | Nil | 1 | Nil |

**Table III : Associated Hearing Loss**

| | Unilateral | Bilalateral | Total |
|---|---|---|---|
| Male | 18 | 5 | 23 |
| Female | 39 | 12 | 51 |
| Total | **57** | **17** | **74** |

**Table IV : Laterality of Sinus Table**

| | | |
|---|---|---|
| 1. | Impacted third molar tooth Unilateral | 1 |
| 2. | Cleft Palate | – |
| 3. | Calculi | – |
| 4. | Facial Nerve Involvement | – |
| 5. | Facial Deformity | 1 |

**Table V : Associated anomalies**

limb of the helix unlike the classified type those fistulous tracks which were directed mostly in the direction of Pits.

Research undertaken in china has mapped a possible locus for congenital preauricular fistula to chromosome 8q 11.1-q13.3 The worked used linkage analysis of a family comprising affected and non affected members[21].

The sinus track vary in length, may be simple or of multiple branching. The sinus is intimately related to perichondrium of aural cartilage. A sinogram may help in assessing the depth of sinus. (Fig. 3)

The most common pathogens reported are staphylococcal species, Proteus, streptococcus and Peptococus species[5, 19].

All these sinuses are always lateral and superficial to the facial nerve and the parotid gland.

These sinuses are usually asymptomatic for many years. The patient are usually adult females attending for foul smelling discharge with incidence of cellulitis or ulcer at preauriculer region with recurrent infection. It may lead to disfigurement or scarring.

**MATERIAL AND METHOD**

The retrospective review of record was done from 1982 to 2010 and record was searched specifically for family history of sinus , diabetes, renal involvement,associated


**Fig. 3 Sinogram of Preauricular Sinus**

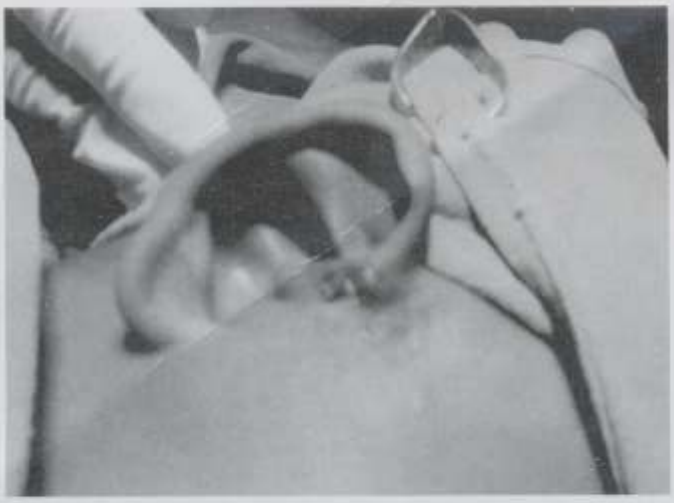

**Fig. 4 Elliptical Incision around Preauricular sinus**

congenital deformity, conductive or senso neural deafness, Including post operative result and follow up. During the compilation of record the photographs of surgical technique were also preserved.

**RESULTS**

A total of 74 cases have been recorded between 1982 to 2010. Male female ratio was 2.2: 1 age wise distribution is shown in table I. The sinus was silent reported in 49 outpatient cases while cellulitis was present in 17 cases and ulcer in eight cases. Hearing was involved in six cases which was mild and conductive in nature in five cases seen in paediatric age group. One case of mixed hearing loss was seen. Fifty seven cases were unilateral and in associated anomalies impacted third molar tooth was seen in one case and facial deformity in one case (TableV)

**SURGICAL TECHNIQUE**

After usual cleaning the part before part preparation 1 : 30,000 local anaesthesia and adrenaline, quantity one ml is infiltrated in the surrounding area using 26 gauze needle. Methylene blue is injected from the sinus opening by 1.0 ml tuberculin syringe after cutting the sharp edge of its needle. Usual preoperative preparation and drapping done.

An ellipticle incision is given all around the opening more towards the direction of tract (Fig.4). From the beginning the lateral margin of both side of skin is undermined, tract is followed by visualization of methylene blue and probe (24 no needle cut off from disposable needle non sharp end and held in curve mosquito forcep. (Fig.5) liberal use of fine bipolar cutting is used and final dissection of base is carried out by mono polar cutting (diathermy). To reach the end of sinus it is always mandatory to remove a piece of cartilage[20]. The wound is closed with 4/o silk suture and 10 mm needle. Pressure dressing applied for a day.

In post oprative care antibiotic analgesic coverage is provided for ten days.

The total operation is performed under magnification using microscope and

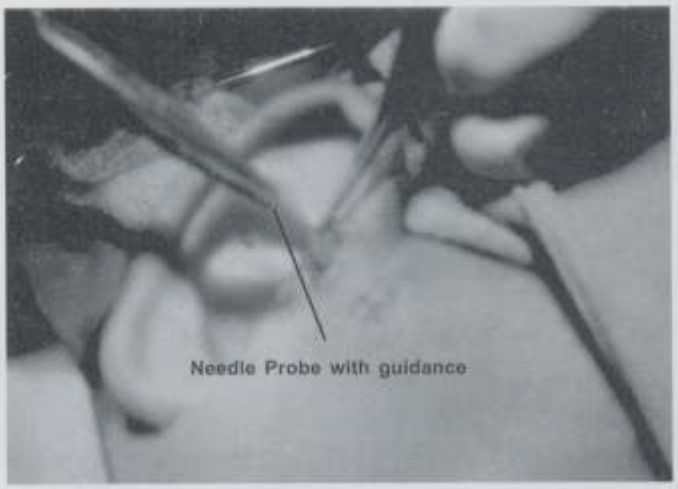


**Fig. 5 Exenteration of Sac**

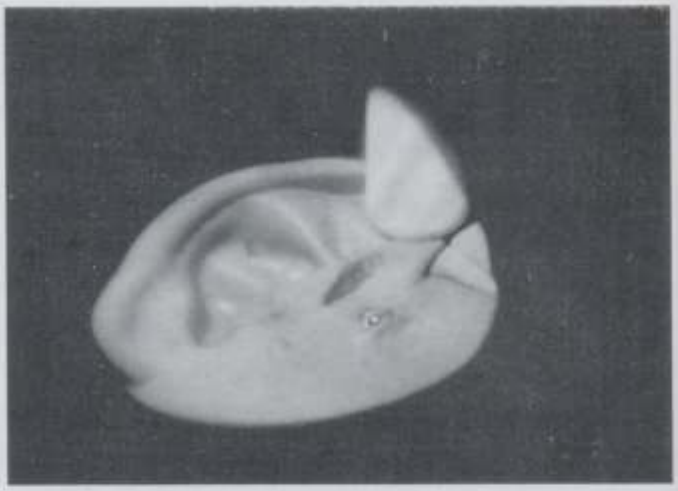

**Fig. 6 Complete Sac Exenteration**

microsuction tips,. Blood less magnified view is the key of successful surgery .

**DISCUSSION**

The recurrence rate of surgical exenteration of preauricular sinus is variable, varies from nil to 3.7% to 42%, author had used above mentioned technique which has been extremely rewarding with just one failure due to local post operative sepsis and ultimatly healed

Author had one case where the sinus presented assubcutaneous cyst , multipronged expansion like cholesteatoma .The complete sac could be removed with patient surgical removal under microscope and general anaesthesia.

*Supra-auricular approach* involving post auricular extension of the elliptical incision carried out up to temporal fascia. All the tissue superfecial to fascia and cartilage attached to sinus tract is removed in to. The sinus tract is opened and total debridement is done. Baatenburg has described a new procedure termed as inside out technique,in this sinus is viewed simultaneously from inside as well as from outside . Each branching tract is followed until every dead end is identified and excised. Baatenburg reported hundred percent success rate.[22] Various authors have observed better result with this techniques but author have performed simple sinusectomy by ellepticle incision which has been extremely rewarding.

**CONCLUSION**

Blood less surgical field and exenteration under microscope with demarcation by methylene blue and using a probe results in success to almost hundred percent. The audiometry should be performed in all cases. Apart from thorough examination for any congenital malformation if any the renal function should be evaluated including ultrasonographic study.

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**Editor**

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