

## AN INNOVATIVE METHOD OF OSSICULOPLASTY

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### ARTICLE INFO

#### Article History:

Received 11<sup>th</sup> May, 2019  
Received in revised form  
06<sup>th</sup> June, 2019  
Accepted 03<sup>rd</sup> July, 2019  
Published online 28<sup>th</sup> August, 2019

#### Key Words:

Preauricular tag,  
Ossiculoplasty.

### ABSTRACT

Ossiculoplasty is a common surgery in otolaryngology. It is described to be of different types and using various materials. Commonly used materials are reshaped ossicles, refashioned cartilage from concha or septum, bone as well as various synthetic materials like gold titanium. Each of them have variable outcome and choice of them are dependent on the individual case and surgeon preference. We describe a case of 20 years old girl with bilateral congenital conductive loss with preauricular tags, ossiculoplasty was done for her using the preauricular tag cartilage. And then hearing results were evaluated.

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**Citation:** Dr. Nilam U. Sathe, Dr. Bhavna Narang, Dr. Kamini Chavan and Dr. Dhanashree Chiplunkar. 2019. "An innovative method of ossiculoplasty", *International Journal of Development Research*, 09, (08), 29073-29075.

## INTRODUCTION

Cartilage ossiculoplasty using a tragal, choncal and septal cartilage has been an age old method of ossiculoplasty. A separate approach to harvest the cartilage is required. We had a case of congenital conductive hearing loss bilateral, whose tympanum was explored. We found partially developed ossicles with a discontinuity of the chain. The ossiculoplasty was done using the cartilage of the preauricular tag, which was excised in the same surgery.

### Case report

A 20 years old female presented to the ENT OPD with bilateral hearing loss since birth. The patient had severe conductive hearing loss due to which she was unable to carry out her day to day activity. On examination she had pre auricular tags bilaterally with normal tympanic membranes. Tuning fork tests were negative for all three frequencies on Rinne's test and centralised Weber's test. Patient could respond to Barany's noise box. Pure tone audiogram showed bilateral severe conductive hearing loss with an average of 60 dB (Figure 1).

An Impedance audiometry was done which showed Ad type curve on both sides with stapedia reflex (Figure 2). A HRCT Scan of temporal bone was done which showed bilateral ossicular chain deformity, with normal mastoid, middle ear cleft and inner ear anatomy. Exploratory tympanotomy with excision of preauricular tags was planned for the right ear. Preoperatively, malleus was normal, lenticular process of incus was absent, stapes had only single crura. Thus there was no continuity of the ossicular chain, though mobility of incudo-malleal joint was present and on manipulation of stapes suprastructure, round window reflex was present. Cartilage from the excised preauricular tag was harvested (Figure 3, Figure 4) and was used to obtain continuity of the ossicular chain (Figure 5). Round window reflex was adequately elicited. Postoperatively, patient when examined six weeks later, on the operated side Rinne's was positive for 512 and 1024 frequencies. Pure tone audiogram showed a hearing threshold of 20 Db for the right ear (Figure 6).

## DISCUSSION

Ossiculoplasty is an age old ENT surgery, dates back to 1901 when first attempt to obtain connectivity between tympanic membrane and oval window is documented. Wullestein in 1951 reconstructed the chain using Vinyl acrylic. Hall and Rytznner were first to use autologous incus. Austin classified

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ossicular defects and described interposition. Utech in 1960 was first to use an auricular cartilage for reconstruction. Jansen in 1963 used tragal and septal cartilage for interposition.



Figure 4. Showing Cartilage harvested from preauricular tag

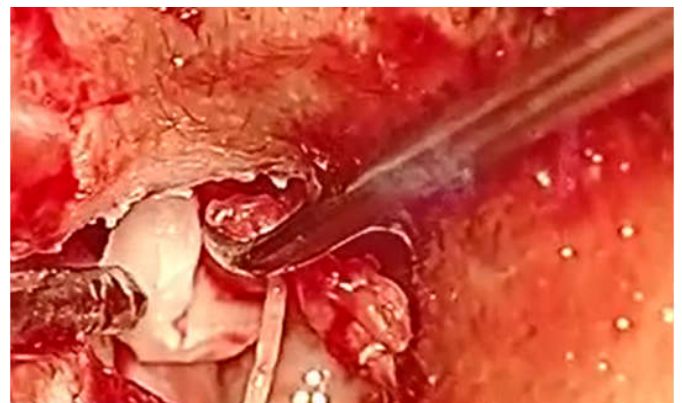


Figure 5. Showing cartilage ossiculoplasty

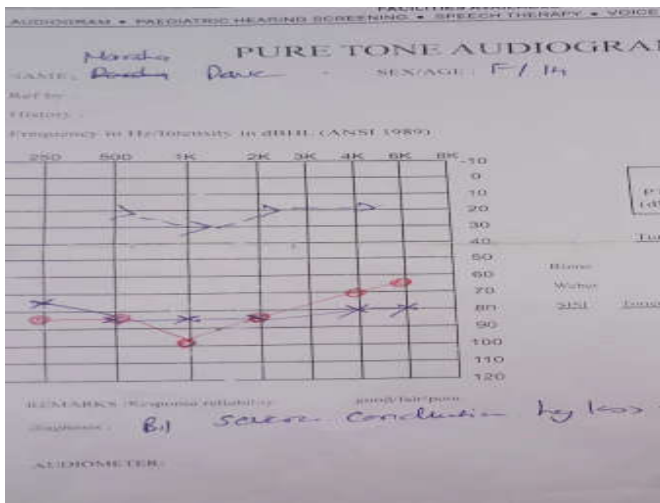


Figure 1. Pure Tone audiogram showing Bilateral Moderate conductive hearing Loss

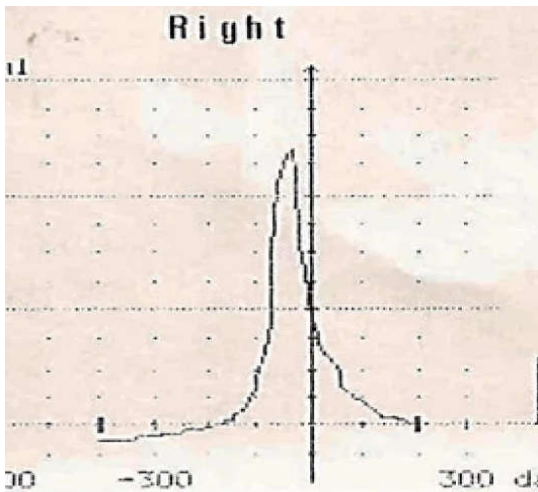


Figure 2. Impedance audiometry showing Ad type curve on both sides with stapedial reflex



Figure 3. Showing excised preauricular tag

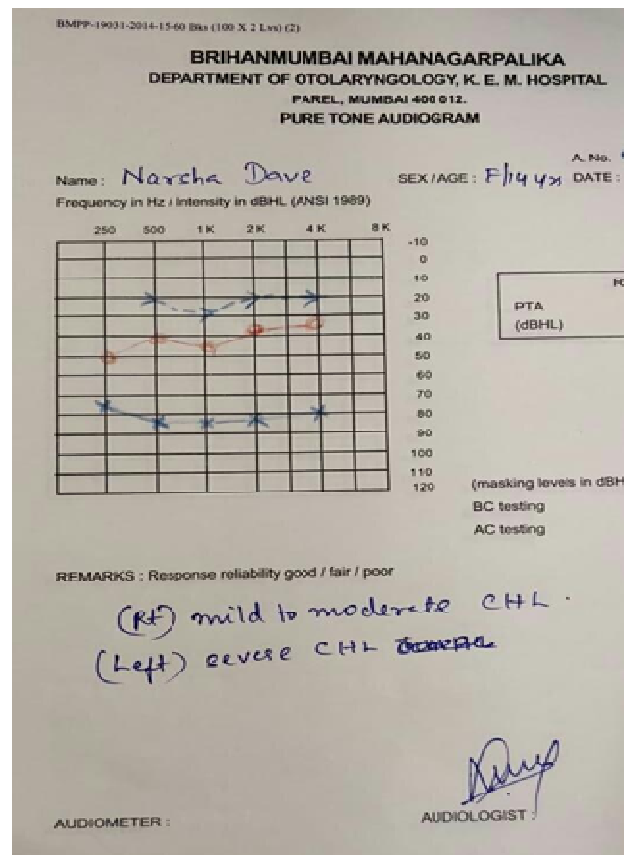


Figure 6. Postoperative Pure Tone Audiogram with improved Hearing in the Right Ear

Various synthetic materials like hydroxyapatite, bioactive materials etc were further introduced. Cartilage usually used are harvested from Concha or tragus or septum, which is a preferred interposition material in view of its good hearing outcome, ease to refashion, inert nature and use and most important its availability. In our case, we did a Wullestein type II b ossiculoplasty. We used the cartilaginous part of the excised preauricular tag for interposition between incus and stapes head to obtain continuity of the ossicular chain. As our approach primarily was permeal, we avoided an extra incision for harvesting the tragal or auricular cartilage. It was an innovative method of reconstruction. The results obtained were as good as with cartilage harvested from other sites, with an improvement of hearing of around 40 dB.

### Conclusion

- The method describes the use of accessory cartilage of lobule for ossiculoplasty.
- In addition to tragal cartilage and conchal cartilage even accessory cartilage of lobule can be utilised for ossiculoplasty.
- The ossiculoplasty material is achieved from the same patient hence there is no risk of HIV transmission unlike homografts.
- It achieves good results by improving the hearing.

**Financial Support and sponsorships:** Nil.

No conflict of interest

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