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E-mail: sukhaura@gmail.com**PALISADE CARTILAGE MYRINGOPLASTY****Key words:** palisade tympanoplasty, cartilage myringoplasty**INTRODUCTION:**

In certain types of perforation of tympanic membrane (TM) graft uptake results of myringoplasty are poorer as compared to others. Total or subtotal and anterior perforations of TM, revision procedures, surgery in wet ears, patients with abnormal opposite ears, ears with extensive tympanosclerosis and paediatric age group are considered negative prognostic factors for tympanoplasty. In such high risk situations, cartilage in various shapes are increasingly being used for repair of TM defects¹ with up to 100% uptake results.² Cartilage as palisades for repair of TM are commonly being used³ for myringoplasty and in atelectatic and cholesteatomatous ears especially in children.⁴ Advantages of cartilage as graft are its low metabolic rate with nourishment by diffusion,⁵ its stability and resistance to negative pressure and infection in middle ear.⁶ Its vibration characteristics especially if thinned or used in the form of islands or palisades⁷ are close to normal TM with comparable hearing results.^{8,9} Palisade reconstruction of TM facilitates its mobility and decreases the acoustic impedance in comparison with larger pieces of cartilages.⁹

PATIENT SELECTION AND PRE-OPERATIVE PREPARATION:

Large perforations of TM with more than 50 % defect in patients of 13 and more years of age were selected for myringoplasty. Oral ciprofloxacin 500 milligram 12 hourly was started one day prior to surgery which was continued to till seventh day postoperatively. Patients were sedated by intramuscular injection of 50 milligrams of pethidine and 25 milligrams of phenergan or less depending upon the body weight of the patient about 30 to 45 minutes pre-operatively.

SURGICAL PROCEDURE:

Surgery was performed under local anaesthesia with about 5-10 ml of 2% xylocaine combined with 1: 200,000 of adrenaline depending upon the approach selected. Four quadrant local injection was given in the canal and around tragus. About 2cm vertical incision was given in the anterior wall of external auditory canal using a number 15 surgical blade starting from incisura terminalis down to upper aspect of inter-tragic notch about 3 mm medial to the tip of the tragus through the tragal cartilage in a single stroke. Either a skin hook or right angled retractor was used to retract the tissues anteriorly by one hand and a small suction tip on the other hand was used to clear the blood by the assistant. Surgeon using non-toothed forceps on one hand and fine graft scissors on the other first elevated the flap off the attachment from the canal side of the tragal cartilage keeping the perichondrium intact. Care was taken not to tear the skin of the

canal while elevating the flap. Then tissues from anterior aspect of tragal cartilage were dissected off the cartilage here again taking care not to damage the perichondrium. Cartilage becomes free at incisura terminalis. (Figure 1)

Fig: 1. Cartilage graft being harvested



When cartilage sized of about 2cm in length and about 1.5 cm in breadth was exposed it was cut either with knife or graft scissors starting superiorly at incisura terminalis and as medial as possible in the canal side. Like this an adequate sized graft was harvested. Incision was closed by interrupted sutures of 4/0 prolene. Keeping it over the graft block perichondrium from the cartilage in its anterior or the surface away from the canal was elevated using sharp septal or any small perichondrial elevator starting from the end cut from near the inter-tragic notch. (Figure 2)

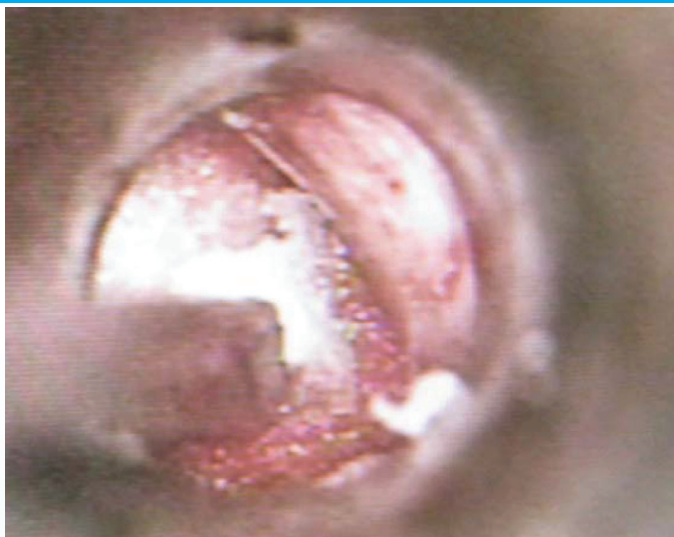
As usual the bed was prepared in the middle ear by freshening the margins of TM and by elevation of the tympanomeatal flap either by perimeatal or post-auricular approach. Malleus handle where present was well skeletonized. Haemostasis in the middle ear was achieved by use of wet cotton balls soaked with pure adrenaline. Dry gelfoam pieces were placed in the middle ear. Palisades of cartilage of different length and breadth and shapes as needed were prepared. They were placed one by one in the middle ear with intact perichondrial sides facing laterally to allow epithelialization⁸ tucking under the margin of

Fig: 2. Perichondrium being elevated off the cartilage.



remnant of TM or medial to osseous annular rim as in underlay fashion but parallel to handle of malleus anterior and posterior to it. Surface of the cartilage without perichondrium faced medially to avoid adhesions to the promontory⁹. First a semilunar shaped palisade of about 2-3 mm breadth in its maximum dimension was prepared and placed anteriorly near the Eustachian tube area or pro-tympanum. (Figure 3)

Fig: 3. First cartilage palisade in pro-tympanum



Second piece was placed parallel and anterior to handle of malleus in contact with the edge of the first like fitting of tiles on the bathroom floor. Third piece was placed like the second one but posterior to the handle of malleus. Fourth appropriately sized and shaped if needed was placed most posteriorly. (Figure 4) Sometimes a very small gap present between the second and the third below the handle of malleus was filled with a small piece of palisade cartilage. Tympanomeatal flap was then replaced and was medialized slightly to cover some parts of palisades. Canal was packed with wet gelfoam pieces soaked in ciprofloxacin ear drops. Ribbon pack made of umbilical cord tier medicated with bismuth iodide paraffin paste was kept in the canal. Ear was bandaged with mastoid bandage.

POST-OPERATIVE CARE AND FOLLOW UP:

Antibiotic ciprofloxacin 500 mgs 12 hourly was given for seven days postoperatively. Stiches were cut and ribbon pack was removed on the sixth post-operative day. After removal of pack chloramphenicol with steroid ear drop was advised for about 2 weeks period and follow up was done at eight weeks or after when graft status (Figure 6) and hearing were assessed.

Fig: 4. Diagrammatic representation of cartilage palisades in place

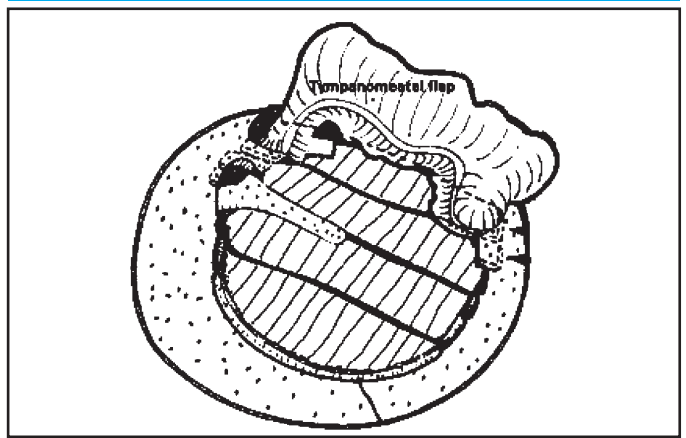


Fig: 5. Tympanic membrane at 8 weeks post-operative.



RESULTS:

As this study is going on in the Department of Otorhinolaryngology & Head and neck surgery details are yet to be published however preliminary results from both anatomical and functional standpoint are very encouraging.

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