

ROLE OF CERVICOMASTOID AND RETROAURICULAR TUBE PEDICLES IN PINNA RECONSTRUCTION

K. L. TAKKAR AND J. L. SRIVASTAVA

SUMMARY

The role of cervicomastoid and retroauricular tube pedicles in the reconstruction of pinna—either congenitally deformed or traumatically severed is presented. The disadvantages of the conventional procedure of burying carved costal cartilages under the retroauricular skin and producing a pinna from it at a future date have been brought out. The advantages of the two flaps used by us on ten patients have been enumerated. The pinna thus formed was found to be nearer to normal shape and texture and yet the described procedure was found not to be unduly time consuming or risky.

Introduction

Reconstruction of pinna poses a challenge to the craftsmanship of the plastic surgeon and demands innovation and creativity. Burying of carved costal cartilage under the retroauricular skin as a skeleton of a perspective pinna is a recognised procedure for pinna reconstruction. However, non-availability of adequate dimensions of hairless retroauricular skin may restrict the overall size of pinna achieved and may require augmentation. Secondly, the thick retroauricular skin as an envelope may mask essential morphological features like a well-rolled out helical rim. Such a lacuna may invariably be felt when pinna is reconstructed for various reasons like microtia, congenital malformations like cup ear or for varying degrees of post traumatic losses. Reconstruction of lobule from local tissues by conventional methods may result in a lobule with scarred surface or scarred borders which are not smooth and round. With all these disadvantages in mind, the role of cervicomastoid and retroauricular tube pedicle in the reconstruction of pinna in certain congenital abnormalities and post traumatic defects has been studied.

Material and Methods

Ten cases of abnormal pinna either congenital or traumatically acquired were chosen for this study. Of them 3 were microtias and 1 had cup ear deformity. Amongst the post-traumatic cases 1 had subtotal loss of pinna, 2 had loss of helix and lobule and 3 had triangular full thickness loss of upper part of pinna.

All 3 cases of microtia underwent total reconstruction of pinna from the retroauricular tissues after burying a frame work carved from the costal cartilages. Pinna thus achieved was later augmented with cervicomastoid tube pedicle (Fig. 1 & 2).

For the cup ear deformity Z plasty was done at crus helix to correct its hood. This was followed by augmentation and helical rim reconstruction by a retroauricular tube pedicle (Fig. 3 & 4). The same flap was also used in the repair of helix and lobule in 2 other cases (Fig. 5 & 6).

In the patient with subtotal loss of pinna reconstruction was primarily carried out by conventional means of burying a carved costal cartilage in the retroauricular tissue but the resultant ear was too small and so was augmented by a cervicomastoid tube pedicle.



Fig. 1. Total pinna reconstruction in a case of Microtia, showing cervicomastoid tube pedicle.



Fig. 2. Same patient following augmentation and helical reconstruction; patient awaits finer adjustments.



Fig. 3. Patient of cup ear deformity—Retroauricular tube pedicle measuring 2.5 cm \times 7.5 cm.



Fig. 4. Final result.

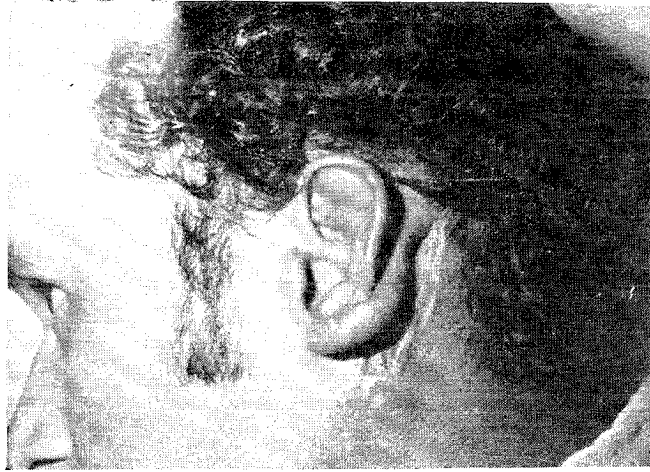


Fig. 5. Subtotal loss of lobule and helical rim; under reconstruction with a retroauricular tube pedicle.



Fig. 6. Showing the result after reconstruction.

Observations & Results

I. CERVICOMASTOID TUBE PEDICLES

In cases requiring total or subtotal reconstruction like in Microtia and subtotal traumatic loss basic structure of pinna could be reconstructed by burying a carved costal cartilage under the retroauricular hairless skin. However, it was felt that in all the four cases, the pinna thus achieved was small and the helix was not so well formed. A random cervical tube pedicle measuring 2.5-7.5 cm with a proximal pedicle in the mastoid region was

raised obliquely across the hairless submandibular area in the females. In males it was raised vertically downwards confining to the hairless area. Cervicomastoid tube pedicle (Fig. 1 & 2) was found very useful in these cases because:

1. It effectively augmented the size of the pinna.
2. It provided nicely rolled-out helical rim.
3. Inset after incising the seem border gave a groove along the suture line which simulated the normal groove

- present on the inside of helical rim.
4. Colour and texture wise it matched well.
 5. Cervicomastoid tube pedicle could be raised without delay upto a ratio of 1:3 and initial inset achievable was almost 100%.
 6. The average time period for complete transfer was about seven weeks.
 7. Procedure was found to be very safe. There was no necrosis in any one of the four cases it was used.
 8. Donor area scar was negligible and well concealed in female subjects.

II. RETROAURICULAR TUBE PEDICLE

It is a vertical tube pedicle usually 2.5×7.8 cm with upper pedicle well within the superior hair bearing retroauricular scalp and lower one well below the mastoid region

into the cervical hairless area. Retroauricular tube was used in six patients for augmentation and helical reconstruction in cup ear, in traumatic loss of helix and lobule and in triangular defects of the upper pinna upto 2.5 cms in width. This tube pedicle was found to have all the advantages of cervicomastoid tube pedicle. However, certain special merits of retroauricular tube pedicle are as follows:

1. In the reconstruction of major losses of the lobule and the helix, it provides an excellent colour match and texture both for the helix and the lobule which is much better than that of cervicomastoid tube. This is so because the retroauricular portion of the tube pedicle provides the required stiffness and obviates for cartilagenous support. The cervical portion of the tube provides optimum suppleness and bulk to the

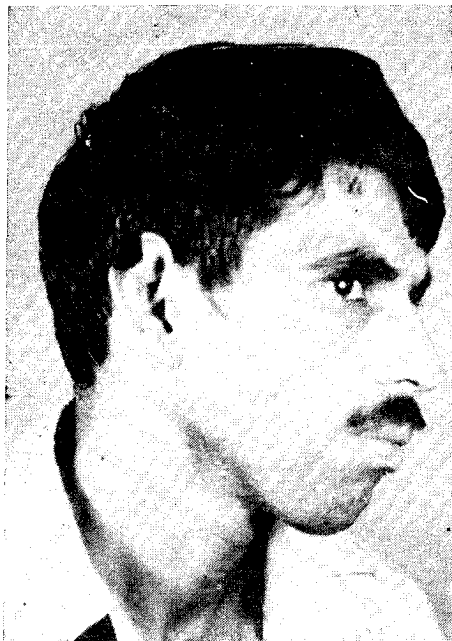


Fig. 7. Post traumatic loss upper part of pinna.



Fig. 8. Retroauricular tube pedicle used for reconstruction of the defect in the pinna.

reconstructed lobule. Colour wise the retroauricular skin matches the pinna best. It also creates nice rounded borders of the lobule and scars of the inset are well concealed at the junction of the lobule and the body of pinna (Fig. 5 & 6).

2. When used for the upper pinna defects compared to direct retroauricular flaps, the insets with the tube pedicle both anterior and posterior are more comfortable due to adequacy of the amount of tissue. The reconstruction is achieved without reducing the cephalo-auricular angle in the upper part which is a marked feature when such defects are repaired with a direct retroauricular flap (Fig. 7 & 8).
3. Donor area graft in the retroauricular area is excellent and scars are minimal and very well concealed.

Discussion

In cases with more advanced hair line, availability of narrow hairless retroauricular skin may compel a surgeon to deposit a cartilaginous frame work much smaller than that

of the opposite side. Inability to carve the normal furrows and ridges to precision and the thicker retroauricular skin envelope, mask the morphological features of the reconstructed pinna. Such cases evidently need augmentation of the reconstructed pinna which should also give a more normal looking helical rim. These negative features after total reconstruction are well looked after by a cervicomastoid or a retroauricular tube pedicle as is quite evident from the observations made earlier. In traumatic losses of the upper pinna by and large direct retroauricular flap provides quick method of reconstruction but often reduces the cephalo-auricular angle and produces asymmetry between the projection of two ears. In cases where helical rim is lost it is not possible to reproduce a well rolled-out helix with a direct flap. In the reconstruction of lobule generally conversant designs from local tissues are not fool-proof vascularity wise and it is difficult to achieve a supple lobule without a scarred surface or scarred free borders. Retroauricular tube provides both components i.e. supple lobule with nice round borders and optimum bulk from its cervical part and optimally stiff rolled-out helix from its retroauricular part.

REFERENCES

1. CONVERSE, J. M. : *Reconstructive plastic surgery*; Edited by John Marquis Converse, W. B. Saunders Company, Philadelphia, London, Toronto, 1977; 1671-1769.
2. JACKSON, I. T. : *Recent advances in plastic surgery*; Edited by IAN T. Jackson, Churchill Livingstone, Edinburgh, London, Melbourne and New York, 1981, 91-99.

The Authors

DR. K. L. TAKKAR, M.S., M.Ch., *Plastic Surgeon*. Department of Burns, Plastic and Maxillofacial Surgery, Safdarjang Hospital, New Delhi.

DR. J. L. SRIVASTAVA, M.S., M.Ch., *Senior Plastic Surgeon and Head*, Department of Burns, Plastic and Maxillofacial Surgery, Safdarjang Hospital, New Delhi.

Request for Reprints

DR. J. L. SRIVASTAVA, M.S., M.Ch., *Senior Plastic Surgeon and Head*, Department of Burns, Plastic and Maxillofacial Surgery, Safdarjang Hospital, New Delhi.