



**RECONSTRUCTION OF EAR USING HARVESTED CARTILAGE FROM AMPUTATED EAR AND TEMPORO-PARIETAL FASCIAL FLAP**

**JAHIR HUSSAIN KADERMOHIDEEN**

**Department of Plastic Reconstructive Surgery,  
STANLEY MEDICAL COLLEGE AND HOSPITAL**

**Abstract :**

A 35 year old lady presented with total avulsion of right ear .The avulsed ear was unfit for replantation. The cartilage framework was harvested from avulsed ear and banked in the right post auricular sub cutaneous pocket. After 6 months the banked cartilage was elevated and the right ear was reconstructed using pedicled temporo parietal fascial flap .

**Keyword :** Ear avulsion, post auricular pocket, banking of ear cartilage, ear reconstruction, temporo parietal fascial flap.

injuries and cannot withstand lengthy procedures or the microvascular expertise is not available<sup>7</sup>. In such situations the cartilage framework can be harvested from the avulsed ear and banked in a sub cutaneous pocket created in the post auricular region .This is a short procedure and can be done under local anaesthesia. After 3 to 6 months the ear can be reconstructed using the banked cartilage and the pedicled temporo parietal fascial flap. The totally avulsed ear reattached as a composite graft usually does not survive in our hot weather conditions.

**Introduction:**

When patients present with total ear avulsion, the options available are, replantation of the avulsed ear<sup>1</sup>, banking the ear cartilage in subcutaneous pocket for later reconstruction<sup>2-5</sup> and reattachment as composite graft<sup>6</sup>. Many times replantation of the avulsed ear is not possible because it is crushed and unfit for replantation or the patient has other associated

**Case report:**

This 35 year old lady sustained multiple injuries due to fall from two wheeler. She presented to our institute 6 hours after injury. On examination she had sustained total avulsion of the right ear with friction burns involving the right side of face. The amputated ear was not fit for replantation.



**FIG 1- AVULSED EAR**  
**FIG 2- AVULSED EAR**

#### **Pocketing of harvested ear cartilage**

The amputated ear was debrided. The cartilage was harvested using sharp dissection to excise the skin. The wound in the right auricular region was debrided and a pocket created in the subcutaneous plane in the post auricular region. The harvested cartilage was banked in the pocket. Drain placed and wound was closed with simple sutures without tension. Drain was removed after 2 days. The wound healed uneventfully.



**FIG 3- HARVESTED CARTILAGE**  
**FIG 4- HARVESTED CARTILAGE**



**FIG 5- POST AVULSION WOUND**



**FIG 6- POCKETED CARTILAGE**

### **Ear reconstruction using the banked cartilage and pedicled temporo parietal fascial flap**

After 6 months the patient was taken up for ear reconstruction. Under general anaesthesia patient was placed in supine position with head turned towards the left side. The right post auricular region was explored through the previous scar. The pocketed cartilage was found intact and healthy. The cartilage was elevated and pedicled right temporo parietal fascial flap was used to reconstruct the right ear.

Superficial temporal pulsation was confirmed with Doppler. Lazy S incision marked over the right temporal region. Tumescence was infiltrated into the marked incision. Sub dermal flap was raised upto 8 cm from the superior auricular sulcus. Dissection proceeded cranial to caudal and about 8 by 6 cm superficial temporal fascial flap was raised upto superior auricular sulcus based on the superficial temporal artery. Hemostasis obtained and wound closed in layers.



**FIG 7- ELEVATED BANKED CARTILAGE AND THE RAISED TEMPOROPARIETAL FASCIA**



**FIG 8- CARTILAGE DRAPED WITH TEMPOROPARIETAL FASCIA**



**FIG 9- FINAL APPEARANCE OF THE RECONSTRUCTED EAR**

The superficial temporal fascia was draped around the elevated cartilage and split skin graft applied. Suction drain was kept. Sterile non compressive dressing applied. Drain removed after 1 week. The reconstructed ear healed well.

### **Discussion:**

The ear cartilaginous framework is difficult to reproduce. The salvage and use of denuded auricular cartilage were recommended by numerous surgeons<sup>4,8-10</sup>. Various techniques have been employed to preserve cartilage from an avulsed ear. The skin may be removed and the cartilage

buried in an abdominal pocket<sup>5</sup>, in a cervical pocket<sup>11</sup> or placed under the skin of the retroauricular 12 area .

With this technique the patient's own ear cartilage is used for ear reconstruction. We are avoiding Chest wall surgery to harvest rib cartilage for ear reconstruction. The duration of the surgery and the morbidity of the patient is reduced. A scar in the chest is avoided.

There is a chance of the cartilage getting absorbed when it is pocketed. However with good debridement and pocketing in the correct plane and without tension and with good drainage, we will be able to salvage the pocketed cartilage and use it for future reconstruction as done in this patient.

The temporoparietal fascial flap has been commonly used in head and neck reconstruction<sup>13</sup>. It has thin, broad, pliable character and also has good blood supply. The temporoparietal fascial flap has been commonly used for coverage of the auricular framework in primary and secondary cases<sup>14</sup>.

## Conclusion:

1. Gifford Jr GH. Replantation of severed part of an ear. *Plast Reconstr Surg*. 1972;49(2):202–203.
2. Spira M, Hardy SB. Management of the injured ear. *Am J Surg*. 1963;106:678–684.
3. Tanzer RC. The reconstruction of acquired defects of the ear. *Plast Reconstr Surg*. 1965;35:355–365.
4. Conway H, Neumann CG, et al. Reconstruction of the external ear. *Ann Surg*. 1948;128(2):226–239.

5. Sexton RP. Utilization of the amputated ear cartilage. *Plast Reconstr Surg (1946)*. 1955;15(5):419–422.

6. Templer J, Renner GJ. Injuries of the external ear. *Otolaryngol Clin North Am*. 1990;23(5):1003–1018.

7. Shelley OP, Villafane O, Watson SB. Successful partial ear replantation after prolonged ischaemia time. *Br J Plast Surg*. 2000;53(1):76–77.

8. Greeley PW. Reconstruction of the external ear. *US Naval Med Bull*. 1944;42:1323.

9. Musgrave RH, Garrett WS. Management of avulsion injuries of the external ear. *Plast Reconstr Surg*. 1967;40:534.

10. Suraci AJ. Plastic reconstruction of acquired defects of the ear. *Am J Surg*. 1944;66:196.

11. Conroy CC. Salvage of an amputated ear. *Plast Reconstr Surg*. 1972;49:564.

12. Bonanno PC, Converse JM. In: Kazanjian VH, Converse JM, eds. *Surgical treatment of facial injuries*. 3rd ed. Baltimore: Williams & Wilkins; 1974:1292.

13. Demirdover C, Sahin B, Vayyada H, Oztan HY. The versatile use of tenporoparietal fascial flap.

Int J Med Sci. 2011;8(5):362-8.

14. Panje WR, Morris MR. The temporoparietal fascia flap in head and neck reconstruction. Ear Nose Throat J. 1991;70:311–7.