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Single Stage Ear Lobule Reconstruction In Post Traumatic Ear Lobule Defects: Unilobed And Bilobed Post-Auricular Flaps

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Abstract:
Traumatic loss of the ear lobule presents significant aesthetic and psychosocial challenges due to its contribution to facial symmetry and self-perception. This case series describes three adult patients with partial to near-total lobule defects caused due to acute trauma reconstructed in single stage using unilobed or bilobed post-auricular flaps under local anaesthesia. Preoperative planning included contralateral ear templating, and flaps were elevated in the subcutaneous plane, preserving the greater auricular nerve. Donor sites were closed primarily. Standard post-operative care involved topical and systemic antibiotics, analgesics, and suture removal on day ten. All flaps demonstrated complete viability, except for one case of minor marginal necrosis, which resolved with conservative management. Patients achieved satisfactory lobule contour, good colour match, and minimal donor-site morbidity, with scars concealed behind the auricle. These findings support post-auricular flaps as a safe, reliable, and aesthetically favourable single-stage option for traumatic lobule reconstruction across diverse injury mechanisms.

Keywords: *Ear lobule reconstruction; traumatic ear injury; Post-auricular flaps; Ear lobule defects;*

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I. Introduction

The ear lobule contributes to facial balance and plays a role in cultural and cosmetic expression. Trauma resulting in partial or complete lobule loss can affect both appearance and daily activities such as wearing earrings. Traumatic partial loss of the ear lobule, hence, poses challenging aesthetic and functional concerns.[1,2]

Various methods have been described for the purpose of ear lobule reconstruction including:

- Post auricular skin flap [3]
- Reverse Omega technique [4]
- Freestyle perforator flap [5]
- Double-crossed skin flap [6]

This study describes 3 patients who sustained partial to near-total ear lobule loss. The defect was repaired under local anaesthesia for all patients with either a unilobed or bilobed postauricular flap in a single-stage procedure between February 2025 to January 2026. The postauricular flap, based on abundant local vascular supply and tissue similarity, provides an excellent reconstructive option for single or multi-stage repairs. Using tissue from post-auricular region offers a close match in colour and thickness to the original lobule, and the donor scar is placed in a naturally concealed area.

II. Methodology:

Patient Selection:

- Inclusion criteria: All three patients who were operated on were consenting adults with a traumatic partial/near-total loss of the ear lobule.
- Exclusion criteria: Non-consenting patients and individuals with damage to the post-auricular region were excluded from undergoing the procedure.

Pre-operative Planning:

- Patients underwent routine pre-operative investigations, including complete blood count and serology.
- Template marking of the post-auricular flap to be elevated based on the size of the lobular defect.
- Test dose for local anaesthetic

Operative Technique:

- Patient lying supine with head turned to the opposite side of the injured ear.

- Post-auricular flap marking with the help of a template taken from the normal/uninjured ear.
- Flap elevated in the subcutaneous plane along the markings with a length-to-breadth ratio of 1.5:1 for the unilobed flap and 3:2 for the bilobed flap, without damaging the greater auricular nerve.
- The flap was folded, customised and was given an inset to the defect both anteriorly and posteriorly according to required shape and the lobule was reconstructed with a proper shape.
- The donor site of the flap was closed primarily in two layers after achieving haemostasis.

Post-operative care:

- The wound was kept open during both the immediate and the later postoperative period.
- Topical application of antibiotic ointment was advised.
- Oral antibiotics were prescribed according to hospital policies for 5 days postoperatively.
- Analgesics and anti-inflammatory medications were advised as required.
- Suture removal was done on post-operative day 10.
- Tab ECOSPRIN (ASPIRIN) 150mg P/O once daily was advised for 7 days for Case 2 where marginal necrosis of the flap was encountered.
- After 3 weeks, gentle massages over the flap and ear lobule were advised to soothe the skin.
- Wearing of studs advised after three months.
- After 8 weeks new hole was created with iv cannula and after 3 to 4 weeks of hole creation studs were advised.

Expected Complications:

Typical early complications include marginal tissue loss, partial or total flap necrosis infection, and wound breakdown, while later issues may involve abnormal scarring, keloid formation or altered sensation if the great auricular nerve is affected.

Case 1: Avulsion Injury

A 27-year-old male suffered a near-total lobule avulsion of left ear lobule due to a Road Traffic Accident while not wearing a helmet, causing avulsion of the lobule along with the ear stud. A proximally based, unilobed post-auricular flap was raised and inset in a circumferential fashion for the new lobule. The donor site was closed primarily. The choice for the post-auricular area as the donor site was dictated by its tissue viability and close colour match. The patient experienced no complications, and the flap remained viable, resulting in good symmetry with the unaffected ear with no visible scarring or keloid occurrence or flap contraction at later period of follow up.

Case 2: Sharp Trauma due to Assault

A 50-year-old female presented with a lower-third left ear lobule defect caused by pulling of earrings by a known individual. The lower part of the lobule, along with the stud, was avulsed. A post-auricular unilobed flap was designed and transferred to the defect site. The flap was inset circumferentially to reconstruct the missing lobule. The donor site was closed primarily. During the 6 months follow-up, the flap survived completely, there was minimal donor site morbidity, and the contour of the lobule was satisfactory. Minor necrosis was managed conservatively. The scar of the donor site was hidden in the post-auricular region, providing satisfactory cosmetic results with no scar related complications except mild flap contraction which was noted in the 11-months follow-up period. After 3 months of suture removal, stud insertion was done.

Case 3: Near-total ear lobule loss due to a human bite

A 55-year-old female experienced a near-total loss of the right ear lobule due to a human bite. Immediately after the injury, an anteriorly based, bilobed post-auricular subcutaneous pedicled advancement flap was raised under local anaesthesia and inset to the lobule defect. Flap viability was ensured by careful flap design, and the donor site was sutured primarily, and scarring was well concealed behind the auricle. The patient was satisfied with the final appearance after three months, with no notable complications except for mild bulkiness of the flap. No flap contraction and scar issues were observed in the total follow-up period.

Images:

Refer to Figure legend.

III. Results:

All the cases recovered with no major complications. Cases 1 had excellent outcomes with respect to skin texture and colour matching and encountered no donor or recipient site complications with minimal scarring. Case 2 showed minimal flap shrinkage and marginal flap necrosis which was managed conservatively. Case 3

healed well with no complications. No keloids or hypertrophic scars were observed in any of the three operated cases so far in the 11 months follow-up period.

IV. Discussion

- The post-auricular flap offers similar skin texture and colour, with a robust blood supply for reliable reconstruction of lobule defects in a single-stage procedure with minimal donor site morbidity.
- The choice of unilobed or bilobed flap depends on the size of the defect (partial/ subtotal/ total loss extending to the helix of the ear), based on which safe flap markings can be done.
- Despite the scar, the lobule reconstruction is mandatory in view of cosmesis among both men and women (for wearing earrings), and the procedure is simple and safe without major complications, and it is an affordable means of management.
- Most complications are minor, such as marginal necrosis, which can be managed by flap revision or conservative measures.

V. Conclusion

In this series, post-auricular flaps allowed stable restoration of lobule form and symmetry with few complications and limited impact at the donor site. They are suitable for a variety of traumatic aetiologies and provide good symmetry, permanent cosmetic outcome with minimal donor-site morbidity and hence are effective options for reconstruction of traumatic lobule defects. They provide stable results, good cosmetic integration in single stage making them suitable for a wide range of traumatic injuries.

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Figure Legend

Figure 1: Ear lobule defect of avulsion injury in Case 1

Figure 2: Unilobed flap marking done intra-operatively in Case 1

Figure 3: Elevated flap given inset into the defective ear lobule in Case 1

Figure 4: 6 month follow up for Case 1

Figure 5: 11 month follow up of case 1 after hole creation and stud insertion