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EAR RECONSTRUCTION SECONDARY TO ACQUIRED DEFECTS: A PROSPECTIVE STUDY

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Abstract
Background: Auricular reconstruction following acquired defects remains challenging due to the complex three-dimensional anatomy of the ear. This study evaluated reconstructive techniques and outcomes in acquired auricular defects.
Methods: A prospective cohort study of 40 patients with acquired ear defects (May 2022–May 2024) was undertaken at Patna Medical College and Hospital. Patients underwent individualized reconstructive procedures. Outcomes were assessed for complications, stages, and satisfaction.
Results: Mean age was 30.65 years; 65% were male. Etiologies included assault (25%), RTA (25%), burns (22.5%), and human bites (20%). Most common affected parts were middle-third helix (20%) and lobule (17.5%). Most frequent procedures were wound debridement with primary suturing (27.5%) and preauricular bilobed flap (15%). Single-stage reconstruction was feasible in 67.5% of cases. Complications were low (15%), mainly infection (10%). Patient satisfaction was high (60% rated outcomes excellent/good).
Conclusion: Individualized, defect-oriented reconstruction yields satisfactory functional and cosmetic outcomes. Single-stage procedures are often preferred by patients, though staged reconstructions provide superior results for large defects.

Keywords: Auricular reconstruction; Acquired ear defects; Pinna trauma; Flap surgery; Cartilage graft

Introduction

Auricular reconstruction is a complex procedure due to the ear's intricate cartilaginous framework and aesthetic importance. Acquired defects arise from trauma, burns, or bites and range from minor lacerations to total auricular loss. Surgical approaches vary according to defect size, location, tissue availability, and patient factors. This study aimed to evaluate techniques and outcomes of acquired auricular reconstruction at a tertiary care center.

Materials and Methods

Design: Prospective cohort study
Duration: May 2022 – May 2024

Sample: 40 patients with acquired auricular defects (trauma, burns, human/animal bites).
Exclusion: Tumor, keloid ear, torn ear piercing defects.
Approach: Defects <25% managed with Antia-Buch/banner flaps; larger defects with Converse tunnel, costal/conchal cartilage grafts, and temporoparietal fascia flaps. Lobule defects reconstructed with Gavello's bilobed flap. Outcomes assessed included complications, number of stages, and patient satisfaction.

Results

The study included 40 patients. Demographic and clinical details are summarized below.

Table 1. Demographic profile

Variable	Details	Value
Age	Mean ± SD (range)	30.65 ± 17.72 (5–72 yrs)
Sex	Male / Female	26 (65%) / 14 (35%)

Table 2. Etiology of auricular defects

Etiology	Number (%)
Assault	10 (25%)
RTA	10 (25%)
Burns	9 (22.5%)
Human bite	8 (20%)
Dog bite	3 (7.5%)

Table 3. Part of ear affected

Part	Number (%)
Middle 1/3 helix	8 (20%)
Lobule	7 (17.5%)
Lacerations	11 (27.5%)
Total/subtotal loss	14 (35%)

Table 4. Surgical procedures performed

Procedure	Number (%)
Debridement + Primary suturing	11 (27.5%)
Preauricular bilobed flap	6 (15%)
Primary suturing	6 (15%)
Staged reconstructions	5 (12.5%)
Others (Antia-Buch, Banner, Converse, Dieffenbach, TPF, tube flap)	12 (30%)

Table 5. Postoperative complications

Complication	Number (%)
Infection	4 (10%)
Cupping	1 (2.5%)
Tip necrosis	1 (2.5%)
Nil	34 (85%)

Table 6. Patient satisfaction outcomes

Satisfaction level	Number (%)
Excellent	8 (20%)
Good	16 (40%)
Fair	9 (22.5%)
Poor	2 (5%)

Discussion

This prospective study of 40 cases underscores the complexity of auricular reconstruction. Our data show the middle-third helix and lobule were most commonly affected, paralleling prior reports. Assault and RTA were leading causes, consistent with trauma trends in India, while human bites posed a particular risk for infection.

Choice of reconstructive technique was highly individualized. Small marginal defects were well treated with Antia-Buch advancement flaps, providing good cosmesis in a single stage. Lobular defects were successfully reconstructed with Gavello's preauricular bilobed flap, which provided reliable vascularity and color match. Larger or subtotal defects required staged reconstruction with cartilage framework (conchal or costal) and temporoparietal fascia flaps. Although staged reconstructions yield superior long-term results, patients often preferred single-stage options, highlighting the importance of aligning surgical planning with patient expectations.

Complication rates were low (15%), with infection being the most common, primarily in human bite and RTA cases. The occurrence of cupping deformity in large Antia-Buch flaps and donor-site morbidity with costal cartilage harvest were recognized limitations. Nonetheless, satisfaction levels were high, with 60% of patients rating outcomes excellent or good.

Our findings emphasize that no single technique fits all defects. Careful evaluation of defect size, site, patient factors, and available resources is essential. In resource-limited settings, single-stage local flap reconstructions remain practical, while staged reconstructions are best reserved for extensive defects. Future larger-scale studies could further refine technique selection and improve long-term outcomes.

Conclusion

Auricular reconstruction for acquired defects requires tailored approaches. Single-stage procedures provide satisfactory outcomes in most cases, while staged reconstructions are reserved for larger, complex defects. Individualized planning, meticulous execution, and patient-centered decision making are key to optimizing results.

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