



TRAUMATIC AURICULAR LACERATIONS : A CASE SERIES AND CLINICAL INSIGHTS

Otorhinolaryngology

Dr. Reema Goswami	Professor And Head, Department Of ENT, Govt. Bundelkhand Medical College, Sagar, Madhya Pradesh
Dr. Shivam Singh*	Senior Resident, Department Of ENT, Nandkumar Singh Chauhan Govt. Medical College, Khandwa, Madhya Pradesh *Corresponding Author
Dr. Aashi Dubey	Senior Resident, Department Of ENT, Netaji Subhash Chandra Bose Medical College, Jabalpur, Madhya Pradesh

ABSTRACT

Background: Auricular trauma is frequently encountered in emergency settings due to the ear's exposed and protruding anatomical position. Timely and meticulous management is essential to prevent complications such as perichondritis and cosmetic deformities. **Objectives:** To analyze the etiology, presentation, and clinical outcomes of traumatic auricular lacerations, and to assess the effectiveness of surgical management strategies in a tertiary care setting. **Methods:** This prospective observational study included 94 patients with auricular lacerations treated at a tertiary care center. All cases were managed under local or general anesthesia with thorough irrigation, debridement, and layered suturing. Follow-up was conducted for one month, with outcomes assessed based on healing and cosmetic results. **Results:** The majority of patients were males (72.34%) aged between 21–30 years (28.72%), with road traffic accidents being the most common cause (60.64%). The helix was the most frequently injured site (57.45%). Complications included perichondritis in 24.47% of patients. Most cases (75.53%) healed without deformity, while 12.77% had minor, and 6.38% had major deformities. **Conclusion:** Prompt and precise surgical management of auricular lacerations leads to favorable cosmetic outcomes and minimizes complications. Public awareness regarding road safety and the use of protective gear like helmets may significantly reduce such injuries.

KEYWORDS

INTRODUCTION

Facial trauma remains a common initial presentation in many emergency departments and urgent care facilities. Along with the nose, the auricle occupies a prominent position in the face. The external ear is commonly involved in facial / head trauma [1]. Due to the outward projection of normal pinna, it is more vulnerable to injury [2].

Ear injuries occur in people of all ages but predominate in active people such as bike riders, wrestlers and boxers. External ear injuries include simple injuries like abrasion and complex like lacerations, hematoma formation, as well as varying avulsive injuries [3]. Ear lacerations are common and can be caused by a variety of injuries such as road traffic accidents (RTA), assaults, occupational, sports, and fall from heights. The most common cause of ear trauma is road traffic accidents [4].

Otological injuries are a common presentation to the otolaryngologist and can be most challenging at times. The golden rule in the management is to balance minimal wound debridement with maximal tissue preservation under adequate anaesthesia. Surgical repair remains the mainstay of treatment. Under aseptic precautions, a good approximation of a wound with adequate vascularity with wound care will result in the best outcome. One of the challenges that remains crucial for such injuries is the prevention of complications such as chondritis (secondary to infection), primarily then cosmesis. Hence, opportune and prudent intervention is required to prevent the complications.

MATERIALS AND METHODS

A prospective observational study was conducted in a tertiary care centre, Govt. Bundelkhand Medical College, Sagar, Madhya Pradesh. A total of 94 cases of auricular laceration injury fulfilling the inclusion criteria were selected.

All cases were managed under local anaesthesia by thorough irrigation, debridement and suturing of skin edges. Contour of pinna was maintained where necessary by applying stay sutures to cartilage or pressure dressing. Prophylactic antibiotics were given to prevent infection. Follow up was done every two weeks on regular basis and one month thereafter. The outcome of management was measured in terms of healing without complications such as chondritis or cosmetic deformity.

A thorough research was done keeping the research question, proposed hypothesis, aims and objectives in mind, the data analysis was done.

Inclusion Criteria :

- New cases of traumatic pinna injury with no previous history of auricular injury.
- Patients of all ages and sex who had traumatic pinna laceration injury were included after informed and written consent.

Exclusion Criteria :

- Those with total avulsed pinna were excluded.
- Those with radiation and thermal injuries to pinna were excluded.
- Those having previous history of perichondritis were excluded.
- Those who had previous injury to auricle with deformity.
- Those with congenital deformity of pinna were excluded.
- Patients who refused to give consent were excluded.

RESULTS AND OBSERVATIONS

The majority of the participants belonged to 21-30 yrs of age (28.72%), while the least of the participants belong to age group of less than 60 yrs of the age (2.13%). The youngest patient in the study was 3 yrs old, while the oldest was 82 yrs old. The mean age was 31.39 years.

Table No. 1 Demonstrates The Age Wise Distribution Of The Study Participants.

Age of patients	No. Of patients	Percentage
≤10 Yrs	8	8.42%
11-20 Yrs	16	17.02%
21-30 Yrs	27	28.72%
31-40 Yrs	18	19.15%
41-50 Yrs	17	18.09%
51-60 Yrs	6	6.38%
>60 Yrs	2	2.13%

Majority of cases of auricular injuries were male (72.34%). The ratio between male to female was 2.62 : 1.

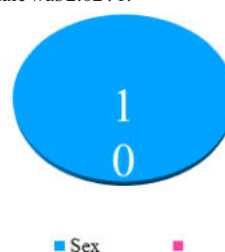


Fig. 1 Showing distribution of sex of the study participants

Among 94 participants, the most common etiology of auricular laceration injury was Road traffic accidents in 57 cases (60.64%) and the least common was Animal bite which was seen in only 2 cases (2.13%).

Table No. 2 Shows The Distribution Of Etiology Of Auricular Injury.

Etiology of Injury	No. Of patients	Percentage
RTA	57	60.64%
Fall from Height	30	31.92%
Assault	5	5.32%
Animal bite	2	2.13%

Out of all 94 study participants, the most common site of injury was helix of pinna which was present in 54 cases (57.45%) of auricular injury, while the least common site was post aural region which was present in only 11 cases (11.70%). In most of the patients, more than one site was involved.

Table No. 3 Shows The Distribution Of Site Of Auricular Injury.

Site of Injury	No. Of patients	Percentage
Helix	54	57.45%
Antihelix	36	38.30%
Tragus	39	41.49%
Medial surface	31	32.98%
Concha or Cyma concha	27	28.72%
Lobule	19	20.21%
Preauricular Region	19	20.21%
Post-aural Region	11	11.70%

All the patients of auricular injury were managed under local anaesthesia or General anaesthesia if required as per case requirement and compliance. All the patients were admitted in department of ENT for management and regular dressing. Out of total 94 participants, 23 cases (24.47%) developed perichondritis and were treated by evacuating the pus and debridement of devitalised cartilage and tissue. Intravenous antibiotics were administered based on culture and antibiotic sensitivity report.



Fig. 2 showing Photograph of laceration of pinna. (a) Before repair. (b) After repair.

Among study participants, majority (75.53%) were healed without any deformity after the complete healing while only 6 cases (5.32%) healed with major deformity like cauliflower ear. Deformity due to loss of cartilage was present in only 5 cases (5.32%).

Table No. 4 demonstrates the sequelae of injury after the complete healing of auricular injury.

Sequelae of Injury	No. Of patients	Percentage
Healing without deformity	71	75.53%
Minor deformity due to perichondritis or chondritis	12	12.77%
Major deformity	6	6.38%
Deformity due to loss of cartilage	5	5.32%

DISCUSSION

Auricular injuries are one of the common cases encountered in Emergency department. Otolaryngologist has a pivot role in proper recognition and treatment of auricular injuries to avoid possible complications and to give excellent cosmetic outcomes.

In our present study among 94 cases of auricular laceration injuries, 68 were males (72.34%) showing male preponderance with Male to female ratio 2.62 : 1. Similarly, in a study done by Shameem Ahamed S V et. al. [5] found male to female ratio of 3 : 1. Similar male to female ratio was also obtained by studies done by Sinha Vikas et. al. and Kartikesh Gupta et. al. [2,6]. In contrast, in a study done by RB Namasivaya Navin et. al. [7] on auricular injury found almost equal incidence in both male and female with male to female ratio of 1.25 : 1. In contrast, Chukuezi and Nwosu found that females were most commonly affected in auricular injuries [8].

The possible reason for the male predominance in our study is that our is a male dominant society and outdoor activities are undertaken predominantly by males as compared to females. Also, in Bundelkhand region most of the people travel by motorbikes which is mostly driven by males as compared to females. Thus, they are more involved in roadside accidents. Males are more aggressive, they drive fast, and are involved in drunk driving, violence, fights and assaults.

In our present study, majority of cases of auricular injuries belong to group of age between 21 to 30 yrs (28.72%) with mean age of 31 years and the least common group was age group above age of 60yrs (2.13%). Similarly, in the study done by Sharma K. et. al., ear trauma was mostly found in patients of 2nd to 3rd decade of age [1]. In a study done by Sinha Vikas et. al., the most common age group involved in pinna injury was 25 to 35 yrs [2]. Similar results were found by studies done by Shameem Ahamed S V et. al., Kartikesh Gupta et. al., RB Namasivaya Navin et. al., Chukuezi A B et. al., [5,6,7,8]. The 21 to 30yrs of age group in our study was most commonly affected similar to other studies conducted on auricular injuries. The reasons are similar to that of male predominance.

Auricular injuries can range from simple abrasions to complex laceration or avulsion. Auricular lacerations are common and can be caused by variety of injuries such as RTA, assaults, occupational, recreational (sports or adventurous activities), and fall from heights. In our present study, the most common etiology on auricular injury was road traffic accidents (60.64%) while the least common etiology was animal bite (2.13%). Similar results were obtained by studies done by Sharma K. et. al., Sinha Vikas et. al., Saimanohar Saikripa et. al., Shameem Ahamed S V et. al., RB Namasivaya Navin et. al. and Kartikesh Gupta et. al. [1,2,3,5,6,7]. RTA was the commonest cause of injuries as compared to other mode of injury. Possible reasons for this can be the unruly traffic, lack of helmet laws, reckless driving and driving under influence of alcohol or drugs.

The pinna protrudes from the head, making it vulnerable to getting caught or snagged during impacts causing avulsions. The pinna is mainly composed of single piece of cartilage, which is strong but relatively rigid. While providing some structural support, it can tear or detach from surrounding tissue under excessive force causing avulsion of pinna. In our present study, the most common site of auricular injury was helix (57.45%). Similar to our study, in a study done by Sinha Vikas et. al., helix was the most common site of auricular injury which was present in 80% of the cases of auricular injuries [2].

Complex lacerations of the ear almost always involve cartilage exposure. Tacking sutures should be placed with caution to avoid compromising the vascular supply. These sutures can also help with surgical/ anatomic orientation during reapproximation. Shearing injury of the pinna causes disruption of the adhered cartilage with its perichondrium and overlying skin. The perichondrium is responsible for supplying blood and nutrients to the cartilage. In our study, we directly sutured skin to skin, sparing perichondrium and cartilage using non-absorbable interrupted sutures. Suturing perichondrium in our patients was not feasible as cartilage was torn into multiple pieces in most of the cases. The main reason for cartilage survival in our cases may be due to intact perichondrium on one side or supply from overlying skin and subcutaneous tissue. Contour dressing helped maintain the shape and gave the pressure needed for the skin to attach to the underlying cartilage, thereby preventing cartilage necrosis.

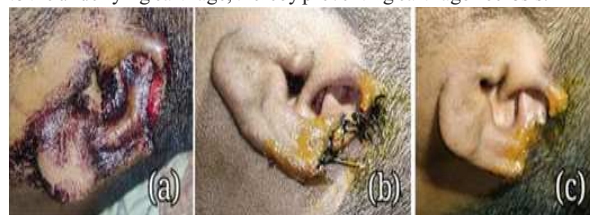


Fig. 3 Showing photograph of partial amputation due to animal bite. (a) Before repair, (b) After repair and (c) After suture removal and healing.

Sometimes despite all measures we tend to encounter complications. The most important and commonest of complications is perichondritis. It usually happens secondary to a traumatic cause. It presents with swelling over an area of trauma associated with dull aching pain of increasing severity, tenderness and redness. In our cases, mainly seen

in trauma due to RTA with gross contamination of wound and delay in arrival from the site of accident. Different type of management options depends on the stage of perichondritis. Topical and oral antibiotics manage the mildest forms. Treatment with a broad-spectrum antibiotics with a high dose, intravenous (IV) to cover organisms in especially *pseudomonas aeruginosa*. Subperichondrial abscess with fluctuation requires - drainage, pus swab for culture and sensitivity. In resistant cases, removal of only affected cartilage and constant irrigation with antibiotic solutions is effective but requires prolonged hospitalization [9].

In our present study, out of 94 cases of auricular lacerations, 71 cases (75.53%) were healed without any deformity. Similar observation were found by studies done by Sinha Vikas et. al., Saimanohar Saikripa et. al. and RB Namasivaya Navin et. al., in which healing without any deformity in 62%, 79.16% and 88.88% respectively [2,3,7].



Fig. 4 Showing photograph of pinna laceration. (a) Before repair, (b) After repair and (c) After healing.

It was observed that meticulous and timely intervention like proper exploration of pinna injuries, thoroughly washing the wound, debridement of devitalized tissue, suturing the skin edges, application of stay sutures to cartilage when necessary, contour pressure dressing, and prophylactic antibiotics helped in attaining success rate of 75.53% without any complication or deformity and the development of minor deformity is reduced to 12.77% and major deformity to only 6.38%.

CONCLUSION

On the basis of above observations, we conclude that the pinna is frequently injured following mechanical trauma due to its outward projection. Traumatic pinna lacerations are very common due to increased incidence of road traffic accidents. Road safety awareness, adherence to traffic rules and wearing helmets reduce the risk of accidents and injuries.

The importance of admitting patients with pinna injuries has been found, especially in patients of rural regions where daily follow up is not possible due to long distance from tertiary healthcare facilities where otolaryngologist are there to review the cases. These patients have to be treated with IV antibiotics and daily dressing as well as kept under close observation for prevention of development of complication like perichondritis. Meticulous and timely intervention is necessary to minimize cosmetic disfigurement of external ear.

REFERENCES

- Sharma, K & Goswami, S & Baruah, D. (2006). Auricular trauma and its management. Indian journal of otolaryngology and head and neck surgery : official publication of the Association of Otolaryngologists of India. 58. 232-4. 10.1007/BF03050826.
- Sinha, Vikas & Parmar, BhagirathsinhD & Senta, NilamT & Jha, SushilG & Yadav, Sandeep Kumar. (2021). Pinna injuries management at tertiary care center. Indian Journal of Otolaryngology. 27. 185. 10.4103/indianjotol.INDIANJOTOL_167_20.
- Saimanohar, Saikripa & Gadag, Ravindra & Subramaniam, Vijayalakshmi & Ravindra, P. (2012). A Study of Pinna Injuries and their Management. International Journal of Health and Rehabilitative Sciences. 1. 81-86. 10.5455/ijhrs.000000013.
- Steffen A, Frenzel H. Trauma management of the auricle. Facial Plast Surg 2015;31:382-5.
- Ahmed S V Shameem, Mukundan Aswin, Githin C R. Pinna Injuries: Our Experience. JMSCR Volume 05 Issue 03 March:18782-18786. DOI: <https://dx.doi.org/10.18535/jmscr/v5i3.80>.
- Gupta, Kartikesh & Sood, Rachit & Awasthi, Priyanshi & Kumar, Amit. (2022). Complex Pinna Lacerations and their Management. Archives of Trauma Research. 11. 129. 10.4103/atr.atr_38_22.
- Navin, RB & Prabakaran, Subramani & Rajasekaran, Sukumaran & Vaishali, PN & Karthika, R. (2022). A Harrowing Experience of Pinna Lacerations. JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH. 16. 10.7860/JCDR/2022/53691.16689.
- Chukuezi AB, Nwosu JN. Ear trauma in Orlu, Nigeria: A five-year review. Indian J Otolaryngol Head Neck Surg 2012;64:42-5.
- Rana A, Gabriela Hawkes, Velankar HK, Carvalho C, Rai K, Yadav R. A Case Study of 20 Cases of Traumatic Injury to Pinna Resulting in Perichondritis with Review of the Literature. Integr J Med Sci [Internet]. 2022 Apr. 1 [cited 2024 Jul. 1];9. Available from: <https://mbmj.org/index.php/ijms/article/view/636>.