

# Three Years of Experience of ENT-Head and Neck Trauma in a Tertiary Care Centre of Nepal

Thapa NM, Das S

Department of ENT-Head Neck Surgery

Maharajgunj Medical Campus,

Institute of Medicine, Tribhuvan University,

Maharajgunj, Kathmandu, Nepal.

## Corresponding Author

Nar Maya Thapa

Department of ENT-Head Neck Surgery

Maharajgunj Medical Campus,

Institute of Medicine, Tribhuvan University,

Maharajgunj, Kathmandu, Nepal.

E-mail: naramayat@yahoo.com

## Citation

Thapa NM, Das S. Three Years of Experience of ENT-Head and Neck Trauma in a Tertiary Care Centre of Nepal. *Kathmandu Univ Med J.* 2024;86(2):160-4.

## ABSTRACT

### Background

Trauma to ENT-Head and Neck region is one of the commonest emergencies. The neck and face being exposed parts of our body are vulnerable to traumatic injuries.

### Objective

To study epidemiological pattern, site, mode and cause of trauma in ENT Head and Neck region, their management and outcome.

### Method

This retrospective study was conducted in the department of ENT-Head and Neck Surgery, Tribhuvan University Teaching Hospital, Kathmandu, Nepal. Medical records of the patients admitted with Head and Neck trauma from April 14, 2019 to April 13, 2022 were retrieved from the Medical Records Section and reviewed. Trauma cases which were managed on an OPD basis and those patients with incomplete data and polytrauma were excluded.

### Result

Most of the trauma cases were in the adults 139 (72.41%). Males were more common than females (80.73%). Oral cavity and oropharyngeal injury 37 (69.81%) was most common in the pediatric patients. In adults nose and facial trauma 79 (56.83%) was the most common site of injury. Fall was the most common mode of injury in pediatric patients 36 (67.92%) while in adults it was interpersonal violence 43 (30.94%).

### Conclusion

ENT-Head and Neck trauma was more commonly observed in male adults. Paediatric patients were found to be vulnerable to fall while in adults interpersonal violence was the most common mode of trauma. Oral cavity and oro-pharynx were the most common sites of injury in children while nose and facial trauma were the most common in adults. There were no significant complications and mortality reported during the hospital stay.

## KEY WORDS

*ENT-head and neck trauma, Fall injury, Fracture reduction, Road traffic accident (RTA), Suicidal cutthroat*

**INTRODUCTION**

ENT-Head and Neck injuries are one of the commonest emergencies.<sup>1</sup> Being the most exposed part of our body neck and facial region are vulnerable to traumatic injuries. Trauma to these regions can vary from simple earache to potentially fatal severe respiratory distress often requiring an emergency tracheostomy.<sup>2</sup> Facial injuries are usually associated with functional and psychological trauma leading to social stigma.<sup>1</sup> For proper evaluation of trauma in this region, special instruments such as an otoscope is required for ear trauma, while an endoscope is needed for nasal and laryngeal injuries. The outcome of the treatment depends on the initial wound care and primary wound repair.<sup>3</sup> Therefore, it is essential to consult with an otorhinolaryngologist for proper evaluation and management of facial trauma.

These traumas have become more frequent in recent decades due to higher automobile accidents and violence.<sup>1</sup> Epidemiological data helps to understand the pattern of facial injuries and thereby helps in delivering sufficient and fruitful treatment in the emergency care department.<sup>4</sup> These data are also helpful in executing protocols for prevention programs.

Aetiology and incidence of ENT-Head and Neck trauma differ across countries owing to different social, environmental and cultural factors.<sup>5</sup> This study will give us insight into the pattern of ENT-Head and Neck injuries in developing countries like Nepal.

The objectives of this study were to study epidemiological patterns, sites, modes and causes of trauma in the ENT Head and Neck region, their management and outcome before discharge in the tertiary care centre of Nepal.

**METHODS**

This retrospective study was conducted at the department of ENT-HNS, Tribhuvan University Teaching Hospital (TUTH), Kathmandu, Nepal. Ethical approval was obtained from the Institutional Review Committee of Institute of Medicine (568(6-11) E2 ). All patients admitted to the ENT-HNS department with head and neck trauma from April 14 2019 - April 13 2022 were included in this study. Medical records of all of these patients were retrieved from the Medical Records Section of TUTH and reviewed.

Patients were divided into two groups paediatric (upto 14 years) and adult (14 years and above) to compare the site and mode of injury. The age of the patients as a whole were further divided into five subgroups (upto 14 years, 15-29 years, 30-44 years, 45-59 years and 60 years and above) to know the specific age group vulnerable to injury.

Sites of trauma were divided into four major subheadings. The first heading was nose and facial trauma, which

included nasal bone fracture and soft tissue injury. The second heading was oral cavity and oropharyngeal injury which included all trauma cases involving lips, tongue, soft and hard palate and buccal mucosa. Similarly suicidal and homicidal cutthroat and blunt trauma neck were included in neck trauma. The fourth heading was ear and lateral skull base trauma which included pinna laceration, cut injury and temporal bone fracture.

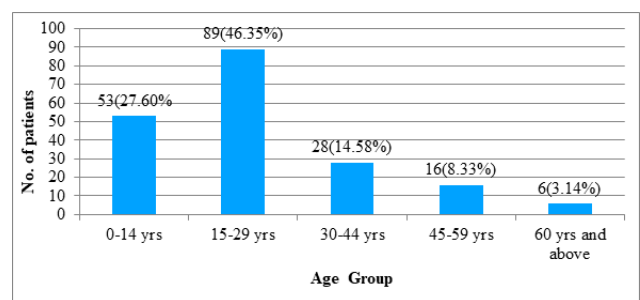
Patients with polytrauma managed in other departments, incomplete data and those who were managed on an OPD basis were excluded.

**RESULTS**

A total of 204 patients who were admitted to the ENT-HNS department at TUTH with ENT Head and Neck trauma between April 14 2019 and April 13 2022 were initially retrieved, but 12 were excluded due to incomplete data. Thus the study included only 192 patients. Majority of patients belonged to the adult age group 139 (72.40%) (Table 1). The most vulnerable age group was 15-29 years with 89 (46.35%) patients (Fig. 1). Males constituted the majority of patients 155 (80.73%), while females accounted for 19.27% (Table 1).

**Table 1. Distribution of patients (N=192)**

Age Group	No. of Patients	Percentage
Paediatric (0-14 years)	53	27.6
Adult (15 years and above)	139	72.4
<b>Gender</b>		
Male	155	80.73
Female	37	19.27



**Figure 1. Age distribution**

Nose and facial trauma was found in 90 (46.88%) patients. Forty five (23.44%) patients sustained injury in oral cavity and oropharynx. Similarly 30 (15.62%) patients sustained neck trauma. Twenty seven (14.06%) patients had ear and lateral skull base trauma. In adults, the most common site of trauma was nose and facial trauma: 79 out of 139 (56.83%) adult patients while in the paediatric age group, it was an oral cavity and oropharynx: 37 out of 53 paediatric patients (69.81%) (Fig. 2).

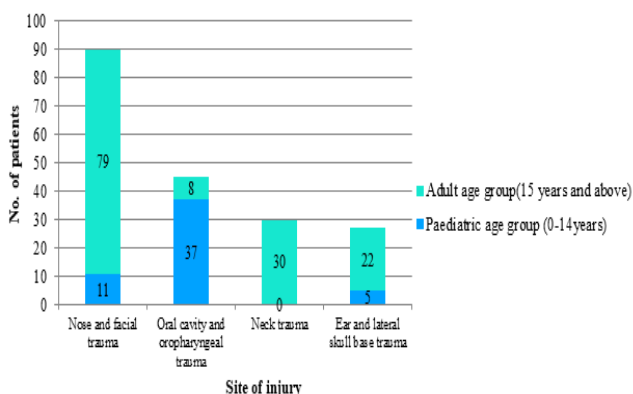


Figure 2. Site of injury (N=192)

The most common mode of injury was fall 76 (39.58%) followed by inter personal violence 43 (22.4%), accidental hit/cut 24 (12.5%), suicidal cut throat 21 (10.94%), RTA 16 (8.33%) and then sports injury 12 (6.25%) in descending order. Comparing the paediatric and adult patients, the most common mode of injury was fall (36 patients), then accidental hit/cut (17 patients) in the paediatric patients and interpersonal violence (43 patients), followed by fall (40 cases) in the adult patients (Fig. 3).

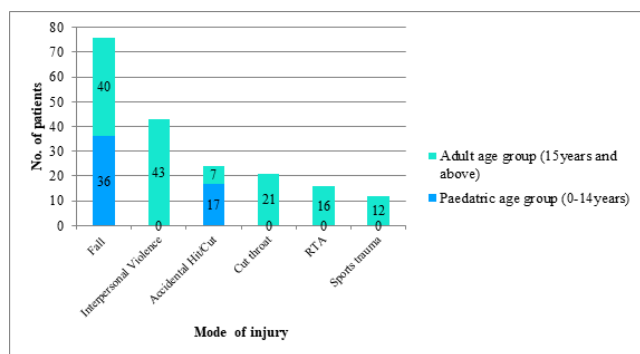


Figure 3. Mode of injury

There were three patients of temporal bone fracture. Two were adult females and one adult male. All had longitudinal fractures. Two patients with temporal bone fracture with facial nerve palsy (House-Brackmann grade IV) underwent cortical mastoidectomy and facial nerve decompression. However, facial nerve palsy remained static before discharge of the patients. One patient with temporal bone fracture with profound hearing loss was treated conservatively with intravenous high-dose intravenous methyl prednisolone (1000 mg on the 1<sup>st</sup> day, then 500 mg on 2<sup>nd</sup> and 3<sup>rd</sup> day). However, the patient’s hearing did not improve.

Tracheostomy was done as a life-saving procedure in neck trauma patients where trauma was associated with a compromised airway in 15 out of 30 (50%) patients of neck trauma. Rest of the patients had primary repair of the cut wound.

All the paediatric patients with oral cavity and oropharynx related trauma underwent primary repair under general anesthesia. Nasal trauma causing fracture nasal bone

with visible external deformity was treated surgically by closed reduction. All pediatric patients underwent fracture reduction in General Anesthesia (GA), while in adults, 17 patients underwent reduction under GA while in the rest of the patients it was done under Local Anesthesia.

Primary or secondary repair of the wound were carried out depending upon the wound status. The outcome before discharge was uneventful in all cases. There were no mortalities. Patients were asked for follow-up depending upon circumstances, such as for fracture reduction cases; patients were asked to follow up in two weeks for splint removal. Similarly, patients with pinna laceration repair were asked to follow up in the 6<sup>th</sup> POD for suture removal.

### DISCUSSION

In our study, most of the patients were males (80.73%) like in the studies: Shrestha et al. (62.3%), Carvalho et al. (male: female 4:1), Ykeda et al. (74.72%), Wulkan et al. (78%), Posnick et al. (63%).<sup>3,4,6-8</sup> This could be attributed to various reasons like males in our society are usually breadwinners, so they have to go out for work and have high chances of Road Traffic Accidents (RTAs). Also, males are generally more involved in interpersonal violence and sports-related injuries.

Our study showed the highest incidence between 15-30 yrs (89 patients), almost similar to studies like Ykeda et al. (20-29 yrs).<sup>6</sup> Study by Carvalho et al. also had mostly young patients.<sup>4</sup> In a study by Wulkan et al. 78% of injuries were in the 20-39 yrs age group.<sup>7</sup> This is in contrast to study by Sreekanth et al. where they found the highest incidence in 41-60 years (36.68%).<sup>2</sup> These findings of injuries being shared in the young age group can be justified by the fact that these younger age group populations are more involved in RTAs, especially motorbike accidents, and they are also more engaged in sports and interpersonal violence.

In our study oral cavity and oropharyngeal trauma was more common in the paediatric age group (69.81%) whereas nose and facial trauma was the most common site of injury in adults (56.83%). This finding is more or less consistent with Shrestha et al.<sup>3</sup> They had 47.6% patients of oral cavity and oropharyngeal injury in the paediatrics while in the adults soft tissue injury and facial fracture constituted 42.10%. This could be explained by the fact that children are very playful and exploratory and have a tendency to put anything inside their mouth, leading to traumatic lacerations in the oral cavity, especially in hard and soft palate and buccal mucosa. The nose, being the most protruding structure in the face, makes it liable to trauma, mainly fractures, constituting a significant site of trauma in adults.

The most common mode of injury was fall in paediatric group while interpersonal violence was the in adults in our study. In the study by Sreekanth et al.<sup>2</sup> RTA was the most common mode of injury. Shrestha et al. reported fall being

the most common mode of injury in pediatric and geriatric populations, while in adults, it was RTA.<sup>3</sup> In studies by Callao-Gonzalez et al. and Khan et al. also fall was the most common mode of injury in paediatric facial trauma.<sup>9,10</sup> Similarly Carvalho et al. (27.9%), Ykeda et al. (36.45%) and Wulkan et al. (48.1%) mentioned interpersonal violence as the most common cause.<sup>4,6,7</sup> Children are very vulnerable to fall so that it can be a standard mode of trauma in this age group. Adults are commonly involved in interpersonal violence and hence could have caused majority of trauma in adult population in our study.

Suicidal/homicidal cutthroat constituted 10.94% of total patients and 70% of neck trauma. There were 17 male and four and all were adults. This was similar to the study by Alam et al. where out of 35 cases, 77.14% patients were suicidal, with 32 males and three females.<sup>11</sup> In our study, out of 30 neck trauma patients 15 (50%) required tracheostomy.

Due to increased levels of stress in today's world, cases of suicidal cutthroat might have become the most common cause of neck trauma. Young males are less likely to ask for help in an attempt to exhibit masculine and avoidance behavior which makes it hard for them to deal with emotional and behavioral problems.<sup>12</sup> This could be a possible explanation for an increased number of male suicides as compared to females.

Nasal trauma causing nasal fracture with external deformity was treated surgically by closed reduction. This is similar to study by Shrestha et al. where all fracture nasal bone with deformities underwent closed reduction.<sup>3</sup> Similarly, in study by Kang et al. the majority of patients (77%) underwent closed reduction.<sup>13</sup> All paediatric patients underwent fracture reduction under GA, while in adults, 17 patients underwent reduction under GA while the rest were under LA. Since nose plays a significant role in facial aesthetics, reduction was done in fracture cases with visible deformity. Out of 86 cases of nasal fracture, 76 patients were adults while 10 were in the pediatric age group.

There were three patients of temporal bone fracture. Two were adult females and one adult male. All had longitudinal

fractures. One patient had profound hearing loss, while the other two had facial nerve palsy (House-Brackmann grade IV). Profound hearing loss was treated conservatively with intravenous high-dose steroids (1000 mg on 1<sup>st</sup> day, then 500 mg on 2<sup>nd</sup> and 3<sup>rd</sup> day). However, the patient's hearing did not improve. The other two patients who had facial nerve palsy were treated surgically with cortical mastoidectomy with facial nerve decompression. Facial nerve palsy remained static before discharge. Longitudinal fractures are relatively more common than transverse fractures. Riccardiello et al. reported that 82% patients had longitudinal fractures.<sup>14</sup> They found sensorineural hearing loss (SNHL) in 30 patients (23.43%), while facial nerve paralysis was in 11 cases (8.59%). Ulug et al. found higher rate of longitudinal fracture of temporal bone fracture (63.63%).<sup>15</sup>

This study was its retrospective design. This could have led to selection bias. Since only admitted patients were reviewed. If we could have included those OPD cases, the number of ENT-Head and Neck trauma cases would have increased. Outcomes before discharge could only be retrieved while their condition in subsequent follow-ups could not be reviewed.

## CONCLUSION

ENT-Head and Neck trauma is a common emergency particularly in adult males. Paediatric patients are vulnerable to fall injury while adults interpersonal violence is the common mode of injury. Though no significant complications and there was no trauma-related mortality during hospital stay. Prospective study including patients managed on OPD basis with longer follow up is recommended to strengthen the results of our study.

## ACKNOWLEDGEMENTS

We would like to thank staffs of record section for providing patients' files and records. We would also like to acknowledge faculties, sisters and resident doctors who helped us to collect data and photos.

## REFERENCES

1. Singhai J, Nigam R, Jain AK. The Demographic Study of Otorhinolaryngological Trauma among Patients with Head and Neck Trauma and Their Management in a Tertiary Care Centre. *Indian J Otolaryngol Head Neck Surg.* 2018 Jun;70(2):249-55. doi: 10.1007/s12070-017-1132-3.
2. Sreekanth G, Reddy LS, Bhushan IP. An Overview of Emergencies in Otorhinolaryngology at a Tertiary Care Centre, Telangana. *Indian J Otolaryngol Head Neck Surg.* 2022 Dec; 74(Suppl 3): 5404-11. doi: 10.1007/s12070-021-02685-8.
3. Shrestha N. An overview of Facial and Head and Neck Trauma at Patan Hospital. *Nepalese J ENT Head Neck Surg.* Mar 2018; 6(1):15DOI:10.3126/njenthns.v6i1.19437
4. Carvalho TBO, Cancian LRL, Marques CG, Piatto VB, Maniglia JV, Molina FD. Six years of facial trauma care: an epidemiological analysis of 355 cases. *Braz J Otorhinolaryngol.* 2010;76(5):565-74.
5. Riasa NP, Parama A, Budiapsari PI, Lestari DPO. The pattern of Facial injury among foreign travellers in Bali: A retrospective study. *Open Access Maced J Med Sci.* Oct 19 2020; 8(B):988-993. <https://doi.org/10.3889/oamjms.2020.5169>.
6. Ykeda RB, Ballin CR, Moraes RS, Ykeda RB, Miksza AF. Epidemiological profile of 277 patients with facial fractures treated at the emergency room at the ENT Department of Hospital do Trabalhador in Curitiba/PR, in 2010. *Int Arch Otorhinolaryngol.* 2012 Oct;16(4):437-44. doi: 10.7162/S1809-9772012000400003. PMID: 25991971; PMCID: PMC4432531.

7. Wulkan M, Parreira JG Jr, Botter DA. Epidemiologia do trauma facial [Epidemiology of facial trauma]. *Rev Assoc Med Bras* (1992). 2005 Sep-Oct;51(5):290-5. Portuguese. doi: 10.1590/s0104-42302005000500022. Epub 2005 Oct 31. PMID: 16270148.
8. Posnick JC, Wells M, Pron GE. Pediatric facial fractures: Evolving patterns of treatment. *J Oral Maxillofac Surg*. 1993 Aug;51(8):836-44; discussion 844-5. doi: 10.1016/s0278-2391(10)80098-9.
9. Collao-González C, Carrasco-Labra A, Sung-Hsieh H, Cortés-Araya J. Epidemiology of pediatric facial trauma in Chile: A retrospective study of 7,617 cases in 3 years. *Med Oral Patol Oral Cir Bucal*. Mar 2014; 19(2): e99–e105. doi: 10.4317/medoral.19035
10. Khan SR, Khan ZA, Hanif S, Riaz N, Warraich RA. Pattern of facial fractures in children. *Br J Oral Maxillofac Surg*. 2019 Dec;57(10):1009-1013. doi: 10.1016/j.bjoms.2019.08.020. Epub 2019 Sep 7.
11. Alam MN, Kumar S, Anas M. A clinico epidemiological study of cut throat patients—An observational retrospective study at tertiary care hospital in Jharkhand, India. *Asian J Med Sci*. 2023 Jan 1;14(1):70-4. DOI:10.3126/ajms.v14i1.48269.
12. Miranda-Mendizabal A, Castellví P, Parés-Badell O, Alayo I, Almenara J, Alonso I, et al. Gender differences in suicidal behavior in adolescents and young adults: systematic review and meta-analysis of longitudinal studies. *Int J Public Health*. 2019 Mar;64(2):265-83. doi: 10.1007/s00038-018-1196-1.
13. Kang BH, Kang HS, Han JJ, Jung S, Park HJ, Oh HK, et al. A retrospective clinical investigations for the effectiveness of closed reduction on nasal bone fracture. *Maxillofac Plast Reconstr Surg*. 2019 Nov 27;41(1):53. doi: 10.1186/s40902-019-0236
14. Ricciardiello F, Mazzone S, Longo G, Russo G, Piccirillo E, Sequino G, et al. Our Experience on Temporal Bone Fractures: Retrospective Analysis of 141 Cases. *J Clin Med*. 2021 Jan 8;10(2):201. doi: 10.3390/jcm10020201. PMID: 33429854; PMCID: PMC7827086.
15. Ulug T, Ulubil SA. Management of facial paralysis in temporal bone fractures: A prospective study analyzing 11 operated fractures. *Am J Otolaryngol*. 2005 Jul-Aug;26(4):230-8. doi: 10.1016/j.amjoto.2005.01.004.