

Head Injury Predominance of Fire Arm Injury with Temporal Bone Fracture

ZEESHAN JAMAL¹, PARDEEP KUMAR², NADIA ASLAM³, EJAZ AHMED AWAN⁴, ABDUL SAMAD⁵, SHABIR AHMED CHEENA⁶

¹Assistant Professor, Department of Radiology, PUMHSW, Nawabshah, District (SBA).

²Associate Professor, Department of Forensic Medicine & Toxicology, PUMHSW, Nawabshah, District (SBA).

³Lecturer, Department of Forensic Medicine & Toxicology, LUMHS, Jamshoro.

⁴Associate Professor, Department of Forensic Medicine & Toxicology, PUMHSW, Nawabshah, District (SBA).

⁵Assistant Professor, Department of Forensic Medicine & Toxicology, PUMHSW, Nawabshah, District (SBA).

⁶Chief Resident Medical Officer, Civil Hospital, Sanghar, Sindh.

Corresponding Author: Dr. Ejaz Ahmed Awan, Cell # 0300-3219531, Email: forensicawan@outlook.com

ABSTRACT

Objective: To identify in patients the causes of head injury and fractured bone in the head.

Study Design: Retrospective study

Place and Duration of Study: Department of Radiology and Department of Forensic Medicine, Peoples Medical College/Hospital, Nawabshah, Shaheed Benazirabad, Sindh, Pakistan from 1st January 2018 to 31st December 2018.

Methodology: Six hundred and twenty one cases of fire arm injuries were evaluated.

Results: Majority of patients come from rural dwellers, 89 (54.6%) compared to 74 (45.4%) proportionately from urban dwellers. Firearm injury is the leading cause of injury in 61 (36.1%) of cases. Temporal bone 96 (56.8 %) is the most head injured as shown in

Conclusion: Most of the patients are from rural areas and among them is the most common cause of head injury is fire arm injury, and temporal bone is also harmed by cranial bone injury.

Key Words: Firearm, Injury, Temporal bone

INTRODUCTION

Temporal bone fractures are rare, they pose a number of diagnostic and treatment challenges. Fracture of the temporal bone necessitates a considerable amount of force. These fractures are rarely found on their own. According to Nosan, 5% of patients who have suffered major head injuries still suffer from temporal bone fractures. The most common treatment for temporal bone trauma is surgery.

Temporal bone cracks may cause a great deal of misery and/or death. They are the softest bones in the base of the skull and need a great deal of breaking strength. As a consequence, if the temporal bone is broken, there is a risk of subsequent utilitarian defects. Various nerves are housed in temporary bones.¹

What's more, transient bones contain the normal carotid vents and stomach divider veins, which are answerable for providing blood and oxygen and vascular infiltration to or from the cerebellum.^{2,3} There are four geographic segments (squamous, mastoid, petrous, tympanic) and different foramen/channels (foramen lac rum, inner acoustic meatus, jugular foramen) in the fleeting bone with complex life system.

The mechanism of trauma can be divided into blunt trauma, which is most often caused by motor vehicle collisions, and penetrating trauma, which is much less common but can cause a much more severe injury depending on the projectile's characteristics. Penetrating temporal bone damage is a rare complication that can be caused by a number of projectiles.

Gunshot wounds with a high rate of fire are probable Major vascular and neurologic injury can necessitate immediate treatment.⁴

METHODOLOGY

The aim of the research was to determine the frequency of temporal bone fractures following a head injury, as well as the gender distribution of these fractures, the cause of the injury, otolaryngology presentation, radiological findings, and fracture outcome. We looked at head CT scans from the previous year to see if there were any temporal bone fractures.

This study has received ethics and research approval. Since this is a systematic examination, patients' permission was not necessary. The study included 163 patients, both male and female, ranging in age from 15 to 56, with the aim of evaluating the incidence of temporal bone fracture in fire arm injuries. The patient's consent was obtained for the collection of data. A total of 163 males and females aged 15 to 56 years old participated in the study the incidence of temporal broken bone in fire arm injuries the data was entered and analyzed through SPSS-25.

RESULT

Out of 163 patients evaluated and the majority of patients come from rural dwellers, 89 (54.6%) compared to 74 (45.4%) proportionately from urban dwellers (Table 1). Firearm injury is the leading cause of injury in 61 (36.1%) of cases (Table 2).

Firearm injury is the leading cause of injury in 61 (36.1%) of cases (Table 2). Temporal bone 96 (56.8 %) is the most head injured as shown in (Table 3).

Table 1: Frequency of area of the population

Residence	No.	%
Rural	89	54.6
Urban	74	45.4

Table 2: Frequency of causes of head injury

Cause of Head Injury	No.	%
Fire Arm Injury	61	36.1
Road Traffic Accident	9	5.3
Fall from Height	15	8.9
Sports Injury	41	24.3
Industrial Injury	20	11.8
Violent assault	17	10.1

Table 3: Frequency of site of head injuries

Site of injury	No.	%
Frontal Bone	28	16.6
Temporal Bone	96	56.8
Occipital Bone	18	10.7
Nasal Bone	14	8.3
Parietal Bone	13	7.7

DISCUSSION

High-energy trauma causes temporal bone fractures. Temporal bone fractures are more common in males, younger age groups, and in motor vehicle accidents, according to the literature [4-7]. In our research, high-energy trauma, such as a car accident, was the most common cause, accompanied by other factors such as a fall from a great height, attack, sports injury, and occupational injury.³

Identification of temporal bone fractures helps in the prediction of trauma-related complications, thus directing hospital administration and care. Although temporal bone fractures are rare, they do raise a number of medical and clinical concerns. The amount of force required to fracture the temporal bone is enormous.⁷

After life-threatening injuries have been treated, the care of temporal bone fractures is focused on restoring functional deficits snippets rather than mitigating and repairing bone. Hearing loss, facial nerve dysfunction, and cerebrospinal fluid leakage are all common injuries that necessitate surgery (CSF) Leaks, to be precise. The temporal is a non-weight-bearing region complex. Accordingly, displaced fractures rarely have any cosmetics, in and of themselves, squalls squeal. The fractures may, however, include the 7th cranial nerve and the 7th cranial nerve Devastating cosmetic and functional injuries may happen.⁵

The magnitude of on the basis of physical examination and imaging tests, the injuries would identify the urgency and type(s) of required surgical procedures. The trauma mechanism can be split into blunt trauma, with a motor most vehicle collisions, as well as penetrating injuries, which are much less common but can, lead to injuries that are far more severe, depending on the projectile's features.

Penetrating temporal interaction bone damage is unusual and can result from a number of projectiles. High velocity bullet wounds can lead to major vascular and vascular wounds. Neurological harm and can entail urgent intervention.

CONCLUSION

The most common cause of temporal bone fractures is serious head trauma, with motor vehicle collisions being the most common cause. Many studies have been done on temporal bone but our study shows that most of the patients are from rural areas and among them is the most common cause of head injury is fire arm injury, and temporal bone is also harmed by cranial bone injury.

REFERENCES

1. Amin Z, Sayuti R, Kahairi A, Islah W, Ahmad R. Head injury with temporal bone fracture: one year review of case incidence, causes, clinical features and outcome. *Med J Malaysia*. 2008 Dec;63(5):373-6.
2. Ishman SL, Friedland DR. Temporal bone fractures: traditional classification and clinical relevance. *The Laryngoscope*. 2004 Oct;114(10):1734-41.
3. Burgut HR, Bener A, Sidahmed H, Albuz R, Sanya R, Khan WA. Risk factors contributing to road traffic crashes in a fast-developing country: the neglected health problem. *Turkish Journal of Trauma and Emergency Surgery*. 2010 Nov 1;16(6):497-502.
4. Dahiya R, Keller JD, Litofsky NS, Bankey PE, Bonassar LJ, Megerian CA. Temporal bone fractures: otic capsule sparing versus otic capsule violating clinical and radiographic considerations. *Journal of Trauma and Acute Care Surgery*. 1999 Dec 1;47(6):1079.
5. Moore PL, Selby G, Irving RM. Gunshot injuries to the temporal bone. *The Journal of Laryngology & Otology*. 2003 Jan;117(1):71-4.
6. Brodie HA, Thompson TC. Management of complications from 820 temporal bone fractures. *Am J Otol*. 1997;18:188-197
7. Johnson F, Semaan MT, Megerian CA. Temporal bone fracture: Evaluation and management in the modern era. *Otolaryngology Clinics of North America*. 2008;41(3):597-618.
8. Basavaraju U, Jayaramaiah SK, Turamari RU, Prakash V, Mankani S. Temporal Bone Fractures and its Classification: Retrospective Study of Incidence, Causes, Clinical Features, Complications and Outcome.
9. Ashley MJ, editor. *Traumatic brain injury: rehabilitation, treatment, and case management*. CRC Press; 2016 Apr 19.
10. Rozen SM. Traumatic Facial Nerve Injury. In *Facial Trauma Surgery 2020* Jan 1 (pp. 58-78). Content Repository Only!.
11. Saraiya PV, Aygun N. Temporal bone fractures. *Emergency radiology*. 2009 Jul 1;16(4):255-65.
12. Schubiger O, Valavanis A, Stuckmann G, Antonucci F. Temporal bone fractures and their complications. *Neuroradiology*. 1986 Mar 1;28(2):93-9.
13. Lambert PR, Brackmann DE. Facial paralysis in longitudinal temporal bone fractures: A review of 26 cases. *The Laryngoscope*. 1984 Aug;94(8):1022-6.
14. Wennmo C, Spandow O. Fractures of the temporal bone—Chain incongruencies. *American journal of otolaryngology*. 1993 Jan 1;14(1):38-42.
15. Amin Z, Sayuti R, Kahairi A, Islah W, Ahmad R. Head injury with temporal bone fracture: one year review of case incidence, causes, clinical features and outcome. *Med J Malaysia*. 2008 Dec;63(5):373-6.