

ORIGINAL RESEARCH

Retrospective Analysis of Pattern of Skull Fractures in Different Medicolegal Autopsies: An Institutional Based Study

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ABSTRACT

Background: Skull fractures occurred due to RTAs, Assaults and other cases are the most common cause for hospitalization. The present study was conducted to analyze retrospective pattern of skull fractures in different medicolegal autopsies. **Materials & Methods:** The present retrospective study was conducted in a tertiary care hospital in all patients with skull fractures who were admitted to our Emergency and Surgery department and underwent autopsy. In this study total 210 cases of post-mortem were conducted. All the findings were described in detail in the prescribed proforma, and the collected data was analyzed. **Results:** In the present study a total of 210 cases of post-mortem were conducted. In maximum cases the area of fracture was base of skull (30.95%) followed by P-T+Base of skull (18.57%). In maximum cases of autopsy, linear fracture was present (74.76%) followed by comminuted (14.76%). **Conclusion:** The study concluded that in different medicolegal autopsies, maximum area of fracture was base of skull and in maximum cases linear fracture was present.

Keywords: Medicolegal, Autopsies, Skull, Fracture.

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INTRODUCTION

The National Advisory Neurological Diseases and Stroke Council defines head injury as a morbid state, resulting from gross or subtle structural changes in the scalp, skull, and / or the contents of the skull, produced by mechanical forces.¹ The skull fractures due to various mechanical forces, bid an array of diagnostic and medico legal challenges to the treating clinicians as well as the autopsy surgeons. Polson rightly said, no injury to the head is too trivial to be ignored or so serious as to be despaired of.² Skull fractures are of various types i.e., linear, fissured, comminuted and depressed. Some of the skull fractures may cause rupture of the dura mater and brain matter thereby causing damage to the brain and leads to permanent neurological damage and leads to death.³ The present study was conducted to analyze retrospectively pattern of skull fractures in different medicolegal autopsies.

MATERIALS & METHODS

The present retrospective study was conducted in Department of Forensic Medicine, Jorhat Medical

College and Hospital, Jorhat, Assam (India) in all patients with skull Fractures who were admitted to our Emergency and Surgery department and underwent autopsy. In this study total 210 cases of post-mortem were conducted. These cases are presented with skull fractures for post-mortem examination in which manner such as accidental, homicidal, suicidal. All the necessary information was collected from the inquest reports, investigating officer and relatives of the deceased. All the findings were described in detail in the prescribed proforma, and the collected data analyzed with suitable statistical tools to find out the significance of the results. Autopsy dissection techniques were used with references from Otto saphir.⁴

RESULTS

In the present study a total of 210 cases of post-mortem were conducted. In maximum cases the area of fracture was base of skull (30.95%) followed by P-T+Base of skull (18.57%).

In maximum cases of autopsy, linear fracture was present (74.76%) followed by comminuted (14.76%).

Table 1: Distribution among skull region wise injury

Area of fracture	N(%)
Frontal	4(1.90%)
Temporal	4(1.90%)
Parietal	10(4.76%)
Occipital	4(1.90%)
F+P+T	4(1.90%)
P+T	13(6.19%)
F-P-MCF	4(1.90%)
Orbital+F-P	4(1.90%)
O+BOS	13(6.19%)
P-T+Base of skull	39(18.57%)
P+O	5(2.38%)
T+O+F+BOS	5(2.38%)
F+BOS	5(2.38%)
F-P+BOS	3(1.42%)
T+BOS	15(7.14%)
BOS	65(30.95%)
F-T+BOS	4(1.90%)
P-O+BOS	9(4.28%)
Total	210(100%)

F: Frontal; T: Temporal; O: Occipital, P: Parietal; BOS: Base of Skull

Table 2: Distribution among type of fracture

Types of fracture	N(%)
Linear	157(74.76%)
Comminuted	31(14.76%)
Depressed	5(2.38%)
Hinge	9(4.28%)
Depressed +Hinge	4(1.90%)
Comminuted fracture+ Hinge	4(1.90%)
Total	210(100%)

DISCUSSION

Head injury is a morbid state, which is produced by mechanical force which indicates the severity of force applied to the skull region to cause fractures and effect on brain such as transient concussions up to some extent. Mostly due to blunt force impact and causing gross and subtle structural changes in the scalp, skull, and contents of the skull. There are two types of forces that leads to causing head injury.⁵ Direct Force like compression of skull under the heavy objects like vehicle wheels commonly seen in road accidents.⁴ Indirect force from heavy objects like bricks and metal sticks hitting the head in motion which is seen in assault cases, in other way head is in motion and it is hitting the stable objects observed in fell on hard surfaces.³

In the present study a total of 210 cases of post-mortem were conducted. In maximum cases the area of fracture was base of skull (30.95%) followed by P-T+Base of skull(18.57%). In maximum cases of autopsy, linear fracture was present (74.76%) followed by comminuted (14.76%).

Ramesh C. Patil et al conducted a study and found that Blunt force is the most common agent causing the skull fracture in 90 cases (95.74 %) and **least sharp** in 4 cases (4.25 %). Among skull Fracture Comminuted

fracture were seen in 46 cases (48.93%), Linear Fracture in 38 cases (40.42%), Depressed fracture in 8cases (8.5%) and Sutural fracture in 1 case and Gutter fracture in 1 case (1.06%) respectively. Temporal bone was the commonest bone fracture in 17 cases (18.08%).⁶

Shetty Suraj S et al found that incidence of skull fractures is constantly increasing. Males are predominantly affected, and 21-30 years was the most affected age group. The most common type of skull fracture was the comminuted type.⁷

Devi T et al observed that skull fractures were encountered most commonly in pedestrian victims. Of the various types of skull fractures, comminuted fracture was observed in maximum number of cases (31.5%).⁸

Chandan V et al conducted a study to know the pattern of skull fractures & intracranial hemorrhages in fatal RTAs and found that most common single type of external injuries over face and head included abrasions in 66% and lacerations 64% cases. Dura mater was torn in 80%cases & 20% cases had intact dura mater.72% cases presented with skull fracture and all the victims (100%) presented with intracranial haemorrhage and injury to brain parenchyma and 30% cases developed cerebral oedema. The most common

type of brain injury noted was contusions in 52% of cases. Fissured fracture was seen in 58% cases, followed by comminuted fracture in 14% & sutural in 6%. Subarachnoid hemorrhage was seen in 90% cases, of which 26% cases was in the age group of 31-40 years.⁹

CONCLUSION

The study concluded that in different medicolegal autopsies, maximum area of fracture was base of skull and in maximum cases linear fracture was present.

REFERENCES

1. WHO- Road Safety is no accident: A brochure for World Health Day, 7th April 2004, Geneva; WHO 2004.
2. Polson CJ. Head injuries: Essentials of Forensic Medicine, English Universities Press LTD. London.1995; 131.
3. <https://www.sciencedirect.com/topics/psychology/skull-fracture>
4. Otto saphir. Autopsy Diagnosis and technique. Paul Hober Inc. Third edition.'
5. Reddy KSN, Murty OP. The essentials of forensic medicine & toxicology the essentials of forensic medicine & toxicology. 35th ed. New Delhi, India: Jaypee Brothers Medical; 2022.P 186-190.
6. Ramesh C. Patil, Mohammed Arifulla K. et al. Scenario of Pattern of Skull Fractures in the Victims of Unnatural Deaths Due to Head Injury Autopsied at Al-Ameen Medical College Hospital and District Hospital Mortuary, Vijaypur,India. International Journal of current Medical and Applied sciences; 2016; 10(2): 86-92.
7. Shetty Suraj S, Meena K, Varsha S, Mahabalesh S. Spectrum of Skull Fractures in The Autopsied Cases of Head Injuries Due To Mechanical Trauma At A Tertiary Care Center of Mangaluru. Journal of South India Medicolegal Association. 2018;10(1):31-33.
8. Devi T, Devi HR. A Three-Year Study of Skull Fracture Patterns in Fatal Road Traffic Accidents in a Tertiary Care Hospital Mortuary in Imphal From 2015-2018. Medico-Legal Update. 2020 Jan 1;20(1).
9. Chandan V, Manjunatha K, Sidramappa V, Venu RP. Cross-Sectional Study on the Pattern of Skull Fractures & Intracranial Hemorrhages in Fatal Road Traffic Accidents in Chitradurga. Medico-Legal Update. 2019 Jul 1;19(2).