

# Study of Skull Fracture Pattern in Cases with Head Injury by Blunt Force

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## ABSTRACT

**Objective:** To study the skull fracture pattern in cases with head injury by blunt force.

**Research methodology:** This cross-sectional study was done at Department of Forensic Medicine, Multan Medical & Dental College, Multan from October 2015 to April 2016. Total 100 cases of intracranial head injury by blunt force were recruited in this study.

**Results:** In present study total 100 cases of head injury were include. Of which 42 cases had scalp injury, 4 cases had skull fracture and 36 cases had scalp and skull fractures. Among the 40 cases of skull fractures, vault fracture was noted in 26 (65%) cases followed by base and vault & base fractures as 5 (12.5%) and 9 (22.5%) respectively.

**Key Words:** Scalp, Blunt trauma, Skull fracture, Head injury, Fissured fracture

## INTRODUCTION

Head injury is defined as any trauma to skull, scalp or brain and brain injury without skull fracture is not un-common. Analysis of pattern of skull fracture in these cases is very important because human head is the most important and most exposed body part of the human body. Due to accident or criminal violence, human head becomes most susceptible to injuries<sup>1</sup>

By blunt force, skull fracture offers varying medico legal and diagnostic problems the clinicians and medical jurists.<sup>2</sup> Due to mortal results and different important medicolegal implication which may arise, this subject has its importance.<sup>3</sup>

It has been truly said by Polson<sup>4</sup> that no injury to the head is too trivial to be ignored or so serious as to be despaired of. Nowadays, by blunt force head injury rate is very high globally, especially in the more densely populated countries with heavy and fast flow of traffic along with rapid industrial growth rate.

## Research Methodology

Total 100 cases with injury of head by blunt force (cases of vehicle accidents, fall from height, gun shoot and fall of masonry) were selected from the Department of Forensic Medicine Multan Medical & Dental College, Multan from October 2015 to April 2016. Head injury cases with completely destroyed brain and skull were excluded from the study. A detailed post-mortem examination was done on every case. History was taken from eye witnesses and relatives regarding cause, time and place of injury,

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whether accidental or homicidal, any lucid interval, survival period after head injury and age of the cases. Examination of the body was done and age of the cases was confirmed, general built was recorded. Type of Trauma, site and type of skull fractures were also recorded on predesigned proforma along with demographic profile of the cases.

Collected data was analyzed by using SPSS version 20. Numerical data was presented as mean and SD and categorical data was presented as frequencies and percentages.

## RESULTS

In present study total 100 cases of head injury were included. Of which 42 cases had scalp injury, 4 cases had skull fracture and 36 cases had scalp and skull fractures. (Fig. 1)

Out of 40 cases of skull fracture, most of the cases belonged to age group 41-50 years, while direct trauma to head was the most common cause almost in 90% cases. (Fig. 2)

Among the 40 cases of skull fracture, vault fracture was noted in 26 (65%) cases followed by base and vault & base fractures as 5 (12.5%) and 9 (22.5%) respectively. (Fig. 3)

Among the cases of skull fracture, depressed, comminuted and fissured type were 12 (30%), 8 (20%) and 20 (50%) respectively. (Fig. 4)

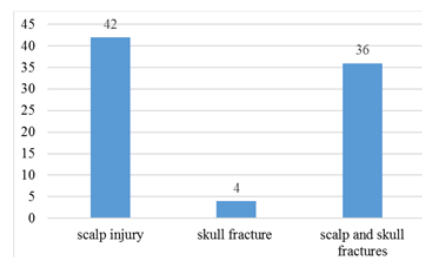


Fig. 1: Incidence of Skull Fracture

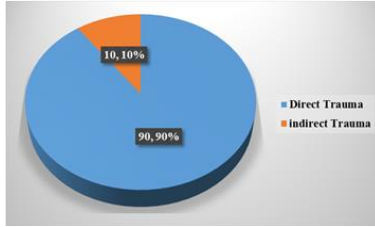


Fig. 2: Type of Trauma

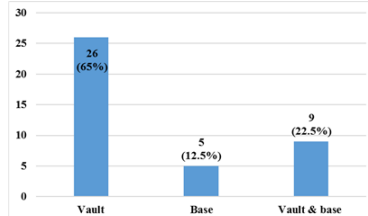


Fig. 3: Site of Skull Fractures

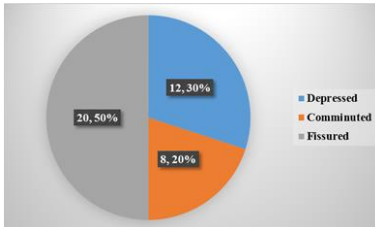


Fig. 4: Type of Skull Fractures

## DISCUSSION

Head injury is increasing day by day with significant morbidity and mortality. Its knowledge is very important for preventive and curative management.<sup>5</sup> Head injury by blunt trauma lead to carnio-cerebral injuries and most of time occurred in vehicular accidents (10%) as compared to head on fall from height (12%). However Thangarajet al<sup>6</sup> noted majority of such injuries caused by fall from height (34%) in a study. Evidence of external injury i.e. scalp involvement may not present in any case of head trauma as told by Gradwhol et al<sup>7</sup> and Pathak et al.<sup>8</sup> But any scalp injury potentially be looked upon serious no matter of the case presentation as Simpson et al<sup>9</sup> advised. In our study almost 30% of head trauma had no evidence of external trauma but had intracranial lesion which caused mortality.

Most of fractures were linear (fissured) 50% but others include basilar 12.5%, comminuted 20% and depressed 30% almost of same pattern as observed by Pathak et al.<sup>8</sup>

Although the linear is the leading one 50% but depressed were also in 30% and comminuted 20%. Manish et al<sup>10</sup> noted 39% linear fracture followed by comminuted 20% and depressed 11% but in our study the 2<sup>nd</sup> leading one was of depressed fracture. Muksh k et al<sup>11</sup> and Ravindra et al<sup>12</sup> showed majority head trauma which proved fatal had skull fracture almost in 80%, the situation faced in this

study where 51% sustained skull fracture and vault sustained most of skull fractures with following percentages temporal 41%, occipital 35%, parietal 45%, frontal 57%, sphenoid 13% and base in 22%. Our findings were inconsistent with their studies. Ranjit et al<sup>13</sup> experienced 84% skull fracture in 113 cases series with significant number of linear fracture of skull with base 24.21% followed by linear fracture alone 16.84%, basal alone 15.79% and depressed fracture 14.74% and the commonest location were temporo-parietal and fronto-parieto-temporal region.

## CONCLUSION

- Common causes of intracranial lesions due to blunt force are vehicular accidents, assault by blunt weapons, and fall from height etc.
- Maximum numbers of cases are due to vehicular accidents.
- No age is exempted.
- Skull fractures in majority of the cases are due to direct trauma and few are due to indirect trauma.
- Fractures can occur without any evidence of injury to scalp.
- Intracranial injuries can occur with or without fracture of the skull.

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