

## Pattern of Skull Fracture in Fatal Road Traffic Accident Victims: An Autopsy Study

Singh B.K.\*

### Abstract

Head injuries are the most serious injuries in the term of morbidity and mortality. This study was conducted in Maulana Azad Medical college, New Delhi Mortuary among the 102 post mortem cases of road traffic accident victims over the period of three years from 2008-2011. Objective of this study was to find out pattern of skull fracture in fatal road traffic accident victims. Most common type of fracture was linear fracture of vertex. Parieto-temporal fracture was most common followed by base of the skull. Fracture involving more than one bone was common.

**Keywords:** Skull fractures; Linear fractures; Basal fractures; Depressed fractures; Manner of death.

### Introduction

In medico-legal practice blunt head injuries are most frequently caused by traffic accident, fall from height, assault, train accident etc. Head injury has been defined[1] as “ a morbid state resulting from gross or subtle structural changes in the scalp, skull and/or the content of skull, produced by mechanical force. Severe head injury with or without peripheral trauma is commonest cause of death and/or disability up to the age of 45 years in developed countries.[2] According to study conducted in Chandigarh[3] head injuries accounted for 73% of all fatal road traffic accident cases. Head injury, a common term that is actually craniocerebral damage, has been recognized since ages. The manner of death in cases of craniocerebral trauma may be accidental, homicidal or suicidal. Accidental deaths are by far the most common and road traffic accidents are the main component, followed by falls from height and railway accidents.. As being developing countries India have road

and traffic problem, so fatal road traffic accidents are quiet common.

### Material and Methods

The study was conducted on 102 cases of fatal road traffic accident victims in Maulana Azad Medical College, New Delhi from 2008 to 2011. In fifty-four out of 102 cases, cause of death was craniocerebral damage. Brief history was taken from the relatives of the victims, the accompanying police personnel, hospital records and inquest papers. Fracture type and location of fracture were noted at the time of autopsy.

### Observation

**Table 1: Showing fatal road traffic accident victims with or without skull fracture**

Road traffic accidents	No of cases	Percentage
RTA without skull fracture	48	47.06
RTA with skull fracture	54	52.94

**Table 2: Pattern of skull fracture in fatal road traffic accident victims**

Type	No of cases	Percentage
Linear	46	85.19
Depressed	02	3.70
Linear + Depressed	01	1.85
Comminuted	05	9.26

**Authors affiliation:** \*Assistant Professor,Forensic Medicine Department M. G. M. Medical College,Indor M. P.

**Reprints requests:** Dr. Bajrang Kumar Singh, Assistant Professor,Forensic Medicine Department M. G. M. Medical College,Indor M. P.

E-mail:rahul1985220@gmail.com

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**Table 3: Distribution of skull fracture in fatal road traffic accident victims**

Site	Total	Percentage
Frontal	01	1.85
Temporal	05	9.26
Parietal	06	11.11
Occipital	02	3.70
Fronto-parietal	07	12.96
Parieto-temporal	13	24.07
Parieto-occipital	06	11.11
Base of the skull	08	14.81
Multiple site	06	11.11

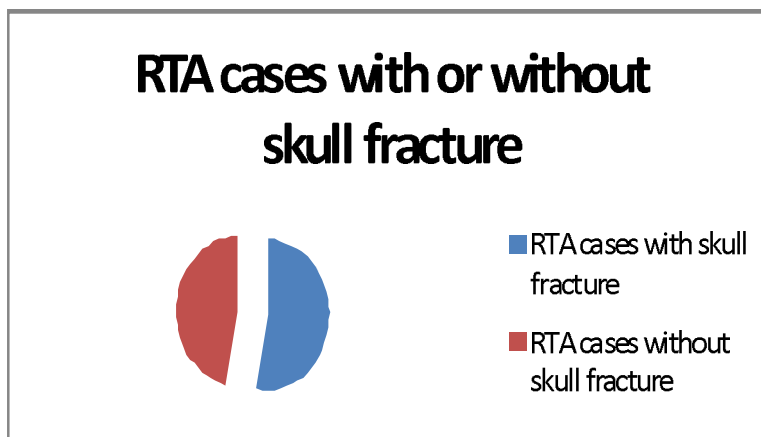
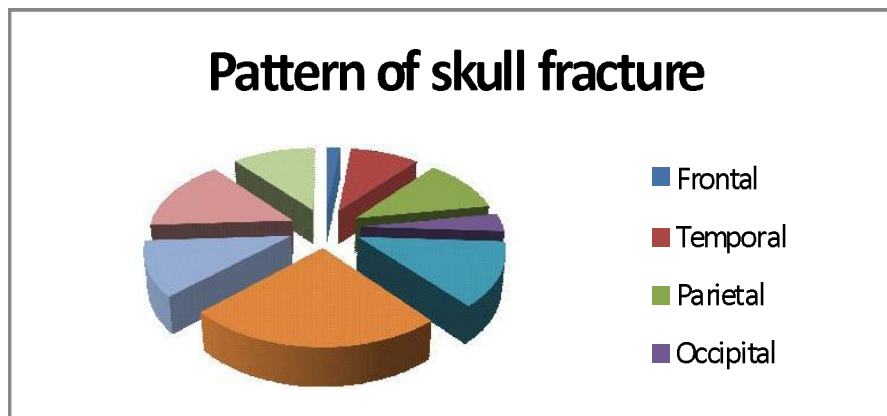
### Discussion

In present study skull fracture was present in 52.94 % of cases of fatal road traffic accident victims.

In present study out of 102 cases, head injuries were present in 82 cases. Out of 82 cases skull fracture was present in 54 cases accounting for 65.85% cases. Study

conducted by Kumar A *et al* showed[4] that skull fractures were present in 69.63 % cases of head injury.

Linear fractures comprised majority of cases. Depressed and comminuted fractures were present in relatively fewer cases. Young and Schmidek[5] also reported that linear fractures were the most common and depressed the least common in 134 patients with occipital fractures. Jamieson and Yelland[6] reported that out of 109 fracture cases, 23 were depressed and the rest were linear (78.9%). All the above mentioned studies are consistent with our study for linear fracture being most common. In present comminuted fracture was also reported in contrast to Jamieson and Yelland study. In study conducted by Chaudhary BL *et al*[7] temporal fracture was the commonest one, comprising 29.78% cases. In present study parieto-temporal fracture

**Chart 1: Showing fatal road traffic accident victims with and without skull fracture****Chart 2: Showing pattern of skull fracture in fatal road traffic accident victims**

was most common in 24.07 % cases followed by fracture of the base of skull in 14.81% of cases. Fractures confined to the base of the skull only were present in 14.81% cases. Such a large proportion of the fractures of base are due to the occurrence of contrecoup fractures as reported by Hirsch and Kaufman.[8] The most likely mechanism of causing contrecoup fractures in closed head injuries is transmission of forces from the point of impact through the brain to the floor of the skull. Cases of head injuries having skull fracture tend to have more complications and are more often fatal than those without skull fracture.[9] Chandra *et al* reported[10] that temporal bone fracture was most common in 59 % cases followed by occipital bone fracture in 58% cases in contrast to present study where pareto-temporal bone fracture was most common.

### Conclusion

In present study skull fracture was present in 52.94 % of cases of fatal road traffic accident victims. Most common type of fracture was linear, which is consistent with existing literatures. Fracture involving more than one skull bones was most common followed by fracture involving basal area of skull in the present study. Fracture involving skull bone should be looked carefully all over the skull as multiple sites fracture is common.

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