ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 04 | April - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ANALYSIS OF FACIAL BONE FRACTURES IN ROAD TRAFFIC ACCIDENT CASES: A PROSPECTIVE POSTMORTEM STUDY

Forensic Medicine

Dr Vijay Kumar A G Professor & Head, Department Of Forensic Medicine & Toxicology Adichunchanagiri Institute Of Medical Sciences, Mandya

Dr Vikas Basavaraj Arabi* Postgraduate Student Department Of Forensic Medicine & Toxicology, BMCRI *Corresponding Author

Dr Jyothi S Postgraduate Student Department Of Forensic Medicine & Toxicology, BMCRI

Dr Tejas Postgraduate Student Department Of Forensic Medicine & Toxicology, BMCRI

ABSTRACT

A facial fracture is a broken bone in the face. The face has a complex bone structure. Nasal fractures (broken nose) are the most common. Fractures to other facial bones can also occur. You might only have one fracture, or you might have several broken bones. Multiple fractures are more likely to occur during a motor vehicle accident or other high-impact accident. Fractures may be unilateral (occurring on one side of the face) or bilateral (occurring on both sides of the face). This is a prospective study, in which 100 RTA cases which are autopsied during the period 1st January 2021 to 31st December 2022 were studied and anlyzed. In that 74 cases had facial bone fracture. Maximum number of victims belongs to 31-40 years (12 cases) decade followed by 21-30 years (08 cases). Fracture of frontal bone accounts for maximum number of cases (36 cases) followed by Nasal bones (30 cases). In 54 cases fracture were seen at multiple sites. CT scan and X ray report were referred in most of the cases to confirm the fracture.

KEYWORDS

Facial Bones, Fractures, Road Traffic Accident

INTRODUCTION:

A facial fracture is a broken bone in the face. The face has a complex bone structure. The facial skeleton consists of the:

- Frontal bone (forehead).
- Zygomas (cheekbones).
- Orbital bones (eye sockets).
- Nasal bones.
- Maxillary bones (upper jaw).
- Mandible (lower jaw).

There are many other bones that are found deeper within the facial structure. Muscles required for chewing, swallowing and talking are attached to these bones.

Nasal fractures (broken nose) are the most common. Fractures to other facial bones can also occur. You might only have one fracture, or you might have several broken bones. Multiple fractures are more likely to occur during a motor vehicle accident or other high-impact accident. Fractures may be unilateral (occurring on one side of the face) or bilateral (occurring on both sides of the face).

Located near to the bones in your face are the nerves and muscles that are responsible for sensations, expressions and eye movements. The muscles and nerves are located near to the facial bones. The face is close to the brain and central nervous system (CNS). Fractures may result in damage to cranial nerves, depending on the particular type and location of the fracture. Fractures to the orbit (eye socket) may result in problems with vision. Fractures of the nose may make it difficult for the injured person to breathe or smell. Also, fractures of the jawbones may cause breathing problems or make it difficult to chew, speak, or swallow.

There Are Several Main Types Of Facial Fractures.

Nasal Bones (broken Nose):

Nasal bone fractures are the most common type of facial fracture. The nasal bone is made up of two thin bones. It takes less force to break the nasal bones than other facial bones because they are thin and prominent. Usually, the nose looks deformed or feels sore to the touch after a fracture. Swelling in the area might make it more difficult to assess how much damage has occurred. Nosebleeds and bruising around the nose are common symptoms of a nasal fracture.

Frontal Bone (forehead) Fractures:

The frontal bone is the main bone in the forehead area. A high-impact injury to the head can cause a fracture of the frontal bone and floor of the sinuses. The fracture is mostly likely to occur in the middle of the forehead. That's where the bone is the thinnest and weakest. An injury may cause the bone to be indented (pushed inward). Substantial force is required to fracture the frontal bone, so often other injuries to the face and skull or neurological trauma may be present. Associated problems may include leakage of the cerebrospinal fluid, eye injuries and damage to the sinus ducts.

Zygomaticomaxillary Fractures (broken Cheekbone/upper Jaw):

The zygomas (cheekbones) are attached at several points to the upper jaw (maxilla) and bones of the skull. Fractures to the cheekbone(s) might also involve breaks in other facial bones nearby.

Orbital Fractures (eye Socket):

There are three main types of orbital fractures.

- **Orbital rim fracture:** The outer rim is the thickest part of the eye socket. It requires a lot of force to break the bone. Many other injuries may accompany an orbital rim fracture, such as damage to the optic nerve.
- **Blowout fractures**: The orbital rim remains intact in this case, but a crack forms in the thin bone at the lower part of the eye socket. The eye muscles and other structures can become entrapped in the break and prevent the eyeball from moving normally.
- **Direct orbital floor fracture:** This is a rim fracture that extends into the lower socket.

Mid-face (Le Fort fractures):

Blunt force trauma tends to cause fractures along three lines of weakness in the mid-face. One characteristic of all types of Le Fort fractures is the fracture of the pterygoid processes, part of the sphenoid bone. There are three main types of Le Fort fractures, but there may be individual variations.

- **Le Fort I**: The fracture extends above the upper jaw (maxilla).
- **Le Fort II**: The fracture extends from the lower part of one cheek, below the eye, across the bridge of the nose, and to the lower part of the other cheek.
- **Le Fort III**: The fracture extends across the bridge of the nose and the bones surrounding the eyes.

Mandible (lower jaw):

The mandible holds the lower teeth in place and moves when you are talking or chewing. Fractures of the lower jaw affect the sections of the lower jaw that supports teeth (called the body), the part where the jaw curves upwards into the neck (the angle) or the knob-shaped joint at the top of the jaw bone (the condyle) or the point where the two sides of the lower jaw are joined (the symphysis). If you have a break in the lower jaw, you may also have broken or loose teeth.

OBJECTIVE:

1. The Analysis Of Facial Bone Fractures In Road Traffic Accident Cases

METHODOLOGY:

This is a prospective study, in which 100 RTA cases which are autopsied during the period 1st January 2021 to 31st December 2022 were studied and anlyzed at the Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, Mandya, Karnataka, India. During this study several epidemiological observations and their results have been considered.

RESULTS:

Table 1: Anatomical site of facial bone fractures:

Si.No	Site Of Facial Bone Fractures	Number Of Cases
1.	Frontal Bone	36
2.	Orbital Bones	12
3.	Nasal Bones	30
4.	Ethmoid Bones	12
5.	Zygoma And Zygomatic Arch	09
6.	Maxillary Bones	06
7.	Combination (More Than One Site)	54

DISCUSSION:

This is a prospective study, in which 100 RTA cases which are autopsied during the period 1st January 2021 to 31st December 2022 were studied and anlyzed. In that 74 cases had facial bone fracture. Maximum number of victims belongs to 31-40 years (12 cases) decade followed by 21-30 years (08 cases). Fracture of frontal bone accounts for maximum number of cases (36 cases) followed by Nasal bones (30 cases). In 54 cases fracture were seen at multiple sites. CT scan and X ray report were referred in most of the cases to confirm the fracture.

According to a study by Venugopal et.al., most of the facial fracture cases belongs to 21-30 age group with male to female ratio of 21:1. Mandibular fractures accounts for 52.2%, Panfacial fractures accounts for 4.7%, frontal bone fractures 8.9%, orbital fractures 0.7%, naso-orbito-ethmoid complex fractures 0.7%, zygomatic complex fractures 23.5%, fracture maxilla 11.5% of all facial fractures.[1]

Martin et al. studied 409 patients with frontal bone fracture sustained during road traffic accident, were males comprised 72.86% of patients and the average age was 30.4 years. The most frequently injured age group was 17 to 19 year olds.[2]

According to a study by Obuekwe et.al., the minibus was the most common type vehicle involved in road traffic accident cases which comprises of 36% of all cases and tyre blast (21.2%) was the most common factor for accidents. Males 117 (37.5%) in the 21 – 30 year-age range were most commonly involved. The frontal region was most commonly involved site of soft tissue injury (37.3%) with mandible was the most commonly fractured facial bone (29.2%).[3]

According to a study by Amit A, et.al motorcycles were the most involved (53.71 %) vehicle type and breaking of traffic rules (24 %) was the most common etiological factor. Male to female ratio was 6.3:1. The most common age group involved was 21–50 (68.85 %). The nasal bone (29.14 %) was most common site of fracture followed by mandible (28.0 %). The number of accident was higher during 1000–1400 hours (23.14 %) period and during weekends (38.0 %).[4]

According to a study by B Rai, indicates that incidence of mandible fractures is common in age Group in 21–30 years, canine is more affected and usual method of treatment is closed reduction.[5]

According to Batstone MD, Four hundred and nine patients were identified. The mid face was injured more frequently than the mandible and the majority of patients had multiple facial injuries. Neurologic, orthopedic, thoracic and abdominal injuries were common and impacted on the management of the patients' facial trauma. Road traffic accidents cause more severe facial trauma than other mechanisms of injury.[6]

CONCLUSION:

This study confirms the higher risk of fractures in younger males and assaults and other traumas were the commonest causes. Isolated nasal bone fractures were most common. The insight into the epidemiology of facial bone fractures and associated injuries is useful not only for developing prevention strategies but also for decisions with regard to patient care, development of optimal treatment regimens and appropriate resource allocation. Furthermore, treatment evaluation and complication rate analysis permits a more realistic interpretation of how patients should be managed.

REFERENCES:

1. Venugopal MG, Sinha R, Menon PS,Chatopadhyay PK, Chowdhury SKR. Fractures in the Maxillofacial Region: A Four Year Retrospective Study. MJAFI 2010; 66: 14-17.
2. Martin DB, Francis NTM, Pamela P, Anthony L. The patterns of facial injury suffered by patients in road traffi c accidents: A case controlled study. International Journal of Surgery. 2007; 5:250-254.
3. Obuekwe ON, Ojo MA, Akpata O, Etetafi a M. Maxillofacial Trauma due to Road Traffic Accidents in Benin City, Nigeria: A Prospective Study. Annals of African Medicine. 2003;2(2): 58– 63.
4. Amit A, Dhanaram G, Deepshikha A. Incidence and Pattern of Maxillofacial Trauma Due to Road Traffi c Accidents: A Prospective Study. J Maxillofac Oral Surg. 2014 Jun; 13(2): 184–188.
5. Rai B, Dhattarwal S, Jain R, Kangra V, Anand, Bhardawaj. Road Traffic Accidents: Site Of Fracture Of The Mandible. The Internet Journal of Epidemiology. 2006;4(2):1-4.
6. Batstone MD, Monsour FN, Pattel P, Lynham A. The patterns of facial injury suffered by patients in road traffic accidents: a case controlled study.