

**REVIEW OF 40 CASES OF ISOLATED FRACTURE MANDIBLE**

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**ABSTRACT****BACKGROUND**

Mandible fractures are a frequent injury because of the mandible's prominence and relative lack of support. The purpose of this study is to clinically determine the most common sites and the prevalence of isolated fracture mandible in our scenario and determine most common traumatic aetiology factor responsible for fracture mandible. Numerous investigators have reported studies on populations on all continents; fractures of the mandible have been reported to account for 36-70% of all maxillofacial fractures. All reports apparently show a higher frequency in males aged 21-30 yrs. There is an emerging trend towards an increase in the frequency of violent mechanisms of fracture and in the proportion of adolescents and young adults sustaining such injuries.

**MATERIALS AND METHODS**

Patients treated at the Otorhinolaryngology Head and Neck Surgery Department of B.D.B.A. Hospital from a period between January 2014 to January 2016 were (retrospectively) evaluated with respect to age groups, gender, aetiology, localisation, type of fractures and treatment.

**RESULTS**

Total number of patients 38, 2 patients had bilateral fracture, males 27 (71.05%), females 11 (28.95%). Anatomical location symphysis and parasymphysis 14 (35%), condylar 12 (30%), body 7 (17.5%), angle 6 (15%), coronoid 1 (2.5%). Aetiological factors road traffic accidents 19 (50%), assault 13 (34.24%), fall 3 (7.89%), work-related trauma 2 (5.26%), sports trauma 1 (2.6%).

**CONCLUSION**

This study indicates that most common fracture in adult patient were symphysis and parasymphysis, second most common were condylar followed by body fracture and angle fracture. The most common cause of the injury maybe road traffic accidents, second most common assault followed by work related injuries, fall and sports injuries.

**KEYWORDS**

Mandible, Fracture, Trauma, Facial, Symphysis, Percentage.

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**BACKGROUND**

- The facial area is one of the most frequently injured parts of the body.<sup>1-3</sup> Fractures of the mandible do occur and form a significant part of facial bone

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fractures encountered by the practicing trauma surgeon.<sup>4,5</sup> Numerous investigators have reported studies on populations on all continents; fractures of the mandible have been reported to account for 36-70% of all maxillofacial fractures.<sup>6,7,8,9</sup> All reports apparently show a higher frequency in males aged 21-30 yrs.<sup>10</sup> Other contributing factors such as socioeconomic status, environment, alcohol use and mechanisms show greater variability.<sup>7,11</sup>

- Local patterns and causes of mandible fractures vary considerably among different study populations and recent overall shifts in the mechanism of injury and age distribution of patients sustaining such injuries are well documented.<sup>12-15</sup> There is an emerging trend

towards an increase in the frequency of violent mechanisms of fracture and in the proportion of adolescents and young adults sustaining such injuries. These trends seem to hold true in urban settings in particular.<sup>8,16,17</sup>

- Results in the United States have been divided. In 1982, Olson and associates demonstrated that vehicular accidents caused 48% of fractures.<sup>18</sup> In 1985, Fridrich and associates demonstrated that altercations accounted for 47% of fractures and automobile accidents for 27%.<sup>17</sup> Also in 1985, Ellis et al reported that 43% were caused by vehicular accidents, 34% were caused by assaults, 7% were work-related, 7% occurred as the result of a fall, 4% occurred in sporting accidents and the remainder had miscellaneous causes.
- Location of mandibular fractures.
- Fridrich and associates showed that most fractures occur in the body (29%), condyle (26%) and angle (25%) of the mandible. The symphyses account for 17% of mandibular fractures, whereas fractures of the ramus (4%) and coronoid process (1%) have lower occurrence rates. In automobile accidents, the condylar region was the most common fractured site. In motorcycle accidents, the symphysis was fractured most often. When assault was the cause, the angle demonstrated the highest incidence of fracture.<sup>17</sup>
- Associated injuries with mandibular fractures.
- Fridrich and associates reported that in patients with mandible fractures, 43% of the patients had an associated injury. Of these patients, head injuries occurred in 39% of patients, head and neck lacerations in 30%, midface fractures in 28%, ocular injuries in 16%, nasal fractures in 12% and cervical spine fractures in 11%. Other injuries present in this group were extremity trauma in 51%, thoracic trauma in 29% and abdominal trauma in 14%. Of the 1067 patients studied, 12 (2.6%) died of their associated injuries before the mandible fracture could be treated.<sup>17</sup>
- Vaillant and Benoist described 14 cases of gunshot injuries to the mandible; 2 children had injuries that resulted from accidents and the adults' fractures were caused by suicide or assault.<sup>19</sup>

**AIMS AND OBJECTIVES**

The purpose of this study is to clinically determine the most common sites and the prevalence of isolated fracture mandible in our scenario and determine most common traumatic aetiology factor responsible for fracture mandible.

**MATERIAL AND METHODS**

Patients treated at the Otorhinolaryngology Head and Neck Surgery Department of B.D.B.A. Hospital from a period between January 2014 to January 2016 were (retrospectively) evaluated with respect to age groups, gender, aetiology, localisation, type of fractures and treatment.

**Inclusion Criteria**

- Age above 15 years.
- Traumatic fracture mandible.

**Exclusion Criteria**

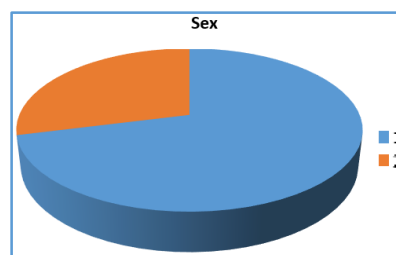
- Age below 15 years.
- Pathological fracture.
- Patient having panfacial fracture.

**RESULTS**

- 1. Sex:** 38 patients were included in the study, 27 (71.05%) males and 11 (28.95%) females with mandibular fractures. 2 patients had a bilateral fractures.

	Number	Percentage
Male	27	71.05
Female	11	28.95
<b>Total</b>	<b>38</b>	<b>100</b>

*Table 1*



*Fig. 1*

**2. Anatomical Location**

- Symphysis and Parasymphyseal fracture account for 35% of total fractures i.e., 14 out of 40 cases had a Symphysis and Parasymphyseal fractures.
- Condylar process fractures account for 30% of total fractures i.e. 12 out of 40 cases had condylar fractures.
- Mandibular body fractures account for 17.5% of total fractures, i.e., out of 40, 7 cases had body fractures.
- Angle - fractures account for 15% of total fracture, i.e. out of 40 cases, 6 had body fractures.
- Coronoid fracture accounts for 2.5% of total fractures, i.e. out of 40 cases 1 case had coronoid fracture.

Anatomical location	Number	Percentage
Symphysis and Parasymphysis	14	35
Condylar	12	30
Body	7	17.5
Angle	6	15
Coronoid	1	2.5
<b>Total</b>	<b>40</b>	<b>100</b>

*Table 2*

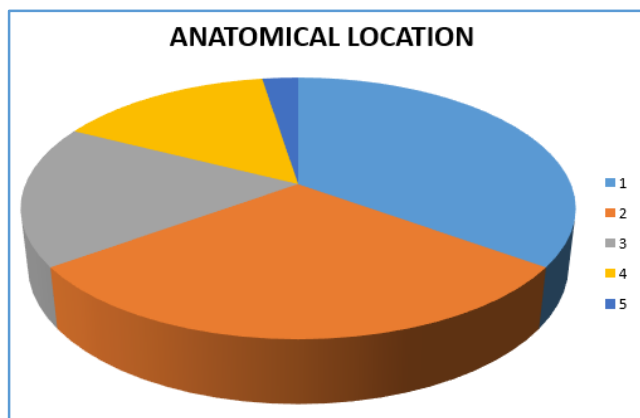


Fig. 2

### 3. Aetiological Factors

	Number	Percentage
Road traffic accidents	19	50
Assault	13	34.24
Fall	3	7.89
Work-related trauma	2	5.26
Sports trauma	1	2.61

Table 3

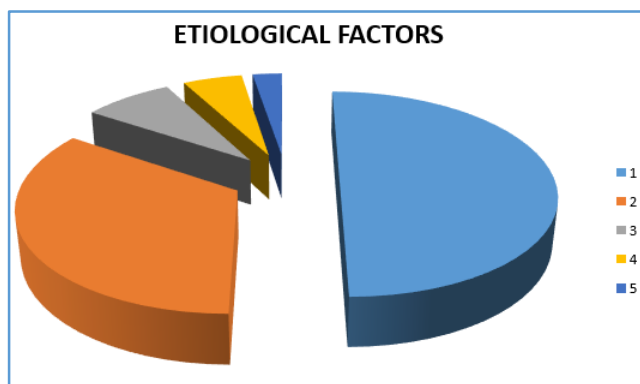


Fig. 3

### DISCUSSION

Facial area is one of the most frequently injured parts of the body. Mandible fractures are a frequent injury because of the mandible's prominence and relative lack of support. Injuries leading to mandibular fractures are influenced by various factors such as the severity and anatomical sites of impacting force, whether the mouth was opened or closed at the time of injury, the presence or absence of teeth and the cross-sectional area of bone.<sup>4,5</sup> As with any facial fracture, consideration must be given for the need of emergency treatment to secure the airway or to obtain haemostasis if necessary before initiating definitive treatment of the fracture.

- In this study, males accounted for 71.05% of all patients with mandibular fractures, a level similar to those reported by Dongas et al,<sup>14</sup> Edwards et al,<sup>15</sup> Qudah et al,<sup>20</sup> Bremerich et al<sup>21</sup> and females are less affected than males with an incidence of 28.95%. The findings from this study are consistent with those from previous research.

- The most common site of mandibular fractures in adult patients were the symphysis and parasymphysis followed by the condyle, body and angle. These findings conflict with studies by Abiose,<sup>1</sup> Ferreira,<sup>16</sup> Oji<sup>22</sup> and in Ibadan, Nigeria, and Portugal in which the mandibular body was identified as the most common fracture site in adult patients. Our findings regarding patients are consistent with those from previous studies.<sup>4,5</sup>
- The cause of the injury maybe road traffic accidents, assault, falls, industrial injuries or sports injuries, but the relative number of each varies considerably between countries and areas.
- In terms of violence, young males are most at risk with alcohol, an aggravating factor.
- Women and children are much less at risk, but can be from domestic violence.
- 19 out of the total 38, i.e. approximately 50% patients had a road traffic accidents similar to results in the United States. Olson and associates demonstrated that vehicular accidents caused 48% of fractures.<sup>18</sup>
- 13 out of 38 patients, i.e. approximately 34.24% had a history of assault, 3 patients had a history of fall, i.e. approximately 7.89%, 2 patients had a history of work-related trauma, i.e. approximately 5.26%, 1 i.e. approximately 2.61% patient occurred in sporting accident. Similar to results in 1985 by Ellis et al reported that 43% were caused by vehicular accidents, 34% were caused by assaults, 7% were work-related, 7% occurred as the result of a fall, 4% occurred in sporting accidents and the remainder had miscellaneous causes.<sup>8</sup>

### CONCLUSION

This study indicates that most common fracture in adult patient were symphysis and parasymphysis. Second most common were condylar followed by body fracture and angle fracture. The most common cause of the injury maybe road traffic accidents, second most common assault, followed by work-related injuries, fall and sports injuries.

### REFERENCES

- Abiose BO. Maxillofacial skeleton injuries in the western states of Nigeria. *Br J Oral Maxillofac Surg* 1986;24(1):31-39.
- Adi M, Ogden GR, Chisholm DM. An analysis of mandibular fractures in Dundee, Scotland (1977 to 1985). *Br J Oral Maxillofac Surg* 1990;28(3):194-199.
- Allan BP, Daly CG. Fractures of mandible: a 35-year retrospective study. *Int J Oral Maxillofac Surg* 1990;19(5):268-271.
- Rowe NL, William J. *Maxillofacial injuries*. 2<sup>nd</sup> edn. Edinburgh: Churchill Livingstone 1994:p. 216.
- Banks P, Brown A. *Fractures of the facial skeleton*. 2<sup>nd</sup> edn. Woburn: Oxford, Butterworth-Heinemann 2001:171-185.

6. Brook IM, Wood N. Aetiology and incidence of facial fractures in adults. *Int J Oral Surg* 1983;12(5):293-298.
7. Van Hoof RF, Merckx CA, Stekelenburg EC. The different patterns of fractures of the facial skeleton in four European countries. *Int J Oral Surg* 1977;6(1):3-11.
8. Ellis E, Moos KF, el-Attar A. Ten years of mandibular fractures: an analysis of 2,137 cases. *Oral Surg Oral Med Oral Pathol* 1985;59(2):120-129.
9. Sojot AJ, Meisami T, Sandor GK, et al. The epidemiology of mandibular fractures treated at the Toronto general hospital: a review of 246 cases. *J Can Dent Assoc* 2001;67(11):640-644.
10. Manson PN. Facial fractures. Chapter 66. In: Mathes SJ, ed. *Plastic surgery*. 2<sup>nd</sup> edn. Vol. 3. Philadelphia: Saunders Elsevier 2006:77-380.
11. McDade AM, McNicol RD, Ward-Booth P, et al. The aetiology of maxillofacial injuries, with special reference to the abuse of alcohol. *Int J Oral Surg* 1982;11(3):152-155.
12. Busuito MJ, Smith DJ, Robson MC. Mandibular fractures in an urban trauma center. *J Trauma* 1986;26(9):826-829.
13. Carlin CB, Ruff G, Mansfeld CP, et al. Facial fractures and related injuries: a ten-year retrospective analysis. *J Craniomaxillofac Trauma* 1998;4(2):44-48.
14. Dongas P, Hall GM. Mandibular fracture patterns in Tasmania, Australia. *Aust Dent J* 2002;47(2):131-137.
15. Edwards TJ, David DJ, Simpson DA, et al. Patterns of mandibular fractures in Adelaide, South Australia. *Aust N Z J Surg* 1994;64(5):307-311.
16. Ferreira PC, Amarante JM, Silva AC, et al. Etiology and patterns of pediatric mandibular fractures in Portugal: a retrospective study of 10 years. *J Craniofac Surg* 2004;15(3):384-391.
17. Fridrich KL, Pena-Velasco G, Olson RA. Changing trends with mandibular fractures: a review of 1067 cases. *J Oral Maxillofac Surg* 1992;50(6):586-589.
18. Olson RA, Fonseca RJ, Zeitler DL, et al. Fractures of the mandible: a review of 580 cases. *J Oral Maxillofac Surg* 1982;40(1):23-28.
19. Zerfowski M, Bremerich A. Facial trauma in children and adolescents. *Clin Oral Investig* 1998;2(3):120-124.
20. Qudah MA, Al-Khateeb T, Bataineh AB, et al. Mandibular fractures in Jordanians: a comparative study between young and adult patients. *J Craniomaxillofac Surg* 2005;33(2):103-106.
21. Bremerich A, Freidl S, Gellrich NC. Mandibular fractures. An epidemiological study of a 10-year cohort. *Acta Stomatol Belg* 1996;93(1):5-11.
22. Oji C. Fractures of the facial skeleton in children: a survey of patients under the age of 11 years. *J Cranio-Maxillofacial Surg* 1998;26(5):322-325.