DOI:10.21276/sjodr

Saudi Journal of Oral and Dental Research
Scholars Middle East Publishers
Dubai, United Arab Emirates
Website: http://scholarsmepub.com/

ISSN 2518-1300 (Print)
ISSN 2518-1297 (Online)

Original Research Article

Mandibular Fractures in Kashmiri Population

Dr. Altaf Hussain Malik, Prof Ajaz A Shah
Oral & Maxillofacial Surgery, Govt Dental College Srinagar (J&K) India

***Corresponding Author:**
Dr. Altaf Hussain Malik
Email: drmalikaltaf@gmail.com

Abstract: Maxillofacial injuries of which mandible fractures is a common phenomenon are very common now due to increased traffic, alcoholism and have a significant functional, anatomic and aesthetic impact on facial region. The aim of the study was to study the pattern of mandibular fractures in Kashmiri population. A prospective study was carried out which included 240 patients to study the etiology, gender distribution and type of mandible fracture present in maxillofacial region in a Kashmiri population. The showed that 73.3 % were males and 26.7% were females ,about 62.9% had suffered fracture due to RTA, followed by13.7% due to falls and 17.9% by assault .About 53.7% of patients had mandible fractures, of which 20.9% times it was parasympheseal fractures. The study establishes that mandibular fractures are very common in Kashmir in maxillofacial region due to road traffic accidents.
Keywords: Fracture, Mandibular, Road traffic accident.

INTRODUCTION

Facial fractures are predominanantly found in young people as they are mostly involved in outdoor activities. Disruption of maxillofacial skeleton causes cosmetic, functional and anatomic derangement of the facial skeleton. Due to increased demands of vehicular traffics by the increasing population of the underdeveloped countries the incidence of trauma is increasing in frequency with significant burden on economy. Maxillofacial trauma is now very common due to high speed travel, increasingly outdoor activities and intolerance in society which is the cause of interpersonal fights.. Mandibular fractures are one of the commonest encountered facial trauma. There is increase in frequency and severity of the maxillofacial injuries [1]. The mandible being only movable bone in skull with less bone support due to presence of teeth and it's peculiar anatomic location make it one of the susceptible bones to fracture in the facial skeleton. The mandible is the largest and strongest bone of the face and is second most commonly fractured bone after nasal bone [2]. About 36% to 54% of all fractures in the maxillofacial region are accounted by mandible, followed by the maxilla (46%), the zygoma accounts for (27%), and the nasal bones (19.5%) [3]. The mandibular fractures occur twice as often as midfacial fractures [4]. The energy required to fracture mandible being of the order of 44.6–74.4 kg/m, which is about the same as the zygoma and about half that for the frontal bone [5-8]. The literature suggests that about four times as much force is required to fracture maxilla [9]. The etiological factors suggested for maxillofacial fractures world wide are, road traffic accidents, assaults, falls, arms and ammunition ,and sport-related injuries. Since ages alcohol consumption is a well-known contributing factor suggested to cause mandibular fractures. The susceptibility to facial injuries is also determined by the socioeconomic factors, demographic location, road traffic legislation and laws to deal with violence and interpersonnel relations . The etiology and pattern of mandibular fracture vary considerably among different study populations. There is overall shift in the mechanism of injury and age distribution of patients sustaining these injuries and are well-documented in literature. The etiological factors responsible for fracture and direction of traumatic force are extremely helpful in diagnosis. The fractures sustained in vehicular accidents are usually different in location and pattern than those sustained in personal altercation. The magnitude of forces can be very much greater in victims of automobile and motorcycle accidents and they tend to have multiple mandibular fractures, whereas single, nondisplaced fractures are usually sustained by victims of personal altercation. There is limited knowledge about about the incidence, diagnosis and treatment of mandibular fractures and the specific type or pattern of mandibular fractures despite abundance of literature. Kashmir valley is noticing increased incidence in traffic accidence due to congested and unplanned road infrastructure. Because of increased road traffic accidents and insurgency in Kashmir valley we undertook this study.

MATERIALS AND METHODS

The study was designed and undertaken in the Department of Oral and Maxillofacial Surgery Govt Dental College Srinagar .About 240 patients of facial trauma were examined who had come for the treatment of facial injuries. The patients were evaluated for cause of trauma, gender and type of mandibular fracture. A thorough clinical examination was carried out in all the patients and necessary radiographic imaging was orded and studied. At least two radiographs at right angles to each other were advised to rule out fracture as most of the times oedema in such patients blunts the clinical examination and diagnosis of the fracture becomes obscure. The indirect fractures of the mandible are common due to force and fulcrum variation , it is recommended to take radiograph of both the sides to rule out fracture. The age group studied was 15-65 years. The patients were informed about the study and a proper consent for the same was obtained from them verbally and in written format. The variables studied were age, sex, type of facial fracture and etiological factor of injury. The data was entered into master chart and studied. An ethical clearance for the same was sought from the ethical committee. The study was not funded from any source

RESULTS

Out of 240 patients studied 73.3 % were males and 26.7% were females (Table1), about 62.9% had suffered fracture due to RTA, followed by13.7% due to falls, and 17.9% by assault, 04 patients reported with gunshot injuries. About 5 patients reported with fractures had underlying pathology and 4 patient reported with fracture due to extraction (table 2). out of 240 patients 53.7% of patients had mandibular fractures (table 3), of which 20.9% had parasympheseal fractures (table 4).

Table 1: Gender distribution of studied subjects

Males	176(73.3%)
Females	64(26.6%)
Total	240

Table 2: Etiology of fractures

Road Traffic Accidents	151 (62.9%)
Falls	33(13.7%)
Assaults	43(1 7.91)%
Gun shot injury	4(1.66%)
Pathology(underlying)	5(2.08%)
Misellenous(Dental Extraction etc)	4(1.66%)

Table 3: Type of facial injury

Mandibular	129(53.75%
Other facial fractures	111(46.25%)

Table 4:Type of Mandibular fracture

Syphmsis	10(7.75%)
Parasymphysis	27(20.9%)
Angle	20(16.6)
Body	16(12.4%)
Condyle	6(4.65%)
Coronoid	1(0.7%)
Combination of mandibular fractures	49(37.98%)

DISCUSSION

The divergent shifts in the society and increased pace of life with unregulated traffic have increased the complexities of the injuries to the face , mandible being the only mobile and most active bone in facial skeleton is affected commonly. The maxillo-facial region occupies the most prominent position in the human body, and is usually highly vulnerable to injuries [10]. The literature reports various etiological factors and pattern of maxillo-facial injuries and they vary from one geographical area to another, depending on the socioe-conomic status, geographic condition and cultural characteristics [11-13].

In our study the predominance of male sex (73.3%) over female sex is seen ,this in consistent to most other studies of the world because males are more involved in outdoor activities like driving, sports, interpersonnel violence etc particulary in Asian part of the world men more frequently involved than females in such activities [14-16].

There is huge difference in the etiological factors in developing and developed contries. The most of our fractures studied are due to road traffic accidents (62.9%) which is in consistent to the other studies of the world. The predominace of road traffic accidents is related to the less regulated traffic, increasing population and overcrowded markets [17-19].

The predominance of mandibular fractures (53.7%) compared to other facial fractures is in consistent with the other studies like Szontagh E [20]and Chandra Sekhar [1]. The anatomic location of fracture correlates significantly with the mechanism of injury and this co- relation dictates the establishment of diagnostic and treatement setup for faciomaxillary trauma patients for successful clinicians. The assault and gunshot victims are more likely to suffer body and angle fractures than expected parasymphyseal fractures. The symphyseal/ parasymphyseal fractures are very common in automobile injury patients and they have fewer body fractures than trauma from a fist or other blunt objects to lateral portions of the jaw, predisposing such patients to fractures in the angle and body regions of the mandible. The posteriosuperiorly directed forces in injured patients in accidents such as falls and being struck by vehicles where chin receives the primary force of impact should be suspected of having condylar and sub-condylar injuries [21].

Amongst the all mandibular fracture cases studied in the present study, parasymphyseal fracture was highest in number (20.9%). These findings are comparable with studies carried out Buchanan *et al* [22, 23]. Similar findings of parasymphsis being the commonest of fracture are reported by Giri *et al* [24]. The long root of canine root weakening the structure of the mandible makes the parasymphesal fracture a very common occurence. The other reason cited for being the commenst site of fracture is that the bone fracture at site of tensile strain since their resistance compressive force is greater. Mandible is not a smooth curve in a uniform cross-section being similar to an architectural arch and tends to distributes the applied force along its entire length. This particular feature leads to greater developement of force per unit area in certain areas resulting in increased concentration of tensile strength leading to a fracture at the site of maximum convexity of the curvature [25]. In other studies the the other common sites found are symphysis [26, 27], body [28, 29], angle [30, 31] and condyle [32, 33]. The difference suggested is mostly related to etiological factors with road traffic being commenst in underdeveloped countries compared to falls and interporsonnel violence in developed nations [34].

CONCLUSION

Mandibular symphyseal and parasymphyseal are common in Kashmiri population with the main causative factor being road traffic accidents compared to western part of the world where assaults and other injuries are the etiologic factors rather than road traffic accidents. Necessary traffic regulations are very important to bring down the frequency of road accidents.

REFRENCES

1. Shekar, B. C., & Reddy, C. V. K. (2008). A five-year retrospective statistical analysis of maxillofacial injuries in patients admitted and treated at two hospitals of Mysore city. *Indian journal of dental research*, *19*(4), 304.
2. Haug, R. H., Prather, J., & Indresano, A. T. (1990). An epidemiologic survey of facial fractures and concomitant injuries. *Journal of Oral and Maxillofacial Surgery*, *48*(9), 926-932.
3. Elgehani, R. A., & Orafi, M. I. (2009). Incidence of mandibular fractures in Eastern part of Libya. *Med Oral Patol Oral Cir Bucal*, *14*(10), 529-32.
4. Halazonetis, J. A. (1968). The ‘weak’regions of the mandible. *British Journal of Oral Surgery*, *6*(1), 37-48.
5. Swearingen, J. J. (1965). *Tolerances of the human face to crash impact*. Federal Aviation Agency, Office of Aviation Medicine, Civil Aeromedical Research Institute.
6. Hodgson, V. R. (1967). Tolerance of the facial bones to impact. *American Journal of Anatomy*, *120*(1), 113-122.
7. Miloro, M., Ghali, G. E., Larsen, P. E., & Waite, P. D. (2004). Peterson's principals of oral and maxillofacial surgery. *Management of Impacted Teeth Other than Third Molars, London, B. C Decker Inc*, 131-7.
8. Luce, E. A., Tubb, T. D., & Moore, A. M. (1979). Review of 1,000 major facial fractures and associated injuries. *Plastic and Reconstructive Surgery*, *63*(1), 26-30.
9. Huelke, D. F. (1964). Location Of Mandibular Fractures Related To Teeth And Edentulous Regions. *Journal of oral surgery, anesthesia, and hospital dental service*, *22*, 396-405.
10. Adeyemo, W. L., Ladeinde, A. L., Ogunlewe, M. O., & James, O. (2005). Trends and characteristics of oral and maxillofacial injuries in Nigeria: a review of the literature. *Head & Face Medicine*, *1*(1), 7.
11. Leles, J. L. R., Santos, Ê. J. D., Jorge, F. D., Silva, E. T. D., & Leles, C. R. (2010). Risk factors for maxillofacial injuries in a Brazilian emergency hospital sample. *Journal of Applied Oral Science*, *18*(1), 23-29.
12. KHITAB, U., Ansari, S. R., Khan, A., & Khan, M. T. (2010). Occurrence and characteristics of maxillofacial injuries-A study. *Pakistan Oral & Dental Journal*, *30*(1).
13. Sirimaharaj, W., & Pyungtanasup, K. (2011). The epidemiology of mandibular fractures treated at Chiang Mai University Hospital: a review of 198 cases. *Journal of the Medical Association of Thailand*, *91*(6), 868.

14. Adi, M., Ogden, G. R., & Chisholm, D. M. (1990). An analysis of mandibular fractures in Dundee, Scotland (1977 to 1985). *British journal of oral and maxillofacial surgery*, *28*(3), 194-199.
15. Bataineh, A. B. (1998). Etiology and incidence of maxillofacial fractures in the north of Jordan. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, *86*(1), 31-35.
16. Al Ahmed, H. E., Jaber, M. A., Fanas, S. H. A., & Karas, M. (2004). The pattern of maxillofacial fractures in Sharjah, United Arab Emirates: a review of 230 cases. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, *98*(2), 166-170.
17. Luce, E. A., Tubb, T. D., & Moore, A. M. (1979). Review of 1,000 major facial fractures and associated injuries. *Plastic and Reconstructive Surgery*, *63*(1), 26-30.
18. Bataineh, A. B. (1998). Etiology and incidence of maxillofacial fractures in the north of Jordan. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, *86*(1), 31-35.
19. Shah, A., Ali, A. S., & Abdus, S. (2007). "Pattern and management of mandibular fractures: a study conducted on 264 patients,"*Pakistan Oral & Dental Journal*, 27(1), 103–106.
20. Szontagh, E., & Halasz, J. (1993). Epidemiologic study of mid-face fractures in a 14-year (1977-1990) material of the authors' clinic. *Fogorvosi szemle*, *86*(11), 359-363.
21. Barde, D., Mudhol, A., & Madan, R. (2014). Prevalence and pattern of mandibular fracture in Central India. *National journal of maxillofacial surgery*, *5*(2), 153.
22. Rajanikanth, K. The pattern of maxillofacial fractures in central India A Unicentric retrospective study. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, *1*(13), 28-31.
23. Buchanan, J., Colquhoun, A., Friedlander, L., Whitley, B., Evans, S., & Thomson, M. (2005). Maxillofacial fractures at Waikato Hospital, New Zealand: 1989 to 2000. *The New Zealand Medical Journal (Online)*, *118*(1217).
24. Giri, K. Y., Singh, A. P., Dandriyal, R., Indra, N., Rastogi, S., Mall, S. K., ... & Singh, H. P. (2015). Incidence and pattern of mandibular fractures in Rohilkhand region, Uttar Pradesh state, India: A retrospective study. *Journal of oral biology and craniofacial research*, *5*(3), 140-145.
25. Natu, S. S., Pradhan, H., Gupta, H., Alam, S., Gupta, S., Pradhan, R., ... & Agarwal, A. (2012). An epidemiological study on pattern and incidence of mandibular fractures. *Plastic surgery international*, *2012*.
26. Choung, R., Donoff, R. B., Guralnick, W. C. (2003). A retrospective analysis of 327 mandibular fractures. *J Oral Maxillofac Surg*, *47*, 305–307.
27. Patrocinio, L. G., Patrocinio, J. A., Caronjo Borba, B. H. (2005). Mandibular fracture: analysis of 293 patients treated in the hospital of clinics, Federal University of Uberlandia. *Rev Bras Otorrinolaringol*, *71*, 560–565.
28. Adi, M., Ogden, G. R., Chisholm, D. M. (1990). An analysis of mandibular fractures in Dundee, Scotland (1977 to 1985) *Br J Maxillofac Surg, 19,* 268–271.
29. Ellis, E., Moos, K. F., el-Attar, A. (1985). Ten years of mandibular fractures: an analysis of 2,137 cases. *Oral Surg Oral Med Oral Pathol, 59,* 120–129.
30. Olson, R. A., Fonseca, R. J., Zeitler, D. L., Osbon, D. B. (1982). Fractures of mandible: review of 580 cases. *J Oral Maxillofac Surg, 40*, 23–28.
31. Bataineh, A. B. (1998). Etiology and incidence of maxillofacial fractures in the north Jordan. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod, 86,* 31–35.
32. Dongus, P., Hall, G. M. (2002). Mandibular fracture patterns in Tasmania, Australia. *Aust Dent J, 47,* 131–137.
33. Ogundare, B. O., Bonnick, A., Bayley, N. (2003). Pattern of mandibular fractures in urban major trauma centre. *J. Oral Maxillofac Surg, 61,* 713–718-106.
34. Al Ahmad, H. E., Jaber, M. A., Abu Fanas, S. H., Karas, M. (2004). The pattern of maxillofacial fractures in Sharjah, United Arab Emirates: a review of 230 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod, 98,* 166–170.