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Etiology and pattern of mandibular fracture in and around Kolar: A retrospective study

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Abstract

Purpose: Mandible, one of the most prominent facial bone, is more prone for fracture. Various causative factors are reported in the literature. Etiology and anatomic site of fracture varies from region to region. Retrospective study was carried out to evaluate the etiology and pattern of mandibular fracture in and around Kolar.

Method: Database of 369 patients, who were treated in R.L. Jalappa Hospital and Research Center, Tamaka, Kolar, over a period of 6 years were included in the study. Patient data including age, gender, etiology and fracture site were analyzed.

Results: Men in age group of 21-30 were more frequently affected. RTA followed by fall was the common etiology. Most frequently encountered fracture was parasymphysis followed by body.

Conclusion: Etiology, incidence and pattern of fractures reflects the compliance of drivers, poor condition of roads, ineffective implementation of seat belt and helmet legislation. Implementation of strict traffic rules and improving condition of roads would decrease the incidence of RTA thus fracture.

Keywords: Mandibular fracture, Etiology, Pattern, RTA

1. Introduction

Human face is the identity of an individual. Mandible, the only mobile and most prominent bone of maxillofacial skeleton is more prone for fracture. Mandibular fractures are the second most frequent facial injury, account for 15.5% to 59% of all facial fractures [1-4]. Mandibular fractures can occur alone or in combination with fracture of other bones in maxillofacial skeleton. Mandibular fractures are often associated with severe morbidity, loss of function, disfigurement and significant financial cost [5-7]. Fracture of mandible attracts maxillofacial surgeon's interest and demands treatment due to its aesthetic and functional importance.

Etiology of fracture is multifactorial and varies from region to region depends on socioeconomic status, cultural, technological, demographic and economic factors. Main mechanism of injury is inconsistent in the literature [8]. Road traffic accident is the leading cause of mandibular fracture in developing countries, [9] interpersonal violence and physical assault is the leading cause in developed countries [10]. Age and sex have been cited as important factors that influence the occurrence of mandibular fracture. Highest incidence is seen in age group of 21-30years, lowest incidence in age group of above 60 and below 5 years [11]. 3:1 male: female ratio has been reported worldwide [12]. Fracture site depends on the mechanism of injury, magnitude and direction of impact, prominence of mandible and anatomy of site [13].

Purpose of our study was to evaluate etiology and pattern of mandibular fractures in and around Kolar.

2. Method

Retrospective study of etiology and pattern of mandibular fracture was done. 369 patients, aged 3-72, years who were treated for mandibular fracture in RLJH were included in the study. Clinical data included age, gender, etiology and fracture sustained. Etiologies were RTA, fall, assault, occupational injury, sports accident and pathologic fracture. Descriptive statistical methods like mean SD was used to present the quantitative data and proportions to present qualitative data.

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3. Result

Patient treated for mandibular fracture in RLJH over a period of 6 years were included in the study. 369 (325 male and 44 female) patients aged 3-72 were included in the study with mean age being 30.77years. (fig 1)

Incidence of fracture was most commonly seen in age group of 21-30(42.9%), followed by 31-40(23.6%), 11-20(14.1%), 41-50(11.4%), 51-60(4.3%), <10(2.7%) and >61(1%). (fig 2)

RTA (68.2%), was the main etiology for fracture followed by fall (11%), Assault (8.9%), Occupational injury (8.5.7%), Sports accident (4.6%) and Pathologic fracture (1.6%). (fig 3) Most commonly fractured anatomical site was parasymphysis (50.8%) followed by Body (23%), Symphysis (19.8%), Angle (18.2%), Condyle (13.5%), Dentoalveolar (2.1%), Coronoid (0.5%) and Ramus (0.2%). (fig 4)

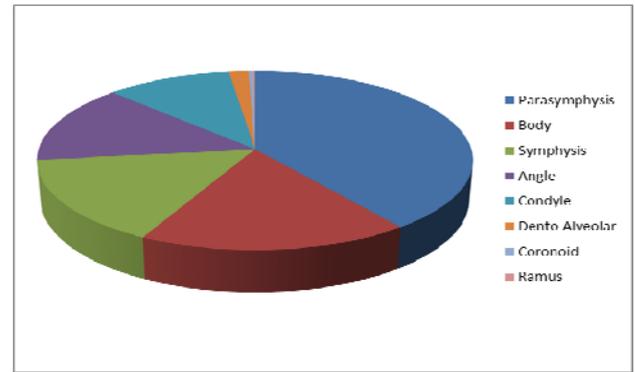


Fig 4: Distribution of mandibular fracture according to anatomical site.

4. Discussion

Fracture one of the most common emergency seen in developing and developed country. Etiology varies, depending on cultural, socioeconomic and environmental factors. Demographic data related to mandibular fractures are difficult to evaluate because of many variables associated with the studies. Statistics related to mandibular fracture varies from country to country [14]. Traumatic injuries are most likely to occur under severe circumstances in a population who are more likely to be younger and potentially healthier. Study conducted worldwide reports Male being more frequently affected than females [1, 12] due to increased outdoor activity either occupational or recreation and increased involvement in interpersonal violence. Results are consistent with our study.

Previous studies on etiology of fracture reports RTA and fall as leading cause in developing countries [15] and assaults and interpersonal violence in developed countries [12, 16-18]. RTA is the main etiology in our country due to poor road traffic rules, compliance of drivers, poor condition of vehicles as well as roads, lack of seat belt and helmet law legislation, over speeding, overloading, underage driving. Fall is the second most common etiology of fracture. Studies conducted by few authors show 16-35 years as typical age of occurrence of fracture [2, 16, 19-25]. Karyouti SM reported that age group of 0-5 are mostly affected [26]. Sakr *et al* quotes higher incidence of fracture in first decade [27]. Many authors quote 21-30 years as typical age of occurrence of fracture, [16, 18, 28-33] which is consistent with our study. Incidence of fracture is seen commonly in second and third decades as it is the active period of an individual where person is busy outdoors making his carrier or in recreation activities. Fracture is less common in pediatric due to monitoring and protection offered by parents and guardian, anatomico-morphologic peculiarities of the infantile bone, small body size in proportion to head, high bone to tooth ratio and low social and outdoor activities [34-36]. Fracture is less common in geriatric patient due to increased stay at home. Fall is the main etiology in pediatric and geriatric. Site of fracture depends on etiology. Adhikri reports most common site of fracture being parasymphysis followed by body, angle and condyle [37]. King *et al* reports parasymphysis followed by condyle [20]. Ahmad khan quotes typical fracture pattern in particular etiology, parasymphysis fracture in RTA, body fracture in gunshot injuries, condylar fracture in fall and angle in assault [38]. Rafa-Abdelsalam quotes coronoid as least site of fracture [39]. Study conducted by us shows parasymphysis followed by body as most common and ramus as least site of fracture.

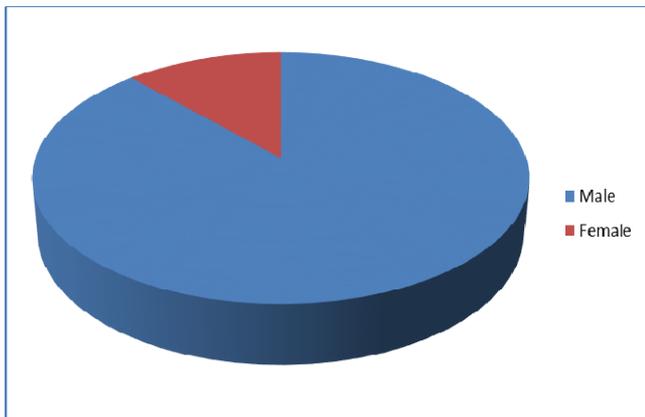


Fig 1: Distribution of mandibular fractures according to gender.

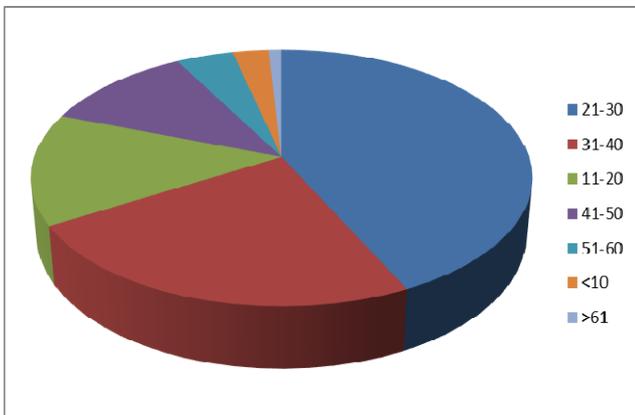


Fig 2: Distribution of mandibular fracture according to age.

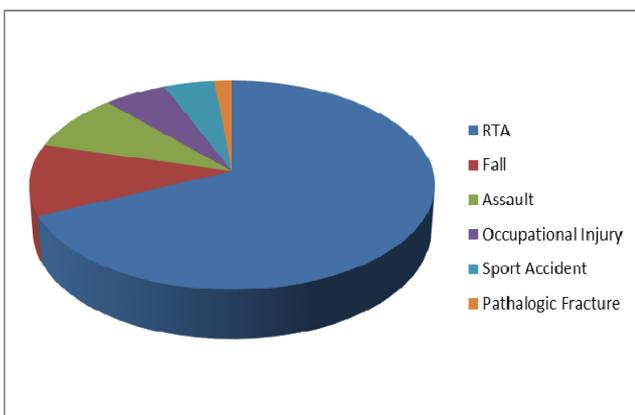


Fig 3: Distribution of mandibular fracture according to etiology.

5. Conclusion

Study results show that RTA was the main etiology of fracture. Men, in age group of 21-30 were more affected. Parasymplysis followed by body was most frequently encountered site of fracture. Traffic law enforcement plays critical role in safety. Improving condition of roads, Motivation of drivers to follow traffic rules, strict monitoring of helmet and seat belt legislation would reduce the incidence of RTA thus Fracture.

6. Reference

1. Brook IM, Wood N. Aetiology and incidence of facial fractures in adults. *Int J Oral Surg.* 1983; 12(5):293-8.
2. Ellis E 3rd, 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):120-9.
3. Scherer M, Sullivan WG, Smith DJ Jr, Philips LG, Robson MC. An analysis of 1423 facial fractures in 788 patients at an urban trauma center. *J Trauma.* 1989; 29(3):388-90.
4. 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.
5. Down KE, Boot DA, Gorman DF. Maxillofacial and associated injuries in severely traumatized patients: implications of a regional survey. *Int J Oral Maxillofac Surg.* 1995; 24:409-12.
6. Qudah MA, Bataineh AB. A retrospective study of selected oral and maxillofacial fractures in a group of Jordanian children. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2002; 94:310-4.
7. Kieser J, Stephenson S, Liston PN, Tong DC, Langley JD. Serious facial fractures in New Zealand from 1979-1998. *Int J Oral Maxillofac Surg.* 2002; 31:206-9.
8. Zix Juergen Andreas. Incidence, aetiology and pattern of mandibular fractures in central Switzerland. *Swiss Medical Weekly,* 2011, doi:10.4414/smw.2011.13207.
9. Lawoyin DO, Lawoyin JO, Lawoyin TO. Fractures of the facial skeleton in Tabuk North West Armed Forces Hospital. A five year review. *African J Med & Med Sci.* 1996; 25:385-7.
10. Edward TJ, David DJ, Simpson DA. Pattern of mandibular fractures in Adelaide, South Australia. *Aust New Z J of Surg.* 1994; 64:307-11.
11. Shah A, Shah AA, Salam A. Maxillofacial fractures: Analysis of demographic distribution in 320 patients. *Pak Oral Dent J.* 2006; 26:235-8.
12. Adebayo ET, Ajike OS, Adekeye EO. Analysis of the pattern of maxillofacial fractures in Kaduna, Nigeria. *Br J Oral Maxillofac Surg.* 2003; 41:396-400.
13. Mwaniki DL, Guthua SW. Occurrence and characteristics of mandibular fractures in Nairobi, Kenya. *Br J Oral Maxillofac Surg.* 1990; 28:200-2.
14. Raymond J Fonseca. Oral and maxillofacial trauma. Third edition. Volume 1. P # 485.
15. Stylogianni L, Arsenopoulos A, Patrikiou A. Fractures of the facial skeleton in children. *Br J Oral Maxillofac Surg.* 1991; 29:9-11.
16. Schon R, Roveda SIL, Carter B. Mandibular fractures in Townsville, Australia: incidence, aetiology and treatment using the 2.0 AO/ASIF miniplate system. *Br J Oral Maxillofac Surg.* 2001; 39:145-8.
17. Telfer MR, Jones GM, Shepherd JP. Trends in the aetiology of maxillofacial fractures in the United Kingdom (1977-1987). *Br J Oral Maxillofac Surg.* 1991; 29:250-5.
18. Adi M, Ogden GR, Chisholm DM. An analysis of mandibular fractures in Dundee, Scotland (1977-1985). *Br J Oral Maxillofac Surg.* 1990; 28:194-9.
19. Fidirich KL, Pena-Velasco G, Olson RA. Changing trends with mandibular fractures: a review of 1,067 cases. *J Oral Maxillofac Surg.* 1992; 50(6):586-9.
20. King RE, Scianna JM, Petruzzelli GJ. Mandibular fracture patterns: a suburban trauma center experience. *AM J Otolaryngol.* 2004; 25(5):301-7.
21. Ogundare BO, Bonnick A, Bayley N. Pattern of mandibular fractures in an urban major trauma center. *J Oral Maxillofac Surg.* 2003; 61(6):713-8.
22. Simsek S, Simsek B, Abubaker AO, Laskin DM. A comparative study of mandibular fractures in the United States and Turkey. *Int J Oral Maxillofac Surg.* 2007; 36(5):395-7.
23. Depprich R, Handschel J, Hornung J, Meyer U, Kubler NR. Causation, therapy and complications of treating mandibular fractures – a retrospective analysis of 10 years. *Mund Keifer Gesichtschir.* 2007; 11(1):19-26.
24. Oikarinen K, Schutz P, Thalib L, Sandor GK, Clokie C, Meisami T *et al.* Differences in the etiology of mandibular fractures in Kuwait, Canada and Finland. *Dent Traumatol.* 2004; 20(5):241-5.
25. Lee KH. Epidemiology of mandibular fractures in tertiary trauma center. *Emerg Med J.* 2008; 25(9):565-8.
26. Karyouti SM. Maxillofacial injuries in Jordan university Hospital. *Int J Oral Maxillofac Surg.* 1982; 10:146-8.
27. Sakr K, Farag IA, Zeitoun IM. Review of 509 mandibular fractures treated at the University Hospital, Alexandria Egypt. *Br J Oral Maxillofac Surg.* 2006; 44:107-11.
28. Tanaka N, Tomitsuka Shionoya K. Aetiology of Maxillofacial fractures. *Br J Oral Maxillofac Surg* 1994; 32:19-21.
29. Bataneih AB. Etiology and incidence of maxillofacial fractures in the north of Jordan. *Oral Surg Oral Med Oral Pathol Oral Rehabil Radiol Endod* 1998; 86(1):31-5.
30. Heimdahl A, Nordenram A. The first 100 patients with jaw fractures at the department of Oral Surgery, Dental school, Huddinge. *Swed Dent J.* 1977; 1(5):177-82.
31. Marker P, Nielsen A, Bastian HL. Fractures of the mandibular condyle. Part 2: Results of treatment of 348 patients. *Br J Oral Maxillofac Surg.* 2000; 38(5):422-6.
32. Voss R. The aetiology of jaw fractures in Norwegian patients. *J Maxillofac Surg.* 1982; 10(3):146-8.
33. Subhashraj K, NandaKumar N, Ravindran C. Review of maxillofacial injuries in Chennai, India: a study of 2748 cases. *Br J Oral Maxillofac Surg.* 2007; 45:637-9.
34. Ai-Aboosi K, Perriman A. One hundred cases of mandibular fractures in Iraq. *Int J Oral Surg.* 1976; 5:8-12.
35. Perkins G. Maxillofacial injuries at the Korle-Bu Teaching Hospital. A preliminary study. *Ghana Med J.* 1999; 33:120-122.
36. Luca EA, Tabb TD, Moore AM. Review of 1000 major facial fractures and associated injuries. *Plastic Recons Surg* 1979; 63:26-29.
37. Adhikari RB, Karmacharya A, Malla N. Pattern of mandibular fractures in Western Region of Nepal. *Nepal journal of Medical Sciences.* 2012; 1(1):45-48.
38. Ahmad Khan, Abdus Salam, Umar Khitab, Mohammad TariqKhan. Pattern of mandibular fractures – A study. *Pakistan Oral and Dental Journal.* 2009, 29(2).
39. Rafa-Abdeslam Elgehani, Maraai-Idris Orafi. Incidence of mandibular fractures in Eastern part of Libya. *Med Oral Patol Cir Buccal.* 2009; 1;14(10)e529-32.