

EPIDEMIOLOGICAL ANALYSIS OF MAXILLOFACIAL FRACTURE IN A SEMI-URBAN AREA OF INDIA; A 1 YEAR PROSPECTIVE STUDY

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HOW TO CITE THIS ARTICLE:

Biswajit Banik, Probhati Purkayastha. "Epidemiological Analysis of Maxillofacial Fracture in a Semi-Urban Area of India; A 1 year Prospective Study". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 14, April 06, 2015; Page: 2145-2151.

ABSTRACT: CONTEXT: An accident has been defined as "an unexpected, unplanned occurrence which may involve injury. Accidents represent the major epidemic of non communicable disease in present century. They are no longer considered accidental; they are part of the price we pay for technological progress. The incidence is rising in the small and remote towns of the developing country like India. Maxillofacial fractures are one of the outcomes, and people of small cities are equally prevalent. **AIM:** To analyze the epidemiological prevalence of maxillofacial fractures in a small town of India during a period of 1 year. **SETTINGS AND DESIGN:** Prospective epidemiological study. **MATERIAL AND METHODS:** Data on patient's age, gender, etiological agent, influencing factor and the facial fractures were collected from the charts of the patients treated. The study was carried out 1st Dec 2009 to 30th Nov 2010. **STATISTICAL ANALYSIS:** Qualitative variables were expressed as absolute and relative frequencies, and quantitative variables as means and standard deviation. The Chi-square test was used to evaluate the association between age, gender, etiological agents, traffic accidents and fracture types. **RESULTS:** 60 patients presented with maxillofacial injuries, amongst them 85% of men sustained significantly more maxillofacial fractures compared to female (15%) with overall male: female ratio 5.6:1. The most common age group affected was 28-32 years (33%). Road traffic accident was the major causative factor (48%), followed by physical assault (21.6%). 56% were under alcohol influence. Lower third fracture (Mandibular fracture) (63%) was most common, middle third fracture (37%). Parasymphyseal fracture (28.94%), body (23.68%), symphysis (15.78%), angle of mandible (15.78%), ramus (7.89%), condylar (2.63%) and dento alveolar (5.26%). Nasal bone fracture was most common amongst middle third fractures. **CONCLUSION:** The incidence of maxillofacial injuries is increasing in the small and remote towns of India due to gradual technological development which is comparable to the major cities of India.

KEYWORDS: Epidemiology, Maxillofacial Fractures, Semi-Urban Area of India.

INTRODUCTION: With the technological advancements in the developing countries like India, the occurrence of road traffic accidents have been increased drastically over the period of last 10 years, and the effects are no longer restricted to metro cities only, even small semi-urban areas have more or less same incidence rates. Susceptibility increases by the effect of alcohol and other addictive drugs. The overall effect is the increased numbers of maxillofacial fracture cases coming to local hospitals. With the change of life styles, improper distribution of available resources and lack of adequate income, the aggression level of people has been increased resulting in more number of physical assault cases. Keeping this in mind, I have selected a semi-urban area named Silchar, a small town of district Cachar, state Assam with population of 2-3 lakh, as a place of my

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study. Various factors like the poor condition of roads, neglected traffic rules, increasing number of two and four wheelers, illiteracy, alcohol consumption etc., might be considered as the probable factors for those accidents.

AIMS AND OBJECTIVE: To analyze the epidemiological prevalence of maxillofacial fractures in a semi-urban area of India during a period of 1 year.

MATERIAL AND METHODS: The study was a prospective observational study conducted at the department of otorhinolaryngology, Silchar Medical College and Hospital, Silchar during the period of 1st December 2009 to 30th November 2010. The cases selected were haemodynamically stable and with age group 18-50 years. Patients with fractures associated with other medical conditions, age more than 50 years and patient with associated bone disease were not considered. A predefined pro forma was used to collect the data. Information pertaining the age sex distribution, etiology, associated factors and type of fractures were entered in the pro-forma. The data was then computerized and subjected to statistical analysis.

RESULTS: The age group selected for the study was 18-50 years amongst them 20 cases out of 60 which constitutes 33.3% was between 28-32 years followed by 11 cases between 33-37 years 18.3% (Table 1). Out of 60 cases 51 (84.9%) cases were male of which 23.3% is between 28-32 years of age. (Table 2). Road traffic accidents were found to be the most common cause of all maxillofacial fractures around 29 cases (48.33%) followed by physical assault 13 cases (21.6%) and fall from height 11 cases (18.3%) Table 3. Around 34 cases (56.6%) were under the influence of alcohol, Table 4. The fracture of the lower third of the face was maximum (63%), middle third (37%), Fig. 1. Nasal bone was most common bone involved in the fracture of middle third of face, followed by fracture of zygomatic complex and dento alveolar fracture (Fig. 2). Amongst the all lower third fractures, parasymphiseal fracture was maximum (29%), body (24%), symphyseal (15.7%), angle (15.7%), ramus (7.8%) and condyle (2.6%), Fig. 3.

DISCUSSION: Facial fractures can be caused by motor vehicle accidents, falls and sport injuries or even from physical assault by another person. The higher frequency of maxillofacial injuries among men (85%) compared to the women (15%) in the present study may be attributed to the fact that the females most often are confined to household works and they drive vehicle less frequently and more carefully than men. The fact that women are less exposed to fights, industrial heavy works and sports, makes them least susceptible. The findings were consistent with the findings of the study by Szontagh E et al (1993) and Freidl S et al (1996). Hogg NJ et al (2000), Klenk G et al (2003), Adebayo et al (2003) also found that males got maxillofacial fractures more than female which is comparable with the present study. The alcohol consumption is considered to be a part of our modern life style and the proportion of youth with this habit is increasing with time. Alcohol impairs driving ability and increases the risk of an accident as well as physical assault. Drugs such as barbiturates, cannabis, amphetamines also impair the ability to drive safely. Alcoholics become more violent and it may be the reason of higher incidence of physical assault which is consistent with the finding of the study carried out by Buchanan J et al (2005), BR Chandra Sekhar et al (2008). Many studies have been carried out throughout the world including India to find the epidemiological pattern of maxillofacial fracture. One study

carried out in India by K. Subhashraj, N Kumar, C. Ravindran (2007) showed that the most common age group affected was between 21-30 years. In my study also the age group 28-32 years was mostly affected. Trauma is now considered as a problem of young people, which may be because of their aggressive nature and careless driving on roads. The increasing RTA in developing country like India, even in its remote part may be attributed to many factors like sharing of roadways by pedestrians and animals with fast moving and slow moving vehicles, large numbers of poorly maintained roads, increasing numbers of two and four wheelers, with spread disregard of traffic rules, overloaded buses, poor street lights etc. Studies carried out by Szontagh E et al (1993), Hogg NJ, TC, Armstrong JE, Girotti MJ (2000), Al Ahmed HE, Jaber MA, Abu Fanas SH, Karas M (2004) showed RTA as a major cause of the fractures which is comparable to my study (48.3%). The higher involvement of mandible may be attributed to its prominence and also its exposed anatomical position on the face. Most victims of RTA will try to avoid their head against injury at the time of accidents and thus in the process of avoiding their head, may receive maximum impact on the mandible. The enforcement of certain laws like use of seat belts and wearing helmets may reduce such incidences. The studies by Szontagh E, (1993), Strom C, Hultin M, Nordenram A (1996), Moshy J, (1996) and BR Chandra Sekhar (2008) showed mandibular fracture as the most common type of fracture which is consistent with my study (63%). Amongst the all mandibular fracture cases in the present study, parasymphiseal fracture was highest in number accounting to 29% followed by body 23.6%, symphysis 15.7%, angle 15.7% and ramus 7.8%. These findings are comparable with studies carried out by K. Subhashraj N et al (2007) and Ozkaya O et al (2009).

ACKNOWLEDGEMENT: It is a privilege on my part to express my gratitude to Dr. Probhati Purkayastha, HOD, department of ENT, Silchar Medical College and hospital for the guidance and advice she has given.

The whole process would be incomplete if I fail to mention the name Dr. Nisha Shoukheen, who have been there in times of need and helped me in collecting data.

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1. Age wise distribution of cases with maxillofacial fractures.

Age in years	No. of cases	Percentage
18-22	7	11.66
23-27	12	20
28-32	20	33.33
33-37	11	18.33
38-42	6	10
43-47	1	1.66
48-52	3	5

Table 1: most commonly involved age group is 28-32 years

2. Sex distribution of cases with maxillofacial fractures.

Age in years	Male	Female	Percentage	
			Male	Female
18-22	6	0	10	0
23-27	11	1	18.33	1.66
28-32	14	4	23.33	6.66
33-37	11	0	18.33	0
38-42	3	3	5.00	5.00
43-47	1	1	1.66	1.66
48-52	5	0	8.33	0
Total	51	9	84.96	14.98

Table 2: Male mostly involved (84.9%) in maxillofacial fracture cases

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3. Etiology of maxillofacial fractures.

Age in years	RTA	Fall from height	Physical assault	Sports	Gun shot	Industrial	Pathological	Miscellaneous
18-22	3	2	1	1	0	0	0	0
23-27	6	2	3	1	0	0	0	0
28-32	11	2	5	2	0	0	0	0
33-37	4	2	3	0	0	0	0	0
38-42	3	1	1	0	0	1	0	0
43-47	0	0	0	0	0	1	0	0
48-52	2	0	0	0	0	0	0	1
Total	29	11	13	4	0	2	0	1

Table 3: RTA was found to be the most common etiology of maxillofacial fracture

4. Influence of alcohol.

Influence of alcohol	No of cases	Percentage of cases
Alcoholic	34	56.66
Non alcoholic	26	43.33
Total	60	99.99

Table 4: around 56.6% patients were under the influence of alcohol

5. Distribution of Fractures.

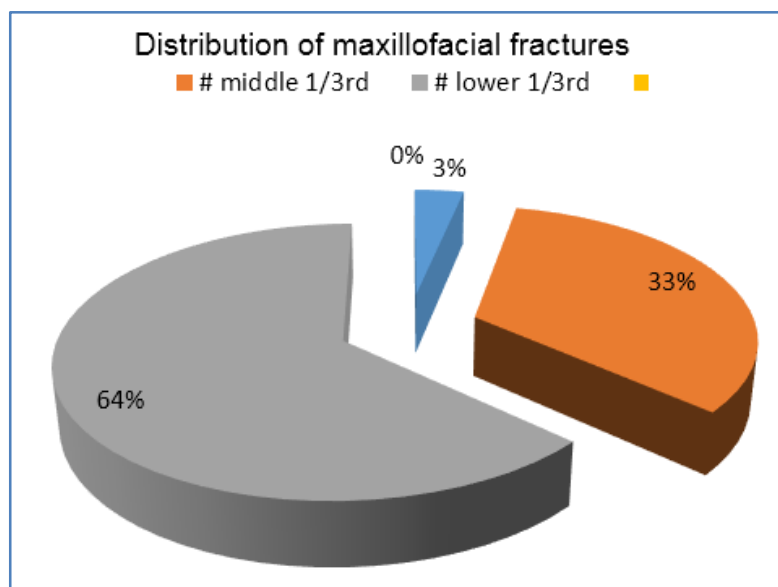


Fig. 1: Fracture of the lower third of the face was most common

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6. Distribution of middle third fractures.

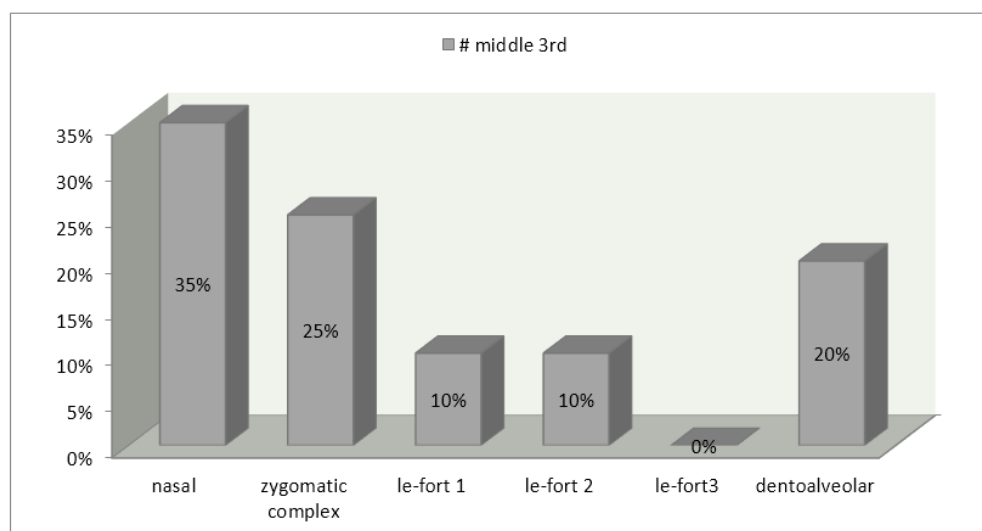


Fig. 2: Amongst the middle third fractures, nasal bone fracture was most common

7. Distribution of Lower third Fractures.

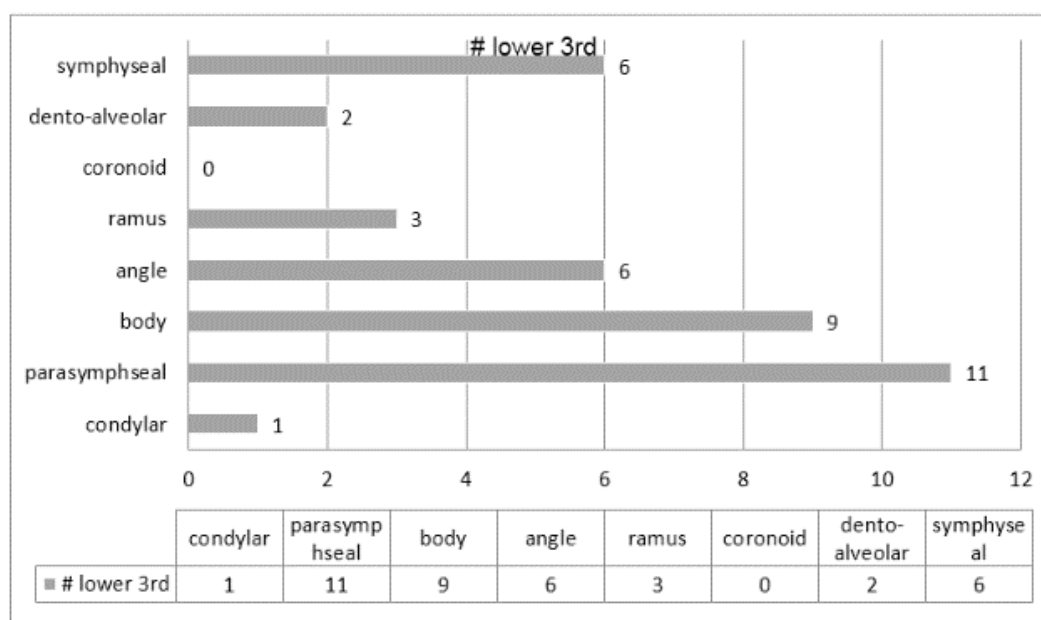


Fig. 3: Parasymphseal fracture was the most common lower third fractures

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Date of Submission: 23/03/2015.
Date of Peer Review: 24/03/2015.
Date of Acceptance: 28/03/2015.
Date of Publishing: 02/04/2015.