

INCIDENCE OF POST TRAUMATIC DEFORMITIES OF THE PATIENTS VISITING SAVEETHA DENTAL HOSPITAL

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ABSTRACT:

BACKGROUND: Post-Traumatic Deformity is an acquired deformity is a change in the normal size or shape of a body part as a result of an injury, infection, arthritis, or tumor. A deformity is defined as any sort of disfigurement or distortion that makes a part of the body a different size or shape than it would be in normal anatomy.

AIM: The determine the incidence of post traumatic deformities of the patients visiting Saveetha Dental college from June 2019 to February 2021.

MATERIALS AND METHODS: A retrospective study in which the data of patients who were diagnosed with post traumatic deformities in the department of oral maxillofacial surgery at a private teaching hospital, Chennai from June 2019 to February 2021 was collected by reviewing patient records and analysed . The collected data (n=10) were compiled, reviewed, tabulated and imported to SPSS (IBM SPSS Statistics v23.0). Descriptive statistics and Chi-square-test were used to compare the results. P value set to 0.05 as level of significance.

RESULT : Within the limit of the study , the incidence of post traumatic deformities was found to be 2%. The age of the patients ranged from chronic 20 to 50 years (mean=32.4). The most prevalent gender was Male(80%).

CONCLUSION : During the study period , the number of post traumatic deformities associated with gender is increased. The age group most impacted was young male adult. Post traumatic deformities are caused by the injuries, from the complications with treatment ,the management of injury which is prevented by obtaining the appropriate treatment at the time of the injury.

KEYWORDS: Deformities,Maxilofacial ,Treatment,Trauma

INTRODUCTION:

Post-Traumatic Deformity is an acquired deformity is a change in the normal size or shape of a body part as a result of an injury, infection, arthritis, or tumor. A deformity is defined as any sort of disfigurement or distortion that makes a part of the body a different size or shape than it would be in normal anatomy (1). Soft and hard tissue defects of the cranial and maxillofacial area, especially after an avulsion injury, are challenging to reconstruct. Sophisticated soft and hard tissue transfer techniques have allowed satisfactory reconstruction of the gross anatomic structure(2). Post-traumatic deformity is a common cause, second to ankylosis. These deformities result due to lack of treatment or inadequate management of condylar fracture(3).

Facial skeleton fractures should be reduced as early as possible to restore optimal function and minimize skeletal and soft-tissue deformity. Management follows well-established principles of correcting dentofacial deformities, coordinated with orthodontic and prosthodontic support(4).The late deformity of midfacial fractures can be corrected by following initial fracture lines; condylar fracture patients can be treated by remote osteotomies(5).Although the timely repair of the fracture usually leads to normal function and appearance, occasionally the surgeon is faced with the untoward sequelae of the mandible fracture(6,7). Post-traumatic mandibular deformities include non-union, malunion, malocclusion, TMJ dysfunction, and facial asymmetry. The difficulty in treatment of these deformities can be compounded by edentulous mandibles, substance abuse, and approach controversies such as the timing of the repair and surgical versus non-surgical management(8).Knowledge of the post-traumatic mandibular deformities by the treating physician not only assists in their management but may also allow for their prevention.Many clinical studies have shown how jaw injuries sustained during impact trauma to the face or mandible are the single most important cause of TMJ subsequent internal derangement(9,10).Proper function of the masticatory system is certainly the most influential variable in the TMJ remodelling. Once a TMJ is internally deranged, adaptive or degenerative osteocartilaginous processes take place in the mandible, temporal bones and muscles(11).

Secondary deformities that result from midface fractures are seen even after proper care is delivered by the best physicians(12). Malpositioned or missing skeletal fragments provide a faulty foundation and disrupt the harmony of the overlying soft tissues.Weak bony support will lead to its collapse and cicatricial loss of soft-tissue volume, thereby

compounding the challenge(13). With the developed technique, specialists can measure damaged parts of the body and based on these measurements, make correct decisions about surgical treatment and choose appropriate implants(14). This helps achieve satisfactory results in restoring the anatomy of the bony structures(15). Therefore it would be of interest to know the incidence of post traumatic deformities. Hence the aim of the study was to assess the incidence of post traumatic deformities of the patients visiting Saveetha Dental college. Our team has extensive knowledge and research experience that has translate into high quality publications(16),(17),(18),(19),(20–29)(30),(31–33).(34,35). Innovative techniques of surgical fixation of post traumatic defect corrections are also under research.

MATERIALS AND METHODS:

This was a retrospective study which was done in a private dental College in Chennai, India. The data of patients who were diagnosed with post-traumatic deformities In the Department of oral and maxillofacial surgery between June 2019 and February 2021 was collected by reviewing the patient records and analysing the data. These data that cross verified with photographs and tabulated in Excel. The sample size of the total number of patients diagnosed with post-traumatic deformity was n=10 . The data was collected with the following parameters : Patient demographics,Original pattern of fracture, timing and treatment delivered for the initial fracture. The patients were grouped into age groups as 20 to 30, 30 to 40 and above 40. Patience of both genders were present. Data were analysed using SPSS statistical software. (IBM SPSS statistics 23.0) Data analysis done using Chi-Square test. P value was set as 0.05 as level of significance.

RESULTS:

There were 8 males and 2 females in the study and their ages at the time of 1st reconstructive procedures ranged from 20 to 64 years old with the mean age of 32.4 years(Table 1). The youngest patient was 20 years old while the eldest was 64 years old. The age difference between the male and female patient was not significant.

Age	Gender		Total
	Female	Male	
20-30	1	4	5
30-40	1	2	3
>40	0	2	2
Total	2	8	10

Table 1: Demographic details of the participants

Classification of the total number of original fractures:

The classification of the original fractures of the 10 patient reported with post traumatic deformity were recorded including Lee Fort I(n=2), Lee Fort II(n=1),Lee Fort III(n=0), Zygomatic(n=0), naso orbital ethmoid(n=2),Frontobasilar (n=1) and mandibular(n=4) (FIGURE 1). The most common classification of the original fracture of the patients reported with post traumatic deformity is mandibular fracture (40%) followed by Naso orbital ethmoid fracture (20%) and Lee Fort I fracture (20%).

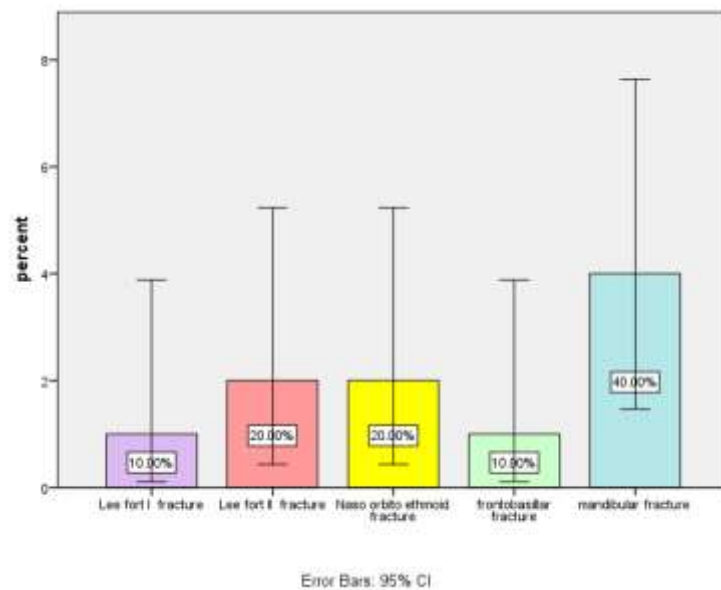


Figure 1 :Bar graph showing the classification of the original fracture of the patients reported with post traumatic deformity. X axis represents the classification of the original fracture and Y axis represents the percentage of the patients . Out of a population of 10 , 40% had mandibular fracture, 20% had naso orbital ethmoid fracture, 20% had Lee Fort I fracture, 10% had frontobasillar fracture , 10% had Lee Fort II fracture.

TIMING FROM WHICH THE INITIAL TREATMENT CARRIED OUT FOR THE PATIENT’S ORIGINAL FRACTURE:

The Initial facial fracture treatment was carried out immediately(<7hrs) in 5 patients, delayed(>24hrs) in 4 patients and Deferred secondary to life-threatening injury in 1 Patient(FIGURE 3).

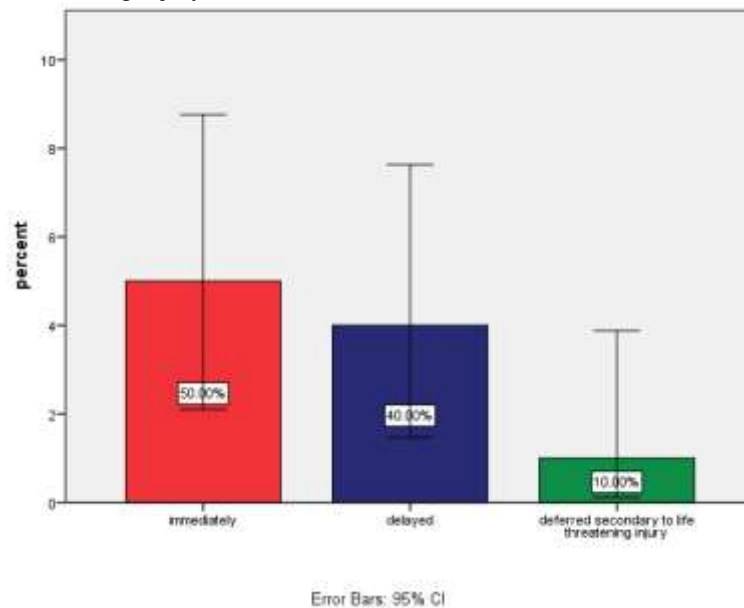


Figure 2 Bar graph shows the timing from which the Initial facial fracture treatment was carried out for the patients reported with post traumatic deformity. X axis represents the timing of the initial treatment done to the patients for original fracture and Y axis represents the percentage of the patients . Out of a population 10 , for 50% patients the treatment carried out immediately , for 40% patients the treatment was delayed , for 10% patients the treatment deferred secondary to life-threatening injury.

TREATMENT DONE FOR THE ORIGINAL FRACTURE:

From the Operative reports of the patients reported with post traumatic deformity the treatment already done for the original fracture were recorded , in which the operative reports were not available or unclear for 2 patients and therefore the details of the initial surgical management of facial fractures was unknown. In the remaining 8 patients, 3 underwent open reduction with the internal fixation(ORIF) with interfragmtery wire and intermaxillary fixation(IMF), 3 had open

reduction with internal fixation with inter-fragmentary wiring only , 1 had open reduction with internal fixation with inter-fragmentary wiring in combination with the rigid fixation with the metal plates and screws,1 underwent rigid fixation with metal plate and screws only.

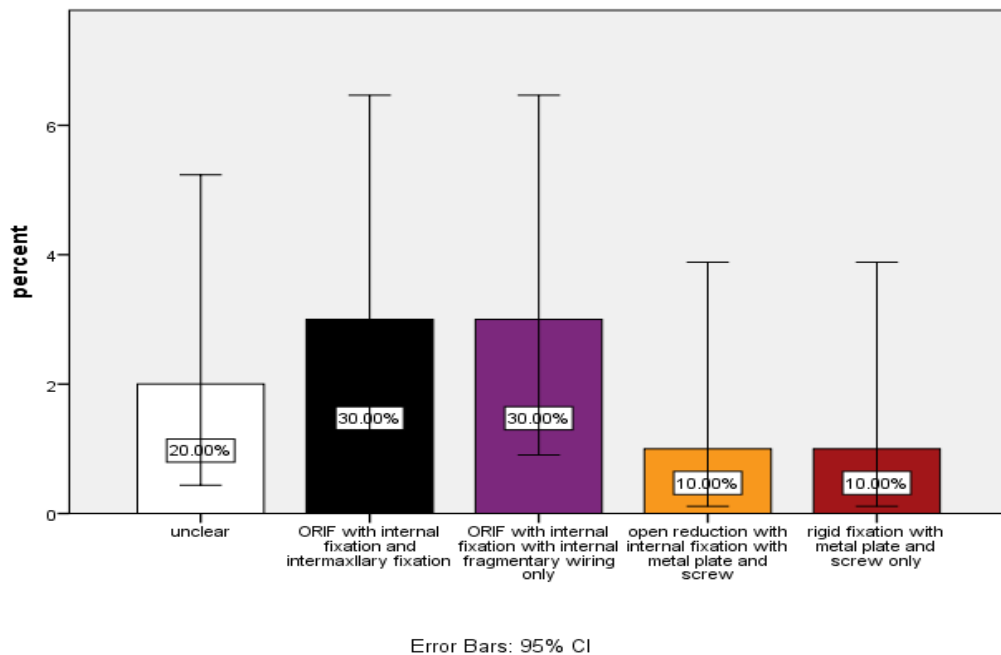


Figure 3 Bar graph shows the treatment already done for the original fracture of the patients reported with post traumatic deformity. X axis represents the treatments done to the patients and Y axis represents the percentage of the patients Out of 10 patients in which the operative reports were not available or unclear for 20% patients and therefore the details of the initial surgical management of facial fractures was unknown, 30% underwent open reduction with the internal fixation(ORIF) with interfragmentary wire and intermaxillary fixation(IMF), 30% had open reduction with internal fixation with inter-fragmentary wiring only , 10% had open reduction with internal fixation with inter-fragmentary wiring in combination with the rigid fixation with the metal plates and screws,10% underwent rigid fixation with metal plate and screws only.

Association:

The correlation of age to Original pattern of the initial fracture showed that the post-traumatic deformity is more common among the age of 20 to 30 followed by 30 to 40 and above 40. In particular, mandibular fracture was found to be high among all the age groups as initial fracture for the post traumatic deformity with the highest among 20 to 30(40%)(Figure 5).

The correlation of the Original pattern of the initial fracture to the gender showed that post-traumatic deformity is more common among males than of females . In which mandibular fractures(30% in male) were Found to be record high among both the gender groups (Figure 6).

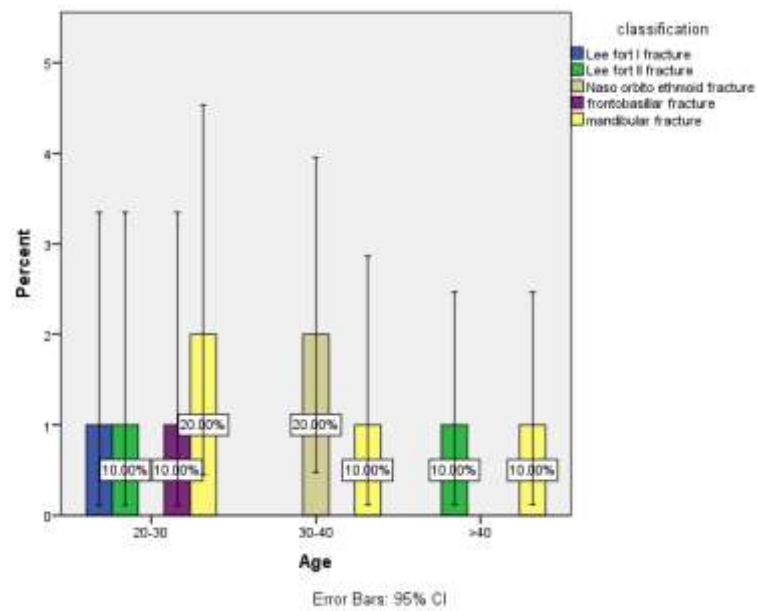


Figure 4 :Bar graph shows the association between age and classification of the total number of the original fracture . X axis represents the age and Y axis represents the percentage of the patients. Chi square test was done and the association was found to be not statistically significant. Pearson’s chi square value:23.14 df:25 p value : 0.543(p>0.05) . Hence not statistically significant although mandibular fracture is observed to be more common among 20-30 especially mandibular fracture (20%).

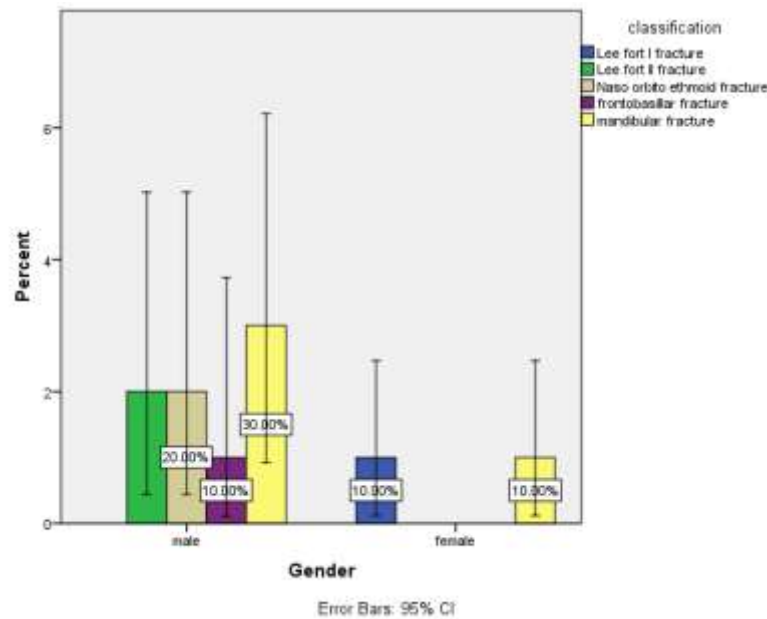


Figure 5 :Bar graph shows the association between gender and classification of the total number of the original fracture . The X axis represents the gender and the Y axis represents the percentage of the patients. Chi square test was done and the association was found to be not statistically significant. Pearson’s chi square value:22.53 df:23 p value : 0.342(p>0.05) . Hence not statistically significant although mandibular fracture is observed to be more common among male especially mandibular fracture (30%).

DISCUSSION:

An acquired deformity is a change in the normal size or shape of a body part as a result of an injury, infection, arthritis, or tumor(5). According to the recent study the correction of post-traumatic deformities constitutes a challenging but sufficiently important. It can be prevented by the careful preoperative evaluation , establishment of reasonable reconstructive aims, and detailed surgical planning to ensure the best possible outcome of the treatments(36).

In another study the significance of principles of treatment were expressed that include bone reconstructive surgery as early as possible to restore the anatomically normal craniofacial architecture followed by some selective ancillary treatments to reduce the soft tissue deficits and functional deformities of the parts(37). In another study the post traumatic deformities were classified into groups for reconstructive considerations based on anatomic sites of the original fracture caused(frontobasilar, nasoethmoid, periorbital, and maxillary-mandibular)(38). In another study the established soft tissue deformities were scarring, malposition, and tissue loss and, in many cases, soft tissue complications represent the most important thing to achieve an ideal outcome of the treatments(39).

This is probably the first study of its kind to report data on post traumatic deformity in patients reporting to dental clinics in Chennai and the findings may be used to develop the prevention model that includes the procedure.

This study gives only insight into the post traumatic deformities related to fracture, timing of the treatment given for the original fracture and treatment done to the original fracture of a small portion of the population. It should be noted that study outcomes could not be strictly analogous to those of the other studies due to a variety of differences, including population size, selection criteria for specific age demographic, method evaluation of fracture which may be a study limitation.

CONCLUSION:

The incidence of post traumatic deformities was found to be 2%. The age of the patients ranged from chronic 20 to 50 years (mean=32.4). The most prevalent gender was young Male(80%). During the study period, the number of post traumatic deformities associated with gender is increased. The age group most impacted was young male adults. Post traumatic deformities are caused by the injuries, from the complications with treatment, the management of injury which is prevented by obtaining the appropriate treatment at the time of the injury.

CONFLICT OF INTEREST:

The authors declared that there is no conflict of interest.

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