



# ORIGINAL RESEARCH PAPER

# Plastic Surgery

## EPIDEMIOLOGY AND EVALUATION OF EARLY MANAGEMENT OF MIDFACIAL FRACTURES IN A TERTIARY CARE HOSPITAL

### KEY WORDS:

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### ABSTRACT

**Objectives:** Facial trauma is often associated with severe morbidity with respect to loss of function and disfigurement as well as the impact of increased financial cost to both the state and affected individual. We have done this study to analyze etiology,biomechanics and demography of patient with mid facial fracture and assessed its association with gender, occupation,machanism of injury and also to evaluate early management and its effect on functional and outcome of midfacial fracture.

**METHODS:** 61 cases of midfacial fractures were taken for study from 297 case of facial injury within 27 months duration. Patients with trauma only in the midface were included for study.fractures involving frontal bone and mandible bone were excluded in study.

**RESULTS:** Gender distribution revealed Male/Female ratio 5:1 with very less patient in both extremes of age <20(1.8%) 60< 3.8%.Infemale population more number of patient were 41 to 50 yrs age .Main cause of injury was Road Traffic Accident (RTA)then followed by Assault .Out of 61 cases 30(49.1%)were under the influence of alcohol. Helmet was used by only two patient out of 37 case of RTA .This study showed majority of patients with isolated zygoma fracture(49.2%) followed by Zygomatico maxillary fracture (26.2%) nasal and Lefort II fracture were (8.2%) and least was Lefort III( 1.6%).In the early management of isolated Zygoma fracture with elevation these patients had good mouth opening,occlusion and cosmetic results. chi-square test revealed significant variation ( $p<0.01$ ) between early(1 to 14 days) intervention and late (above 14 days)intervention.

**Conclusion:** Early management of mid facial fracture showed better result functionally and asthetically when compared to delayed management.

### INTRODUCTION

Mid facial trauma are commonly seen associated with multisystem trauma which affect various functions such as vision, hearing, breathing, smell and speech because of association of all these sensory organs in the face.

Most of the injuries are the result of low energy impact. Major injuries are due to complex high energy impact involves multidisciplinary team of surgeons with plastic surgeons. In urban areas the most common cause of facial injuries are due to motor vehicle accidents followed by assault, fall, and industrial accidents and sports injuries.

- Midface is defined as the area bounded above by a trasverse line joining the zygomatico- frontal suture bilaterally which also passes in the middle through the fronto- maxillary and fronto-nasal suture and bounded below by incisal and occlusal plane of maxillary teeth.

Various parameters like age, gender, type of injury, time of accident, site of injury, various modalities of treatment, duration between accident and surgery, results of early and late management of fractures and their complications have been analysed in this study.

### AIM OF STUDY

This study was done to collect and analyse current data on aetiology, biomechanics and demography of patients admitted with midfacial fractures at Chengalpattu medical college and to assess the association of midfacial fracture with gender, occupation,social behaviour and mechanism of injury.

It is also to evaluate the result of early management and its effect on functional and aesthetic outcome of midfacial fractures.

### MATERIALS AND METHOD

The study was done during the period of October 2010 to december 2012 totally for a period of 27 months. 297 cases of facial injuries were referred to the Department of Plastic Surgery during this period. Out of which only 61 cases of midfacial

fractures were taken up for study.

Proforma was prepared to study the various epidemiological factors like age, gender, occupation, causes of injuries, association of injuries with alcohol consumption, usage of helmet, type of fractures, and to analyze the out come of results of early and late management of these midfacial fractures.

This topic was submitted for the approval of the Human Ethical committee and the approval was granted, [Ref no.493/MEI/2007].

Verbal explanation about the study was given to the patients who fulfilled the inclusion criteria. Patients history, symptoms & signs were recorded, photos were taken, their contact address and phone numbers were collected with their consent.

### INCLUSION CRITERIA

Mid facial fractures were included as per Frost in the area bounded by frontozygomatic and frontonasal sutures superiorly and occlusal plain inferiorly, pterigoid plates posteriorly, till the root of the zygomatic arch laterally. So all the patients with fractures in the above mentioned territory were included for the study.

### EXCLUSION CRITERIA

Fractures involving Frontal bone and Mandible were excluded.

When patients were referred to our department all details were recorded in the proforma. Patients' age, sex, occupation, residential address and contact number were noted first. Mode of injury was recorded as Road Traffic Accidents (RTA), assault, fall, industrial accident and, sports injury. In RTA option, whether the patient was a pedestrian, bike rider, or pillion rider was recorded. History of alcohol consumption during driving was noted. Usage of helmet during driving by the rider and pillion rider was recorded. The site of accident, whether occurred on the street, or road within the urban area, or on the national highway was recorded. Whether the accident had taken place during day time or night time was also recorded.

Thereafter symptoms were recorded as relevant to the midfacial fractures. These include pain, ear nose throat (ENT) bleeding,

difficulty to open mouth, malocclusion, loss of sensation over infraorbital area and others. All these patients were examined and the important signs were recorded like periorbital edema, diplopia, sub conjunctival echymosis, step in infra orbital region and zygoma region, malar flattening, trismus and cerebrospinal fluid (CSF) rhinorrhea. Oral examination was done to look for palatal split, malocclusion, oral mucosa, and floor of the mouth, loose or broken teeth.

Associated injuries were recorded and Ophthalmology, Neurology, Orthopedics and ENT opinions were obtained whenever necessary. Comorbid factors such as Diabetes Mellitus, Hypertension, and Ischemic Heart Disease were recorded and opinion from the relevant specialty was obtained. Basic blood investigations, X- ray chest, electro cardio gram (ECG), X- ray paranasal sinus (PNS) view and CT scan of facial bones were taken and reviewed in the following appointment. These patients were classified after review of X- ray and CT scan and classified as Dento Alveolar fractures, Zygomatico Maxillary complex fractures, Nasal complex fractures and Maxillary Le Fort fractures.

According to the diagnosis relevant treatment was planned. The time gap between the day of injury and the day of surgical treatment was recorded. This duration was classified as within 7 days, between 7 days to 14days (early management), and later than 14 days (late management). Patients who had only midfacial fracture with no other injuries were referred early to our department and we have managed them early. Those with associated injuries and other comorbid factors along with midfacial fractures were referred late after getting treatment for other injuries and our treatment was delayed. Some of the patients came to the hospital very late after taking treatment at other places. Some of the patients were managed conservatively.

Patients planned for surgery were referred to anesthesiologist for fitness. After getting consent, these patients were operated under local anesthesia or general anesthesia (either through oral or nasal route) as per anesthesiologist advice. Various techniques of reduction, fixation of fractures with plates and with MMF were recorded. Proper photos were taken in the intra operative period, post operative period, and at the time of discharge.

Follow up was done after two weeks, after one month and after three months. During follow up, the cosmetic and functional results and complications were recorded. All the various demographic factors, etiology, type of treatment and results were analysed and compared with other similar results which was done by different authors.

## RESULTS

In a total of 61 patients, details of history, examination findings, operation records, follow up photos and the results were entered in the proforma. Then master chart was prepared and the results were analysed, (annexes).

## GENDER DISTRIBUTION

Out of 61 patients, 53 patients were males and 8 patients were females. Gender distribution revealed male predominance in a ratio of 5:1.

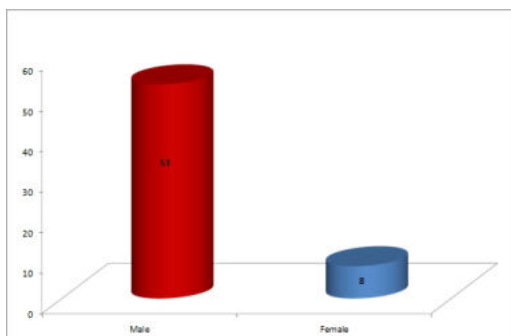


FIGURE 1. GENDER DISTRIBUTION

TABLE 1. AGE DISTRIBUTION AMONG MALE PATIENTS

S.No	Age range	Number of Cases	Frequency
1	Below-20	1	1.8%
2	20-30	20	37.7%
3	31-40	16	30.2%
4	41-50	8	15.0%
5	51-60	6	11.3%
6.	Above-60	2	3.8%

Out of 53 male patients, 20 (37.7%) were involved in the age group of 20 to 30 yrs. Followed by 16 patients in the 31 to 40 year age group. There were very less patients in both extremes of age group that is below 20 and above 60 yrs. In the 20 to 30 yrs age group all were involved in road traffic accidents.

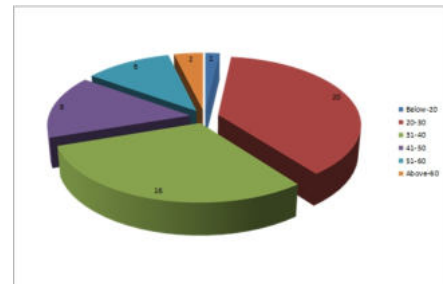


FIGURE 2. AGE DISTRIBUTION AMONG MALE PATIENTS

TABLE 2. AGE DISTRIBUTION AMONG FEMALE PATIENTS

S.No	Age range	Number of Cases	Frequency
1	Below-20	1	12.5%
2	20-30	2	25%
3	31-40	1	12.5%
4	41-50	4	50%

In the female population more number of patients (50%), were in the 41 to 50 yrs age group. The main cause of the injury was assault, followed by fall and lastly road traffic accidents. This pattern is very different from men.

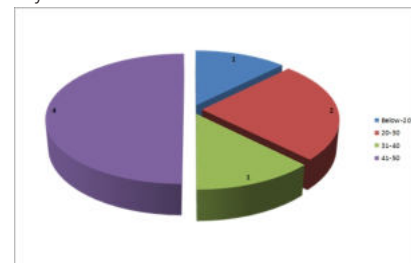


FIGURE 3. AGE DISTRIBUTION AMONG FEMALE PATIENTS

TABLE 3. DISTRIBUTION OF CAUSES

Road Traffic accident	No. of Cases	Frequency
Bike rider	30	49.2
Assault	11	18
Pillion Rider	7	11.5
Fall	7	11.5
Pedestrian	5	8.2
Cyclist	1	1.6

Main cause of injury was road traffic accidents (49.2%), followed by assault (18%). Out of 37 patients who were involved in the two wheeler accidents, bike riders were more than the pillion riders.

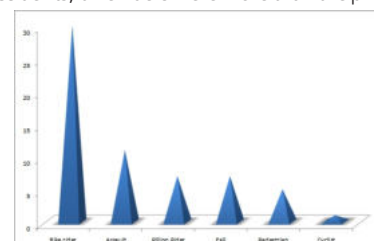


FIGURE 4. DISTRIBUTION OF CAUSES

TABLE 4. DISTRIBUTION OF PLACE OF OCCURRENCE OF INJURIES

Place	No. of cases	Frequency
Street	39	64.0%
Home	14	22.9%
Highway	6	9.8%
Work	2	3.3%

Majority of the injuries have taken place on the roads (64.0%), within the city and around the nearby villages. 22% of injuries have occurred at home due to assault and fall.

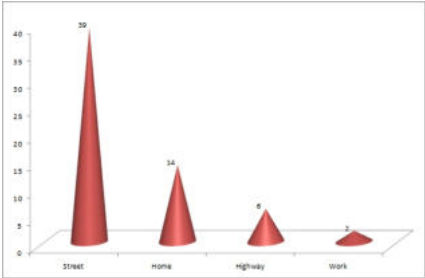


FIGURE 5. DISTRIBUTION OF PLACE OF OCCURRENCE OF INJURIES

TABLE 5. INCIDENCE OF ALCOHOL CONSUMPTION AND INJURY

Habit	No. of Cases	Frequency
Alcohol	30	49.2%
Non-Alcoholic	31	50.8%

Out of 61 cases 30 (49.1%) were under the influence of alcohol in overall cases of midface injury.

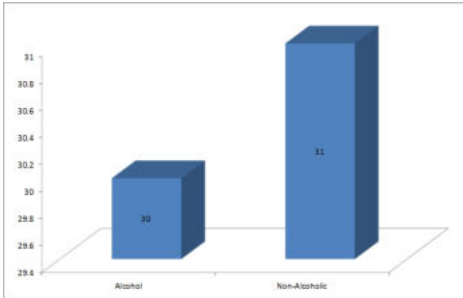


FIGURE 6. INCIDENCE OF ALCOHOL CONSUMPTION AND INJURY

TABLE 6. USAGE OF HELMET

Usage of Helmet	Number of Cases	Frequency
With Helmet	2	5.4%
Without Helmet	35	94.6%

Out of 37 cases of road traffic accidents only two of them had used helmets (5.4%), rest of the 35 patients (94.6%) did not use helmet.

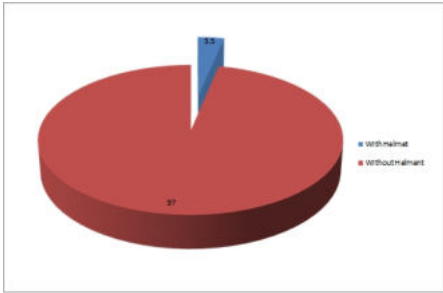


FIGURE 7. USAGE OF HELMET

TABLE 7. TIME DISTRIBUTION OF ACCIDENTS

Day / Night	No. of Cases	Frequency
Day	32	52.5%
Night	29	47.5%

52% of injuries have occurred during the day time.

TABLE 8. DISTRIBUTION OF SYMPTOMS

Symptoms	No. of Cases	Frequency
Pain	58	95.0
Mouth open	40	65.6
Loss of sensation	26	42.6
ENT bleeding	16	26.2
Wounds	12	19.7
Teeth bite	11	18.0
Unable to open eye	7	11.5
Others	5	8.2

Main symptom was pain in 95% of patients, followed by difficulty to open the mouth (65.6%). Loss of sensation in infraorbital region (42.6%), was the next common symptom.

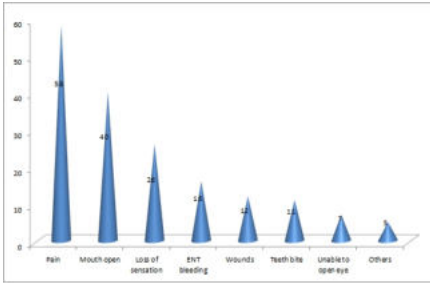


FIGURE 8. DISTRIBUTION OF SYMPTOMS

TABLE 9. DISTRIBUTION OF SIGNS

Signs	No. of Cases	Frequency
Step I/O, Zygo	40	65.5%
Trismus	39	63.9%
Sub Conj Echymosis	35	57.4%
Malar Flattening	32	52.5%
Peri orbi edema	19	31.2%
I/O Anesthesia	16	26.3%
Malocclusion	11	18.0%
Enophthalmas	3	4.9%
Diplopia	3	4.9%
Palatal split	2	3.3%
CSF Rhinorrhoea	1	1.6%

About 40 patients (65.6%) had step in the infraorbital rim, zygomatico frontal suture line and in the zygomatic arch. Trismus was the next common sign (63.9%). Around 50% of them had subconjunctival echymosis and malar flattening.

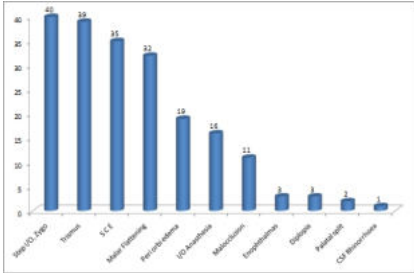


FIGURE 9. DISTRIBUTION OF SIGNS

TABLE 10. DISTRIBUTION OF TYPE OF FRACTURES

Type of Fractures	No. of Cases	Frequency
Isolated Zygoma	30	49.2
ZMC	16	26.2
Max Le F II	5	8.2

Nasal	5	8.2
Max Le F II/III	2	3.3
Dental ALV	2	3.3
Max Le F III	1	1.6

Isolated zygoma fracture was the most comprising (49.2%) of the total cases. Out of these, left zygoma fractures were more than right. Zygomatico maxillary complex fractures followed by 26.2%. Two patients had Le Fort II & III on either side of the face.

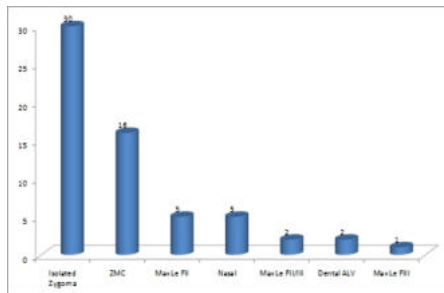


FIGURE 10. DISTRIBUTION OF TYPE OF FRACTURES

TABLE 11. DISTRIBUTION OF ASSOCIATED INJURIES

Associated injuries	No. of Cases	Frequency
Soft tissue injury	6	9.8%
Neurological Injury	3	4.9%
Limb injury	2	3.3%
Eye injury	1	1.6%
Blunt injury abdomen	1	1.6%

Maximum number of injuries associated with midface fractures in this study were soft tissue injuries (9.8%). They were lacerations, contusion and abrasion injuries. It was followed by neurological injuries.

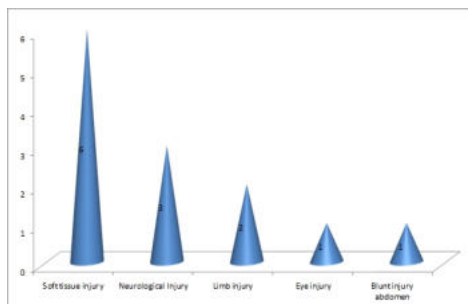


TABLE 11. DISTRIBUTION OF ASSOCIATED INJURIES

TABLE 12. MANAGEMENT DISTRIBUTION

Treatment	No. of Cases	Frequency
Elevation	21	34.4%
Elevation + Orif	18	29.5%
Refused treatment	8	13.1%
Elevation + Orif + MMF	6	9.8%
Conservative	6	9.8%
Nasal Bone Fracture Reduction	2	3.2%

Most of the cases were managed by surgery. Out of these, majority were elevation only (34.4%) in 21 cases. This was done in isolated zygoma fracture and ZMC fracture with minimal displacement. Those unstable and comminuted fractures were managed with elevation of zygoma plus open reduction of fracture and fixation with plates (ORIF) (29.5%). Plates with two holes to four holes 2 mm size, were selected for fixation of fractures at zygomatico frontal sutures and fixed with 2X 8 mm screws. For fractures at infraorbital rim, four holes to six hole 1.5 mm size plates were selected and fixed with 1.5X 6 mm screws. Only six cases of Le Fort II and III fractures were managed with MMF with ORIF. Out of 61 cases 8 of them refused treatment. 6 patients (9.8%) were managed conservatively, since they all had isolated fracture zygoma and ZMC fracture with only pain during full mouth

opening. 2 cases of Nasal Bone Fractures was managed with closed reduction. All elevations were done under Gillies Temporal approach. Zygomatico frontal fractures were approached by making incision lateral to eyebrow and fixed with plate and screws. The infraorbital rim fracture and nasozygomatico buttress were approached through subciliary incision.

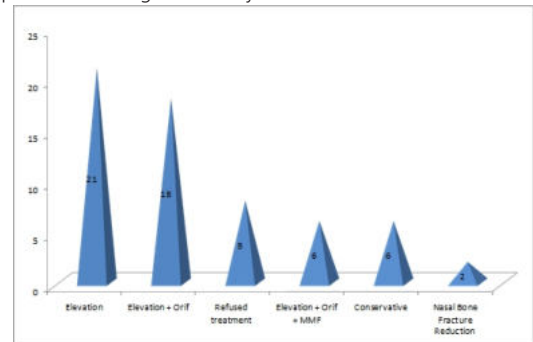


FIGURE 12. MANAGEMENT DISTRIBUTION

TABLE 13. DURATION FROM TRAUMA TO SURGERY

Time of Surgery	No. of Cases	Frequency
< 7 days	8	17.0%
7-14 days	26	55.3%
>14 days	13	27.7%

All our patients were referred from other departments only. These patients were first seen at casualty and were admitted in surgical wards. They were referred to our department only after ruling out all other injuries like Neurological, Dental and ENT. So most of these patients were seen by us only around the 4th day. Then we send for investigations X-rays and CT scan and anesthesiologist opinion. By this time the facial edema would have subsided and they will be posted for surgery. We have managed to do only 8 (17%) cases within the first week of injury. Rest of the 34 cases (72.3%) were managed within two weeks. Only cases which needed cardiologist opinion and those with comorbid factors like diabetes and hypertension were taken up for surgery after three weeks.

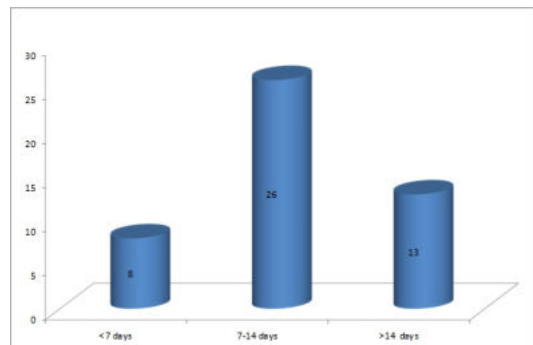


FIGURE 13. DURATION FROM TRAUMA TO SURGERY

TABLE 14. TYPE OF ANESTHESIA GIVEN

Anesthesia	Number of cases	Frequency
Nerve block	17	36.2%
O/GA	24	51.0%
N/GA	6	12.8%

17 cases of isolated zygoma and ZMC fractures were managed under local anesthesia (36.2%). This was done in very cooperative patients and early fractures and fractures with minimal displacement where elevation only was the main treatment. All ZMC fractures and few zygoma fractures were managed under oral ETGA (51.0%). In patients with Le Fort II, III fractures who needed correction of occlusion, we had requested for nasal ETGA (10.6%) In one patient with bilateral comminuted Le Fort fracture intubation was difficult. He was given anesthesia through nasal ETGA under endoscopic guidance.

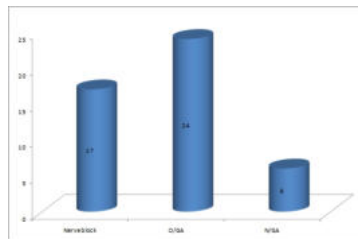


FIGURE 14. TYPE OF ANASTHESIA GIVEN

TABLE 15. OVERALL OUTCOME AND COMPLICATIONS

Results	No. of cases	Frequency
Good	30	49.2%
Facial nerve palsy	1	1.6%
Drooping of R side Naso labial region	1	1.6%
Malar flattening	1	1.6%
Infra orbital step	3	4.9%
Persisting infra orbital Anesthesia	8	19.7%
Implant late infection	1	1.6%
Nose deformity	1	1.6%
No follow up	7	13.2%

All patients were followed up after post operative period and reviewed after one month and again after six months. Some of the patients were on regular follow up even for two years. 30 patients (49.2%) were able to get good occlusion, full mouth opening, good malar prominence with symmetry and very minimal scar. The main complaint was persistent infraorbital anesthesia 19.7%. Three patients had a step in infraorbital and zygomatic arch region. Drooping of the nasolabial region and malar flattening were among other complaints. Only one patient had implant site infection which was managed with antibiotics.

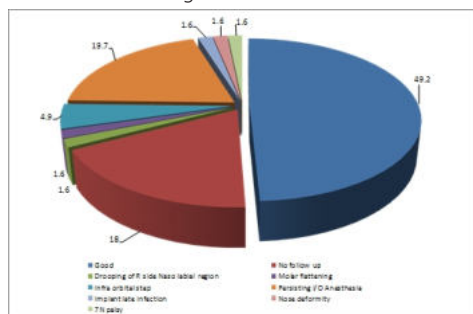


FIGURE 15. OVERALL OUTCOME AND COMPLICATIONS

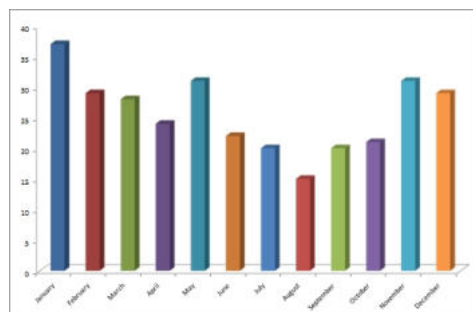


FIGURE 16. MONTHWISE INCIDENCE OF CASES

Cases which were referred to our department during each month was noted for seasonal variation of incidence and this showed maximum number of patients during the month of May, November, December and January.

## ANALYSIS OF RESULTS AND DISCUSSION

Overall incidence of midfacial fractures was more in men than in women with the ratio of 5:1 in this study. In a study done by

Darash Singh et al at Aligarh it shows that 88% were males and 12% were females. Road traffic accidents was the common cause of midfacial fracture in this study (62.3%). Similarly Zachariades et al, and Van Beek et al, also noted in their study at Greece and Netherlands that road traffic accidents were comprised more than half of their patients.

This was followed by assault which was around 18% and the least cause was fall (11.5%) in this study.

The incidence of RTA was more among male and it was more in the younger age group ranging from 20 to 30 yrs. This was also similar to the study done at Aligarh by Darash Singh et al in 1202 patients. 32.36 % was involving the same age group and 56 % of cause was RTA followed by fall. In male population most of them of them were labourers, farmers and students. Darash Singh et al [61] in their study also reported similar results. In their 1202 patients 421(35%) were farmers and labourers. 40 year old women constituted the majority and assault was the main cause. Most of them were house wives. This was also similar to the study done by Darash Singh et al which showed 8% of women were house wives. In contrast a study by Eggensperger at Central Switzerland showed 5% women were office workers.

Out of all road traffic accidents only 2 patients were wearing helmet. There is no study to compare this because in other countries helmet usage is a must while driving motor bike.

Alcohol consumption was noted in more than 50% of cases which was the prime reason in causing road traffic accidents, assault and interpersonal violence in this study. Kontio et al reported that maximum number of RTA and assault have occurred during weekends under the influence of alcohol where the violence was extreme with more severe injuries and more number of associated injuries.

TABLE 16. TYPES OF FRACTURES OBSERVED IN ALCOHOLIC AND NON-ALCOHOLIC PATIENTS (MEAN VALUE STANDARD DEVIATION)

S. No	Type of Fracture	Alcoholic	Non-Alcoholic
1	Zygoma	13±2.8	17±2.8
2	Zygomatico maxillary complex	11±1.4	9.0±1.4
3	Nasal bone	1.0±1.4	3.0±1.4
4	LeFort I/II/III	6.0±3.5	1.0±3.5

In the types of fractures observed, maximum cases of zygoma fracture were observed in non-alcoholic patients, with a mean of 17±2.8 and nasal bone fractures with a mean of 3.0±1.4. Whereas, maximum cases of severe fractures like zygomatico maxillary complex and Le Fort I/II/III were observed in alcoholic patients, with mean cases 11±1.4 and 6.0±3.5 respectively (Table-16).

TABLE-17.A F-TEST FOR FRACTURES BETWEEN ALCOHOLIC AND NON-ALCOHOLIC PATIENTS

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	217.375	3	72.458	11.830	
Intercept	465.125	1	465.125	75.939	P<0.01
FRACTURE	217.375	3	72.458	11.830	P<0.01
Error	24.500	4	6.125		
Total	707.000	8			
Corrected Total	241.875	7			

a R Squared = .899 (Adjusted R Squared = .823)

Two way Anova revealed that there was significant difference (P<0.01) in the frequency of major fractures in alcoholic patients compared to those of non-alcoholic patients, thus confirming also the fact that the fractures of severe nature were more in alcoholic patients.

Post-hoc analysis using SNK test revealed the variations in the frequency of midfacial fractures. Among the midfacial fractures,



frequencies of nasal bone and LeFort fractures were significantly less, while those of zygoma were significantly more. Fractures of the zygoma Maxillary complex occupied a medium rank in its frequency (Table-17a, b.).

**Table-17b. SNK Test for variation in fractures in alcoholic and non alcoholic patients**

Type of Fractures	N	Subset	
		1	2
Nasal bone	2	2.0000	
LeFort	2	3.5000	
Zygoma Maxillary complex	2	10.0000	10.0000
Zygoma	2		15.0000

Means for groups in homogeneous subsets are displayed. Based on Type III Sum of Squares

The error term is Mean Square (Error) = 6.125. a Uses Harmonic Mean Sample Size = 2.000.

Most of the incidence has occurred in the day time and inside the city. More number of cases were noticed in the month of May, November, December and January. The probable reason may be school holidays during the month of May and end of December where more travelling could have occurred. In the month of November, December due to fog there may be more number of accidents. In the month of January due to too much fog and also because of harvesting time in villages there must have been lot of work for the farmers and labourers which could have been the cause for the increased number of cases during this month. When studying speed of impact, all road traffic accidents are high velocity injuries and the rest like fall and assault are low velocity injuries. In this study there were more high velocity injuries 62.3% than low velocity a injury which was only 37.7%, similar to results of other studies.

In this study major symptoms were pain 95%, difficulty in opening mouth 65.5%, loss of sensation in infra orbital region 42% and malocclusion 18%.

Major signs on examination in this study showed step in infraorbital rim and zygoma 65%, trismus 63%, subconjunctival echymosis 57%, flattening of malar region 52% and malocclusion 18%. One patient had CSF rhinorrhoea, 2 patients had palatal split. The more severe injuries had correlation with RTA in young bike and pillion riders who did not wear helmet and had consumed alcohol during accidents.

In the two patients who were wearing helmet there was less severe trauma. One of them had only undisplaced fracture of right zygoma with complaints of pain when opening mouth. He was managed conservatively and had good recovery. The other patient had fracture of left zygoma with difficulty in opening mouth. We had done elevation only under local anesthesia after which he had good recovery. So wearing helmet was associated with less severe injury to facial bones.

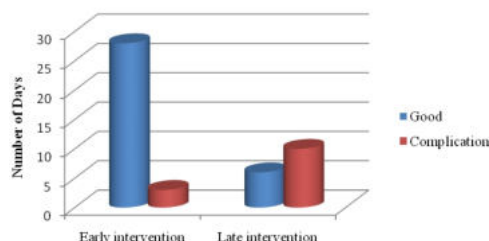
In this study more number of fractures were isolated zygoma fractures (49.2%) followed by ZMC fracture (26.2%), nasal and Lefort II were (8.2%) each and the least was Le Fort III (1.6%). Similar result was shown in a study done by Beaumont et al confirmed maximum fracture in midfacial injuries were ZMC fractures followed by Le Fort and later by dento alveolar fractures. In a study of faciomaxillary injuries by Darashigh et al isolated zygoma was common fracture 18%. In one study Rezzan and Nezh found zygomatic arch is the most common site of fracture which is also shown in this study.

In this study soft tissue injuries (9.8%) were the most common associated injuries along with midfacial fractures followed by neurological injuries (4.9%). This was also proved in the study done by Darashigh et al where soft tissue injuries with or without bone involvement were the most common presentation in faciomaxillary injuries.

In this study majority of patients were managed within 4 days to 2 weeks from the day of trauma. In the early management of isolated fractures of zygoma we have done elevation under local anesthesia. Patients were followed up in the postoperative period and after two weeks and then once a month. Most of them had good mouth opening, occlusion, good malar prominence and cosmetically good results. In isolated zygoma fracture two weeks later we could not do elevation satisfactorily and there was step in the arch and the malar flattening could not be corrected perfectly. Though all these patients could open their mouth after six weeks of regular physiotherapy they still had persistent infra orbital anesthesia and pain while opening their mouth.

### Time of Intervention

Chi-square test revealed that there was statistically significant variation ( $P < 0.01$ ) between early intervention (1-14 days) and late intervention (above 14 days). Early surgical intervention could bring forth good results with less complication, while in late interventions the frequency of complication was higher (Fig. 17)



**FIGURE 17. TIME OF INTERVENTION**

In ZMC and Le Fort II, III fractures we have done elevation with open reduction and fixation with plates atleast at two buttress points. In the early management group we could get good reduction and alignment of fracture segments after elevation and open reduction. These patients on follow up showed good results. All our Le Fort II, III patients were managed within one week because these patients were referred earlier as the symptoms were very severe. Among all the patients only one had implant site infection. Results of early management were definitely good even in patients with high velocity injuries after RTA with severe type of fractures.

### CONCLUSIONS

This study shows that the incidence of midfacial fractures were more in males of 20 to 30 years age group than in females who were between 40 to 50 years.

The main cause in men were road traffic accidents and assault in the case of women.

Most of the men were of low socioeconomic group comprising farmers & labourers whereas the women were all housewives.

There is a strong correlation with alcohol consumption and helmet defaulters with severe midfacial injuries due to road traffic accidents.

There is a significant correlation with increased incidence during some months in a year when there are environmental changes, increased work load and holiday season which could have resulted in more traveling.

When compared to delayed management, early management of midfacial fractures showed better results functionally and aesthetically with less complications.

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