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COMPARISON OF POST OPERATIVE COMPLICATIONS IN MANDIBULAR CONDYLAR FRACTURES IN OPEN VERSUS CLOSED REDUCTION TECHNIQUE

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Abstract…..Objective: To compare post-operative complications of mandible condylar fractures treated by open versus close reduction technique.
Study design: Randomized control trial study
Study duration: Study was completed in six months from 20-01-2019 to 20-07-2019 at Department of Oral and Maxillofacial Surgery, Nishtar Institute of Dentistry Multan.
Results: Total 60 patients were included in study. 51 (85.0 %) were male patients while 09 (15.0 %) were female patients. Mean age of our study cases was 27.23 ± 5.76 years (with minimum age of our study cases was 20 years while maximum age was 42 years). Of these 60 study cases, 19 (31.7%) were illiterate and 41 (68.3%) were literate, unilateral fracture was noted in 49 (81.7%) and bilateral fracture in 11 (18.3%). Pain in group A was 8 (16%) and in group B was 16 (53.3%) ($p = 0.064$) while occlusion disturbance was 13.3 % and 43.3 % in group A and group B respectively ($p = 0.020$).
Conclusion: Our study results support the use of open reduction technique in the treatment of mandibular condylar fracture as compared with closed reduction technique. Open reduction Technique had significantly lower occlusion disturbance and pain was also quite lower in this group. All the clinicians treating such patients should always employ open reduction technique to avoid further complication in such patients which will improve quality of life of these patients.

Keywords: Pain, Occlusion Disturbance, Open Reduction Technique.

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INTRODUCTION

Facial area is one of the most frequently injured areas of body. Mandible fractures most commonly occur in the region of condyle, the body or the angle. According to several studies, they account for 17.5% to 52% of all mandibular fractures 1, 2. Causes of mandibular fractures are road traffic accident, falls, industrial trauma, interpersonal violence and sports injuries 3. Diagnosis of condylar fractures is based on history, clinical examination and plain radiography.

Orthopentomogram is the best screening tool to rule out condylar fractures. CT scan has role in case of treatment planning while MRI can also be helpful in case of associated soft tissue injuries of temporomandibular joint 4. In conservative approach closed reduction is done by avoiding direct exposure of fracture site, early mobilization of joint, restoration of occlusion and function. Open reduction and internal fixation includesdirect surgical access, reduction of condylar fracture and fixation with 2.0 mm titanium miniplates under direct vision 5-9. There are two principal therapeutic approaches to these

fractures: functional and surgical 10. Since the introduction of osteosynthesis materials for rigid internal fixation after anatomical reduction there has been ongoing discussion about the treatment of condylar fractures of the mandible 11.

In recent years, open treatment of condylar fractures has become more common, probably because of the introduction of plate and screw fixation devices that allow stabilization of these injuries. Nevertheless, several reports and a few series of open treatments have emerged in the world literature 12.

Functional therapy (closed treatment) is indicated in almost all condylar fractures that occur in childhood, and in intracapsular and extracapsular fractures that do not include serious condylar dislocation in adults. In contrast, surgical treatment is indicated primarily for adults with displaced fractures or with dislocation of the condylar head13,14. There are many studies available in international literature but a few in local literatures on this topic.

Rationale of this study is to compare postoperative complication of open versus close reduction technique in local population and selection of better technique for better care and management of patients with mandibular condylar fractures in our setup. Current study is designed to compare so as to develop a consensus to adopt better treatment option on patient.

METHODOLOGY

Sixty patients (30 in each group) were included from Department of Oral & Maxillofacial Surgery, Nishtar Institute of Dentistry, Multan after taking informed consent and permission from ethical committee and research department.

Demographic information of patients (name, age, gender, duration of fracture) had taken. Patients from both gender with age range of 18-45 years having Maxillofacial trauma within a week were included in this study. Patients with panfacial trauma and maltreated malunited condylar fractures were excluded in this study. Informed consent was taken. Patients were divided in two groups by using random number table i.e. group A with odd number and group B with even number. In group A open reduction technique and in group B closed reduction technique was used for mandibular condylar fractures. Patients were called for follow up at 1st week, 1st month and after 3rd month after the procedure to evaluate the complications (pain and occlusion).

Data was entered and analyzed with SPSS version 20. Descriptive statistics was given for both quantitative and qualitative variables. Mean ± S.D. was calculated for quantitative variables like age, pain score of patients.Frequencies and percentages were calculated for qualitative variables including gender, occlusal disturbance and pain. Pearson Chi Square was applied to compare complication like Occlusal disturbances and pain. Effect modifiers like age, gender were controlled by stratification. Post stratification chi-square test was applied to see their effect on outcome. A p-value of ≤ 0.05 was considered significant.

RESULTS

Our study comprised of a total of 60. Of these 60 study cases, 51 (85.0 %) were male patients while 09 (15.0 %) were female patients. Mean age of our study cases was 27.23 ± 5.76 years (with minimum age of our study cases was 20 years while maximum age was 42years). Mean age of the male patients was noted to be 27.86 ± 5.92 years while that female patients was 23.67 ± 3.00 years (p=0.043). Our study results have indicated that majority of our study cases i.e. 45 (75.0 %) were aged up to 30 years. Of these 60 study cases, unilateral fracture was noted in 49 (81.7%) and bilateral fracture in 11 (18.3%). (Table No.1). Pain in group A was 8 (16%) and in group B was 16 (53.3%) (p = 0.064) while occlusion disturbance was 13.3 % and 43.3 % in group A and group B respectively (p = 0.020). (Table No.2). Complications occlusion disturbance were stratified with regards to type of fracture. (Table No.3).

Table-1

Demographics

Characteristics	GROUP(A)	GROUP(B)
	Frequency (Percentage)	Frequency (Percentage)
Age		
Male	25 (83.3%)	26 (86.7%)
Female	5 (16.7%)	4 (13. 3%)
Gender		
upto 30 yrs	22 (73. 3%)	23 (76.7%)
More than 30 yrs	8 (26.7%)	7 (23.3%)
Type of Fracture		
Unilateral	25 (83.3%)	24 (80%)
Bilateral	5 (16.7%)	6 (20%)
Pain		
Yes	8 (26.7%)	16 (53.3%)
No	22 (73.3%)	14 (46.7%)
Occlusion		
YES	4 (13.3%)	13 (43.3%)
NO	26 (86.7%)	17 (56.7%)

Table-1

Stratification of Occlusion with respect to age and gender

Gender	Groups	Oclusion YES (n=24)	Oclusion NO (n=36)	P value
Stratification of Occlusion with respect to Age				
Upto 30yrs	Group (A)	2	20	0. 035
	Group(B)	09	14	0.035
More than 30yrs	Group(A)	02	06	0.315
	Group (B)	04	03	0.315
Stratification of Occlusion with respect to gender				
Male	Group (A)	4	21	0. 064
	Group(B)	11	15	0.064
Female	Group(A)	00	05	0.167
	Group (B)	4	21	0. 064

Table-3

Stratification of Occlusion with regards to type of fracture

Gender	Groups	Occlusion YES (n=24)	Occlusion NO (n=36)	P value
Stratification of Occlusion with respect to Type of fracture				
Unilateral	Group (A)	1	24	0. 002
	Group(B)	10	14	0.002
Bilateral	Group(A)	03	02	1.000
	Group (B)	03	03	1.000

DISCUSSION

Among facial bone fractures, the MANDIBLE fracture has a highest incidence next to nasal bone fracture and condyle fracture most frequently occurs in mandible fracture. Condyle fracture accounts for approximately 30% and 37% of mandible fracture in dentulous mandible patients and edentulous mandible patients respectively. As mandibular fracture may cause disorders that is hard to be recover aesthetic and functionally, an appropriate treatment is required to reconstruct the shape and function. To do this, accurate diagnosis, appropriate reduction and rigid fixation, and complication prevention are required 15.

Our study comprised of a total of 60 patients meeting inclusion criteria of our study. Of these 60 study cases, 51 (85.0 %) were male patients while 09 (15.0 %) were female patients. A study conducted in Islamabad by Asim et al (16) has also reported 90 % male gender predominance which is close to our study results. Merlet et al (17) also reported similar findings.

Our study results have indicated that majority of our study cases i.e. 45 (75.0 %) were aged up to 30 years. A study conducted in Islamabad by Asim et al 16 has also reported 30.80 ± 12.12 years mean age which is in compliance with our study results. Another study by Merlet et al (17)also reported 36.44 years mean age which is in compliance with our study results.

Pain in group A was 8 (16%) and in group B was 16 (53.3%) ($p = 0.064$) while occlusion disturbance was 13.3 % and 43.3 % in group A and group B respectively ($p = 0.020$). A study conducted by Eckelt U et al 5 reported mean value occlusal disturbances is 23% and no pain in 13/30 (43.33%)with closed technique group while in operatively treated group mean occlusal disturbance was 9% and no pain in 28/36 (77.78%) with open technique group. These findings are close to our study results. A study conducted in Islamabad by Asim et al 16 has also reported occlusion disturbance 9 % versus 18 % which is in compliance with our study results.

CONCLUSION

Our study results support the use of open reduction technique in the treatment of mandibular condylar fracture as compared with closed reduction technique. Open reduction technique had significantly lower occlusion disturbance and pain was also quite lower in this group. All the clinicians treating such patients should always employ open reduction technique to avoid further complication in such patients which will improve quality of life of these patients.

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