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Original Article

Assessment Of Efficacy Of Different Treatment Modalities In Management Of Mandibular Angle Fracture: A Comparative Study

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ABSTRACT
Background: Mandibular angle fractures represent the largest percentage of mandibular fractures. Two of the most common causes of mandibular angle fractures are motor vehicle collisions. Various techniques, including closed reduction, open reduction by non-rigid fixation with wire, and open reduction and rigid internal fixation with plates or lag screws, have been reported for the management of mandibular angle fractures. The present study was conducted to compare treatment modalities in the management of mandibular angle fractures. **Materials & Methods:** We planned the present study to compare mandibular fracture patients treated with various lines of treatment. A total of 90 patients were included in the present study. Complete demographic details about all the patients were obtained. Random division of all the patients was done into three study groups; group A, B and C included patients treated with locking plates, non-locking plates and bioresorbable plates respectively. All the complications were recorded and analyzed by SPSS software. Chi-square test was used for assessment of level of significance. **Results:** All the patients were broadly divided into three study groups with 30 patients in each group. Group A included patients who were treated with locking plates, group B included patients who were treated with non-locking plates while group C included patients who were treated with bioresorbable plating. We didn't observe any significant difference while comparing the number of complications in between various study groups. **Conclusion:** The authors didn't observe any significant difference while comparing the complications occurring in various lines of treatment in treating patients with mandibular angle fractures.

Key words: Infection, Miniplates, Mandibular angle

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INTRODUCTION

Mandibular angle fractures represent the largest percentage of mandibular fractures. Two of the most common causes of mandibular angle fractures are motor vehicle collisions and assaults or altercations. There are two main proposed reasons why the angle of the mandible is commonly associated with fractures.[1- 3] The first reason is the presence of a thinner cross-sectional area relative to the neighboring segments of the mandible. Second is the presence of third molars, particularly those that are impacted, which weakens the region. Mandibular angle fractures pose a unique challenge for surgeons because they have the highest reported postoperative complication rate of any mandibular area.[4] Various techniques, including closed reduction, open reduction by non-rigid fixation with wire, and open reduction and rigid internal fixation with plates or lag screws, have been reported for the management of mandibular angle fractures.[5- 8] Hence; The present study was conducted to compare treatment modalities in the management of mandibular angle fractures.

MATERIALS & METHODS

We planned the present study in the department of oral surgery of the institute and it included evaluation and comparison of mandibular fracture patients treated with various lines of treatment. Ethical approval was obtained before the starting of the study and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 90 patients were included in the present study. Complete demographic details about all the patients were obtained. Random division of all the patients was done into three study groups; group A, B and C included patients treated with locking plates, non-locking plates and bioresorbable plates respectively. All the patients were given antibiotic Cap Amoxicillin + Clavulanate for 5 days. All were on liquid diet for one week, gradually switching to semisolid intake in the coming weeks. All the complications were recorded and

analyzed by SPSS software. Chi-square test was used for assessment of level of significance.

RESULTS

A total of 90 patients were included in the present study, among which 48 were males while the remaining 42 were females. Mean age of the patients of the present study was 40.4 years. All the patients were broadly divided into three study groups with 30 patients in each group. Group A included patients who were treated with locking plates, group B included patients who were treated with non-locking plates while group C included patients who were treated with bioresorbable plating. We didn't observe any significant difference while comparing the number of complications in between various study groups.

Table 1: Demographic details

Parameter	Value
Mean age (years)	40.4
Males	48
Females	42
Total	90

Table 2: Distribution of patients according to treatment

Group	Treatment	No. of patients
A	Locking plates	30
B	Non-locking plates	30
C	Bioresorbable plating	30

Table 3: Comparison of complications occurring in the various study groups

Complications	Group A (n)	Group B (n)	Group C (n)	P-value
Infection	1	2	1	0.75
Delayed union	0	1	1	
Secondary reduction loss	1	0	1	
Plate removal due to infection	2	0	1	

DISCUSSION

In the present study, didn't observe any significant difference while comparing the number of complications in between various study groups. Kim MY et al determined a practical and cost-effective treatment method for fixing mandibular angle fractures using miniplates. Patients were divided into three groups for comparison, based on the intraoperative plates and maxillomandibular fixation (MMF) used: group A, single miniplate fixation with MMF (n=37); group B, double miniplate fixation with MMF (n=59); group C, double miniplate fixation without MMF (n=38). Details of the characteristics of the fractures and the treatments and outcomes were collected retrospectively and analyzed statistically. This study was based on 134 cases of isolated mandibular angle fracture. Of the surgically treated patients, 78.4% (n=105) were completely free of complications. A detailed complication correlation matrix is given in the text. Besides screw loosening and malocclusion, no statistically significant difference was observed between the groups. The results of this study suggest that treatment with single miniplate fixation and MMF has a low incidence rate of complications, and this method of treatment is considered to be simple.[8] Sudhakar GVS et al assessed the simple and effective surgical approach in treating mandibular angle fractures and the outcome by means of three approaches i.e. intra oral, transbuccal and extra oral approaches. A total of 45 patients with mandibular angle fracture were divided into three groups. Group I—intra oral approach—15 patients, Group II—transbuccal with intraoral approach—15 patients, Group III—extra oral approach—15 patients. The results of their study found intraoral approach to be much better because it is simple, precise, duration is short, and post operative complications are less with minimal morbidity and pain.[9] Schaaf H et al compared lag screw fixation and miniplates. This retrospective investigation compared patients treated with miniplates (n = 24) and with lag screws (n = 21). Inclusion criteria were a solitary angle fracture without comminution or other reasons for load-bearing osteosynthesis. The main parameters for the outcome analysis were fracture gaps at 4 defined measuring points on postoperative radiography. Postsurgical complications were recorded. Fracture gaps measured in panoramic radiographs differed significantly between the lag-screw (average 0.56 mm) group and the group using 1 miniplate (average 0.85 mm) and 2 miniplates (1.40 mm). Miniplate fixation resulted in a wider fracture gap, especially in the region of the lower margin of the mandible. Lag-screw fixation demonstrated smaller fracture gaps compared with miniplate fixation.[10] Yazdani J et al assessed the postoperative complications and outcomes associated with the fixation of mandibular angle fractures using 1 and 2 miniplates in patients with favorable mandibular angle fractures. A prospective study of 87 patients (73 males, 14 females) with favorable mandibular angle fractures was done. In the first group, a 4-hole miniplate was placed at the superior border through an intraoral approach. In group 2, patients were treated with 2 miniplates, one placed at the superior border (similar to group 1) and the other on the lateral aspect of the angle at the inferior border through an intraoral and transcutaneous approach using a trocar. Postoperative complications including malocclusion, malunion and sensory disturbances associated with surgery, additional maxillomandibular fixation (MMF) by means of an arch bar and wires for a longer period (for delayed union) and infection were assessed in patients of both groups up to 12 months postoperatively. The data were analyzed using the chi-square test. In the single miniplate group, 25 patients showed lip numbness associated with surgery (55.6%), 22 patients required additional use of MMF (48.9%) and 3 patients developed infections (6.7%). In the double miniplate group 20 patients showed lip numbness associated with surgery (47.6%), 18 patients required additional use of MMF (42.9%) and 1 patient developed infection (2.4%). None of the patients in either group showed malocclusion or malunion. No significant difference was observed between the groups regarding overall complication rate. In this study, use of one miniplate or two miniplates for treatment of favorable mandibular angle fractures was associated with a similar incidence of complications.[11]

CONCLUSION

Under the light of above mentioned data, the authors didn't observe any significant difference while comparing the complications occurring in various lines of treatment in treating patients with mandibular angle fractures.

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