Original Article

A Study of Complications and Outcome of Transoral Surgical approach for mandibular angle fractures

Vaibhav Mirajkar[1*], Priyesh Patil[2]

[1]Maxillofacial Surgeon, Smile Landmark Maxillofacial Surgical Centre, 61, Ravivar Peth, Shiv Shakthi Complex, Powai Naka, Satara, Maharashtra, INDIA.
[2]Maxillofacial Surgeon, Department of Dental Surgery, RCCM Government Medical College, Kolhapur, Maharashtra, INDIA.
Email: drmirajkar@gmail.com, maxfac1977@gmail.com

Abstract

Introduction: Mandibular fractures represents approximately two-thirds of all the maxillofacial fractures (nearly 70%) out of which Majority part constitutes fractures of mandibular angle. **Aims and Objectives:** To Study Complications and Outcome of Transoral approach for mandibular angle fractures. **Methodology:** This was a Cross-sectional study carried out at the tertiary Care Hospital during the one-year period from January 2014 to January 2015 in all the Patients admitted to Various Hospitals for Maxillofacial trauma and injuries. Those patients who are having mandibular fractures were included into the study. Total 104 patients with mandibular angle fractures were included into the study. **Result:** The majority of the patients were form the age groups (in Yrs.) of 45-55 i.e. 25 (24.03%) followed by >65 were 23 (22.11%); 55-65 were 21(20.19%); 35-45 were 14(13.46%);25-35 were 13(12.50%); 15-25 were 8(7.69%). The majority of the patients were Male- 83(79.80%) followed by Female- 21 (20.19%).In classification the 70.34% fractures were Simple and 29.66% were Complex fractures. Out of the total 104 Favourable fractures were 72.11% and Unfavourable fractures were 27.89%.The most common complications observed were Infection i.e. 10(9.61%) followed by Loss of teeth – 4(3.84%), Malocclusion- 3(2.88%); IAN Paresthesia -3(2.88%); Non-union of Fracture and Reoperation with IMF -2(1.92%).In outcome Satisfactory bony union occurred in 91.83 % cases. **Conclusion:** In our study commonest complication observed was operation site infection followed by Malocclusion, Inferior Alveolar Nerve Paresthesia and Loss of teeth. In outcome Satisfactory bony union occurred in 91.83 % cases.

Key Words: Fracture of mandibular angle, Transoral approach for mandibular angle fractures, IMF (Inter Maxillary Fixation) ORIF (Open Reduction and Internal Fixation), IAN (Inferior Alveolar Nerve) Paresthesia.

[*]**Address for Correspondence:**
Dr. Vaibhav Mirajkar, Maxillofacial Surgeon, Smile Landmark Maxillofacial Surgical Centre, 61, Ravivar Peth, Shiv Shakthi Complex, Powai Naka, Satara, Maharashtra, INDIA.
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INTRODUCTION

Mandibular fractures represents approximately two-thirds of all the maxillofacial fractures (nearly 70%) out of which Majority part constitutes fractures of mandibular angle.[1,2] Haug *et al*. gave the ratio of incidence of mandibular, zygomatic, maxillary fractures was 6:2:1 respectively.[3] There are several reasons proposed for the increased occurrence of mandibular angle fractures. The abrupt change in the anatomy at mandibular angle around the Vertical and horizontal plane ranging from plane at the upper border is 20^{0} to 60^{0}, the presence of impacted mandibular third molars, less cross-sectional area due to the large amount of space occupied by the crypt of mandibular third molars and biomechanical consideration of angle as a lever area of mandible.[4, 5] The suprahyoid group of muscles (mylohyoid, geniohyoid, anterior belly of digastric) which are attached to mandible anterior to the angle region exerts a pull inferiorly with the angle acting as a lever area and at the same time muscles of mastication (pterygomassetric sling, temporalis) exert a pull superiorly thereby causing more often but not always displacement of the fractured segments at the angle region.[4]

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METHODOLOGY

This was a Cross-sectional study carried out at the tertiary Care Hospitals during the one-year period from January 2014 to January 2015 in all the Patients admitted to Various Hospitals for Maxillofacial trauma and injuries. Those patients who are having mandibular fracture were included into the study. Total 104 patients with mandibular angle fractures were included into the study. The detailed clinical history and Dental examination was done involving pattern of fracture of Mandible. All the patients managed with Transoral surgical approach for mandibular angle fractures. The complications and outcome in the patients were noted.

Open Reduction and Internal Fixation: Plates and screws function to rigidly fixed and prevent any motion of fracture segments by sharing the functional load and helps in osteosynthesis.

RESULT

Table 1: Age wise Distribution of the Patients

Age	No.	Percentage (%)
15-25	8	7.69%
25-35	13	12.50%
35-45	14	13.46%
45-55	25	24.03%
55-65	21	20.19%
>65	23	22.11%
Total	**104**	**100.00%**

The majority of the patients were form the age group (in Yrs.) of 45-55 i.e. 25 (24.03%) followed by >65 were 23 (22.11%); 55-65 were 21(20.19%); 35-45 were 14(13.46%);25-35 were 13(12.50%); 15-25 were 8(7.69%).

Table 2: Gender-wise distribution of the Patients

Sex	No.	Percentage (%)
Male	83	79.80%
Female	21	20.19%
Total	**104**	**100.00%**

The majority of the patients were Male- 83(79.80%) followed by Female- 21 (20.19%).

Table 3 A: Distribution of the Patents as per the Classification

Classification	No.	Percentage (%)
Simple	73	70.34%
Complex	31	29.66%
Total	**104**	**100.00%**

In classification the70.34% fractures were Simple and 29.66% were Complex fractures

Table 3B: Distribution of the Patients as per the Classification

Classification	No.	Percentage (%)
Favourable	75	72.11%
Unfavourable	29	27.89%
Total	**104**	**100.00%**

Out of the total 104 Favourable fractures were72.11% and Unfavourable fractures were 27.89%.

Table 4: Distribution of the Patients as per the various complications

Complications	No.	Percentage (%)
Infection	10	9.61%
Malocclusion	3	2.88%
IAN Paresthesia	3	2.88%
Non-union of Fracture and Reoperation with IMF	2	1.92%
Loss of teeth	4	3.84%
Total	**22**	**21.15%**

The most common complications observed were Infection i.e. 10(9.61%) followed by Loss of teeth – 4(3.84%), Malocclusion- 3(2.88%); IAN Paresthesia -3(2.88%); Non-union of Fracture and Reoperation with IMF - 2(1.92%).In outcome Satisfactory bony union occurred in 91.83 % cases.

CONCLUSION

In our study commonest complication observed was operation site infection followed by Malocclusion, Inferior Alveolar Nerve Paresthesia and Loss of teeth. In outcome Satisfactory bony union occurred in 91.83 % cases.

DISCUSSION

The frequent involvement of the angle in mandibular fractures can in part be attributed to its thin cross-sectional bone area and the presence of a third molar.[16] Other variables, such as bone density and mass, severity, direction, and point of impact, also influence the site of fracture.[17] The bone in the mandibular angle area is thin inferiorly, and the fracture is generally distal to the dentition, preventing adequate stabilization by IMF. Unstable rotation or distraction of the proximal and distal fracture segments often occurs as a result of the opposing muscular forces of the elevator group of muscles (i.e., masseter, medial and lateral pterygoids, and temporalis muscles) and the depressor group of muscles (ie, geniohyoid, genioglossus, mylohyoid, and digastric muscles). Furthermore, the presence of a third molar may inhibit or impair reduction, decrease bony contact, alter the vascularity of the fracture site, or be a source of pathogenic organisms.[18]

Mandibular angle fractures are one of the most common types of fractures encountered in the maxillofacial region. Treatment philosophies range from simple maxillo-mandibular immobilization to rigid internal fixation of bone fragments (ORIF).[6] Fracture can occur either anterior or posterior to mandibular third molar but rarely involving it. The basic need of rigid internal fixation is primary bone healing under conditions of absolute stability. Rigid internal fixation must neutralize all forces (tension, compression, torsion, shearing) developed during functional loading of the mandible to allow for

immediate function.[7] Hamill *et al*. advocated that successful fixation method depends upon the choice of approach.[8] Extra oral approach was once the most standard traditional and popular approach for management of mandibular angle fractures when compared to transoral approach which was first given by Kazanjian in 1933. Due to the increasing aesthetic demands of the patient and avoidance of extraoral scar, transoral approach has overcome the extraoral approach for the management of mandibular angle fractures[9,10] The main aim of any approach is to promote rapid healing and restore the anatomical form and function with particular care to restablish the functional occlusion and facial aesthetics with minimal disability and complications. A very few studies have been done by Raveh *et al*., Ellis and Karas, to discuss the differences between transoral and extraoral approaches.[10,11,12,13,14] Decision regarding the approach most often depends upon the anatomical location of the fracture line, type of fracture, amount of displacement of the fractured segments, dentition of the patient, associated maxillofacial fractures and general condition of the patient.

In our study we have observed that the majority of the patients form the age group (in Yrs.) of 45-55 i.e. 25 (24.03%) followed by >65 were 23 (22.11%); 55-65 were 21(20.19%); 35-45 were 14(13.46%);25-35 were 13(12.50%); 15-25 were 8(7.69%). The majority of the patients were Male- 83(79.80%) followed by Female- 21 (20.19%).In classification the 70.34% fractures were Simple and 29.66% were Complex fractures. Out of the total 104 Favourable fractures were 72.11% and Unfavourable fractures were 27.89%. The most common complications observed were Infection i.e. 10(9.61%) followed by Loss of teeth – 4(3.84%), Malocclusion-3(2.88%); IAN Paresthesia -3(2.88%); Non-union of Fracture and Reoperation with IMF -2(1.92%).In outcome Satisfactory bony union occurred in 91.83 % cases.

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