IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 15, Issue 6 Ver. VI (June. 2016), PP 85-87
www.iosrjournals.org

Complications of Semi-Rigid Fixation of Mandibular Fractures -- a Ten Year Retrospective Study

R.Sathyanarayanan[1], V.Suresh[2], F.Stanely Mangalakumar Robert[3], Dr. Krishna Kumar Mallick[4].
[1,2]*Indira Gandhi Institute Of Dental Sciences, Puducherry,India.*
[3]*AIMST University, Senior Associate Professor, Facultyof Medicine(FOM), Malaysia.*
[4]*Melaka Manipal Medical College, Malaysia,Professor of Surgery*

Abstract: *The aim of this study is to investigate post treatment complications of mandibular fracture by semi-rigid fixation. 1850 patients who suffered maxillofacial injury were seen during the period 1997-2007 at JIPMER, Pondicherry (now,Puducherry), India.1000 patients had mandibular fractures and were treated by semi-rigid fixation.Onehundredpatientssuffered from some type of post-treatment complications. Break up showed thirty suffered from infection,twenty one had delayed union, eighteen had non-union,fourteen showed mal-union, ten had trismus and seven hadparesthesia. Study subjects from 21-30 yearsageshowed highest (45%) prevalence of post-treatment complications. Males dominated females 3:1.*
Abbreviations*: SRF semi-rigid fixation; PTC post-treatment complications.*
Key-words*: Mandibular fracture, semi-rigid fixation, complications.*

I. Introduction

The common PTC following treatment of mandibularfractures are infection,delayed union,mal-union,deformity,mal-occlusion,temporo-mandibular dysfunction and disfigurement of lowerlip.In a study analysis for complications in 96 patients with mandibular fractures treated overall complication rate was 17%. Infection was the most common complication occurred in 17 fractures.[1] Fractures at the mandible are plagued with the highest rate of complications of all maxillofacial injuries. Open reduction and internal fixation using a single mini-plate are associated with the fewest complications.[2]

The rate of major complications are higher in comminuted fractures. Complications for the intra-oral and extra-oral approaches for treating mandibular fractures were found similar prevalence.[4] According to a studysimilar osteo-synthesis failure rates were shown for one mini-plate and two mini-plate used to treat mandibular fractures[5].

II. Methodology

This study was carried out in the department of oral and maxillofacial surgery, JIPMER, Puducherry during 1997-2007. All together 1850 patients who suffered from maxillofacial trauma were included in the study. The diagnostic criteria were history, signs and symptoms, clinical examination and different radiological investigation including ortho-pantomogram, postero-anterior view of mandible, lateral oblique view and three dimensional computed axial tomogram.1000 patients withmandibular fracturetreated by SRF were included in this study. All medically compromised patients like uncontrolled diabetes, renal failure, patients with malignancy and patients with pathological fracture were excluded.

III. Results

Out of 1000 mandibular fractures, 275 had angle fracture, 330 patients had condylar fractures, 195 had para-symphysis and 200 had body fractures. Only 100 cases suffered with some kind of complications, thirty with infection, twenty one with delayed union, eighteen from non-union,fourteen from mal-union/mal-occlusion, ten from trismus and seven from anesthesia/paresthesia.

Infection cases were treated with drainage, extraction ofoffending teeth in fracture line, and antibiotic therapy. Delayed union was treated according to the cause with the removal of the fibrous tissue inter-positioning through exposure of fracture line, and increasing duration of immobilization. Mal-occlusion cases were treated by horizontal osteotomy, and occlusal splint with inter-maxillary fixation, and restricted mouth opening cases were dealt with exercise. Four cases of paresthesia were followed for six months for spontaneous recovery which occurred. Only one patient did not show recovery who had suffered from trauma by fire arm injury. Non-union were treated with iliac crest cortico-cancellous graft.

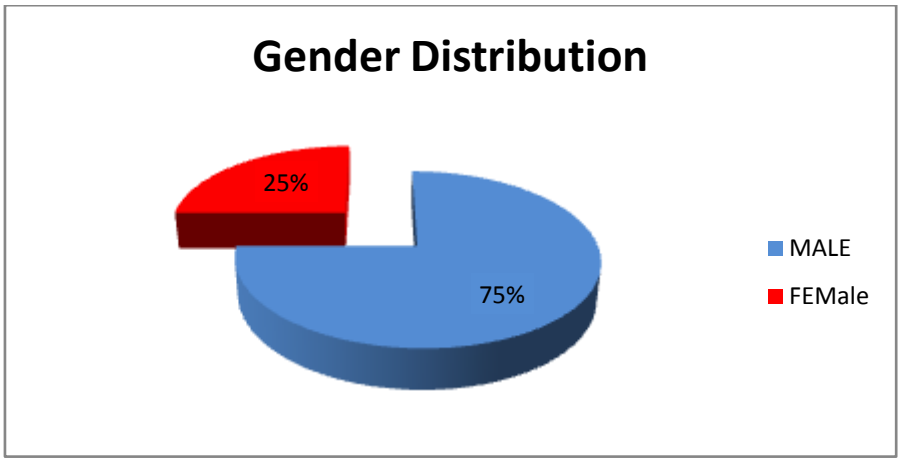
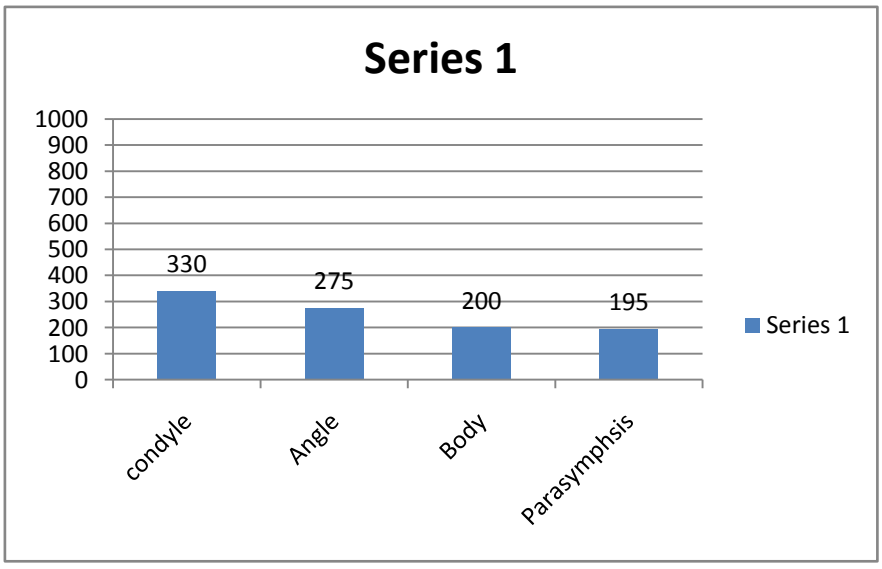


Fig 1: Gender Distribution.

Table 1:COMPICATIONS ACCORDING TO TYPE

S.No	Complication	Number of Patients	Percentage
1	Infection	30	3%
2	Delayed Union	21	2.1%
3	Non-Union	18	1.8%
4	Mal-union/Mal-occlusion	14	1.4%
5	Trismus	10	1%
6	Anesthesia/Paresthesia	7	0.7%
7	No Complication	900	90%
	Total	**1000**	**100%**

Fig 2: Distribution Of Mandibular Fracture



VI. Discussion

Mandibular fractures due to any cause is treated by open reduction either through intraoral and extra-oral approach and is always prone to complications. This morbidity ranges from mild swelling to severe infection, delayed union to non-union.This data is in compliance to the results of Biller et al. Of the 84 in that study, 11 had infections and 10 had technical Mandibular fracture due to any cause is treated by closed or open reduction either through intraoral or extra-oral approach and is Mandibular fracture at the angle due to any cause is treated by closed or open reduction either through intra-oral or extra-oral approach and is always prone to complications. This morbidity ranges from mild swelling to severe infection, delayed union to nonunion.

The high incidence of delayed union and infection found in the investigation agree with the results of Biller et al. Of the 84 patients in that study 11 had infections and 10 had technical complications. The incidence of technical complications was remarkably higher in patients repaired after 3 days.[6]Chamber and Skully stated that

in their study infection occurred in 40.3% of the patients and contributed significantly to the high prevalence of delayed and nonunion. The high incidence may be due to long delay between injury and definitive treatment and the absence of prophylactic antibiotic therapy, the frequent existence of concomitant soft tissue injuries, unclean environment and lack of wound hygiene during transfer to the maxillofacial unit.

The present study reported 100 cases out of 1000 with complications comprising 10% cases of infections which coincides with the study of Fox and Kellman who reported 8% developed infection. One patient was noted to have a serousyellow drainage within first week after surgery[7.] In a study by Iizuka and Lindqvist who evaluated 113 patients with mandible fractures treated with lag screw fixation, compression plates, or neutral reconstruction plates, post-operative infection was identified in 8 cases. The authors found an association with infection and the use of compression plates at the angle after tooth extraction in the fracture line.[8]

The lesser percentage of trismus 1% in this study differs from the work of Chamber and Skully who reported 8.7% cases. There were fourteen cases of mal-union/malocclusion reported in this study which differs from the study of Chamber and Skully who reported 15 cases of mal-union. Present study also reported seven cases of mandibular angle fracture with paresthesia which was due to the inferior alveolar nerve damage or compression[8.] This study also differs with the work of Ellis and Sinn who reported 32% cases of infection 18.46% of delayed union and only 1.53% of mal-union which later caused malocclusion[9]. In the study of Jennifer Lamphier of the 594 fractures 79 cases (13.3%) suffered from complications. The most common Complication was wound infection, which occurred in 35 cases followed by non-union which occurred at 35 sites[10].

IV. Conclusion

Post treatment complications of mandibular fracture produce morbidity which is not only a financial burden but also increase the hospital stay, and weight loss due to lack of adequate food intake.

References

[1]. Passeri LA, Ellis III E, Sinn DP. Complications of non-rigid fixation of mandibular fractures. J Oral Maxillofacial Surg. April 1993:51(4):382-84.
[2]. Ellis III E. Treatment methods for fractures of the mandibular angle. Int J Oral Maxillofac. August 1999; 28(4): 243-52.
[3]. Feller KU, Schneider M, Hlawitschka M, Pfeier G, Lauer G et al. Analysis of complications in fractures of mandibular angle- a study with finite element computation and evaluation of data of 277 patients. J Cranio-Maxillofacial Surg 2003;31(5):290-95.
[4]. Toma VS, Mather RH, Meleca RJ. Trans oral versus extra oral reduction of mandibular fractures: Oto-larnygeal head Neck Surg 2003;128(2):215-19.
[5]. Seeman R, SchichoK, Wutzl A Fetal. Complications rate in the operative treatment of mandibular angle fractures: a 10 year retrospective. J Oral Maxillofacial Surg. 2010 Mar: 68(3);647-50.
[6]. Biller JA, Pletcher SD, Goldberg AN. Complications and the time to repair of mandibular fractures. Laryngoscope. 2005:115:769-72.
[7]. Fox AJ, Kellman RM. Two mini-plate fixation and complications. Arch Facial Plast Surg. 2003:5(6);464-69.
[8]. Iizuka T, Lindquist C. Rigid internal fixation of fractures in the angular region of the mandible: an analysis of factors contributing to different complications. PlastReconstr Surg. 1993: 91: 265-69.
[9]. Ellis E, Sinn DP. Treatment of mandibular angle fractures using two 2.4mm Dynamic Compression plates. J Oral Maxillofacial Surg 1993:51:969-73.
[10]. Lamphier J, Ziccardi V, Ruvo A Fetal.Complications of mandibular fractures in an urban teaching center. J Oral Maxillofacial Surg. 2003: 61(7):745-49.