MANAGEMENT OF CONCOMITANT FRACTURES OF MANDIBULAR ANGLE AND CONTRALATERAL PARASYMPHYSIS.

***SEEMA SHANTILAL PENDHARKAR*[1]**

[1]*Consultant Oral and Maxillofacial Surgeon, Chhatrapati Sambhajinagar, Maharashtra, India.*

Case Report

ABSTRACT

A common fracture in maxillofacial trauma is the mandibular fracture. The Parasymphysis region and combined angle-Parasymphysis fractures are the most common fracture locations. It is difficult to decrease several mandibular fractures, which typically result in facial asymmetry. In order to restore function and appearance, fracture therapy needs to be done right away. The management of numerous mandibular fractures in the angle and parasymphysis regions of the mandible is the focus of this case report. Case report: A 27-year-old male patient reported to the department of oral and maxillofacial surgery with severe pain during movement of jaw due to the road traffic accident. Clinical and radiographic examination revealed the right para symphysis and left mandibular angle undisplaced favourable fracture. Which was treated with Open Reduction and Internal Fixation (ORIF). Discussion: Driving accidents are typically the major cause of mandibular fractures, which happen frequently. Radiographs and a clinical evaluation are required in order to administer the proper care. Open reduction internal fixation (ORIF) combined with intraoral techniques is the treatment used in this instance. 3-D miniplate fixation in the para-symphysis area and conventional miniplate fixation in the mandibular angle area. Conclusion: Internal fixation with open reduction (ORIF) was used in this instance to treat many fractures that had occurred in the mandibular region. There is no major difference in clinical outcomes between two plating systems, and both can be effectively used in treatment of mandible fractures.

Key Words :Para symphysis, Angle, ORIF, Mandibular fracture

Received: 1 June 2025**, Accepted:** 13 June 2025

Corresponding Author : Seema Shantilal Pendharkar**, Adresse:**Plot no 15, rohini nagar, new osmanpura, Aurangabad, Maharashtra, India

Mobile: 07350036510 , **E-mail**: dr.seemapendharkar@gmail.com

ISSN: 2090-097X, ,September 2025, Vol. 16, No. 4

INTRODUCTION

Automobile accidents are one of the most serious injuries, but there are also many others brought on by sports, industrial accidents, house mishaps, interpersonal violence, missiles, and gunshots. One of the main causes of mandible fractures has been identified as road traffic accidents (RTA). With a 6:2 ratio of mandibular to zygomatic fractures, mandibular fractures are among the most frequent injuries to the face skeleton because they are the most noticeable moveable bone. Young men suffer the majority of mandibular fractures. Fractures of the ramus and coronoid process are uncommon, although fractures of the mandibular body, condyle, and angle are often somewhat common. [1] The symphysis, parasymphysis, mandibular body, angulus, condyle, and coronoid are the anatomical locations where fractures are classified.[2] The para-symphysis region (32.45%), mandibular body (27.8%), angle (14.56%), symphysis (11.9%), condyle (8.6%), coronoid (2.64%), and ramus (1.98%) are the most often found areas in the mandible. [3] Males are more likely than women to suffer maxillofacial fractures, with a 5:1 ratio, according to Caesario et al.[4]. According to studies done at Hasan Sadikin Hospital in Bandung between 2017 and 2020, falls (9.25%) and traffic accidents (82.95%) were the leading causes of mandibular fractures [5]. Other causes include pathological fractures, sports, and violence The placement of a mandibular fracture depends critically on the type of trauma and causative variables.

 DOI: 10.21608/omx.2025.391124.1290

Patients involved in traffic accidents frequently experience parasymphysis—the study by Oruc et al. Angulus-parasymphysis was the most frequent combination of fractures in 419 mandibular fracture patients [6]. It is well known that mandibular angle fractures frequently occur concurrently with contralateral parasymphysis fractures; one Indian study found that the prevalence was 21%. This is because of the direction in which force is transmitted and the presence of weak points at the mandibular angle. When exposed to trauma, the presence of an impacted tooth at the mandibular angle renders this region extremely vulnerable to fracture. Numerous research has proven this. According to a study by Tevepaugh et al. [7], the risk of fracture is 3.8 times higher when there is an impacted mandibular third tooth at the mandibular angle than when there are no impacted molars present. Patients with angle fractures were more likely to experience mesioangular impaction, according to Fuselier et al. [8]

CASE REPORT

A 27-year-old male patient reported at the oral and maxillofacial surgery department complaining of pain that had been present for two to three days during chewing and opening and closing the jaw. Two to three days earlier, the patient described a traumatic event. He was in an automobile accident. During the clinical examination, palpable pain, ecchymosis, and swelling were all noted. Ecchymosis and bleeding in the lingual and posterior buccal vestibules are discovered during an intraoral examination. A right parasymphysis fracture was discovered by radiological testing (Fig.1).

Fig.1 Pre-operative OPG

A fracture line showing the left mandibular angle was also discernible. While under local anesthesia Intraoral vestibular incisions were used to reveal the fracture site (Fig.2). After the fractured segments were reduced, the parasymphysis region was fixed with a 3-D miniplate, and the angle region was fixed with a conventional miniplate.

Fig 2. Exposure of fracture line at parasymphysis.

The three-dimensional plate was curved across the fracture line so that the vertical struts were parallel to the fracture line and the horizontal crossbars were perpendicular to the fracture line. Screws that were diagonally opposed were positioned first, then the other two screws.A 3D miniplate with four holes was placed across the fracture line in parasymphysis fractures (Fig. 3),

Fig 3. 3D miniplate fixation at right parasymphysis fracture

secured with four screws (2mmx8mm), and closure was completed. A two-hole, with gap conventional miniplate was positioned on the external oblique ridge or lateral cortex at the angle region (Fig. 4), secured with two screws (2 mm x 8 mm), and closed with silk sutures.

Fig 4. 2D miniplate fixation at left angle fracture

DISCUSSION

From different types of splinting to circummandibular wiring, extra oral pins,and semi-rigid fixation with transosseus wire followed by stiff fixation technique—which has recently been replaced by semi-rigid fixation with miniplate—the therapy of trauma has changed throughout time (Champy et al.).[9] The standard miniplate procedures that are currently in use are inadequate to provide 3D stability at the fracture site and require Maxillomandibular fixation for a brief duration. A novel titanium plate system was introduced by Farmand and Dupoirieux (1992)[10] (3D plates).

The plate's quadrangular shape provided good stability in the space's three dimensions. Among the benefits were the plate's small design, ease of use, and strong torque resistance.Mostafa Farmand (1993) [11] made a significant advancement in the field by creating a novel miniplate method he coined a "3D plating system" that uses bio-geometry to enable stable fixation. The creation of 3D miniplates, which are made up of two × four-hole miniplates connected by four interconnecting cross struts, was prompted by the drawbacks of rigid and semi-rigid fixation [12]. The foundation of 3D plating systems is the idea that support can be obtained by using a geometrically stable configuration. Because it provides high resistance against torque forces, the plate's quadrangle geometry ensures good stability in three directions of fracture. Lai (1997) [13] used a 3D titanium miniplates method to operate on 30 patients who had maxillo-mandibular fractures. According to him, internal stiff fixation with 3D titanium miniplates is a potential treatment option for maxillary fractures since it is easier for the surgeon to do and more tolerated by the patient.According to Mostafa Farmand [11], solid plate osteosynthesis has emerged as a crucial element in craniomaxillofacial surgery for fracture repair. Therefore, functionally focused mini plating systems are increasingly replacing compression plate fixations in craniomaxillofacial surgery. The ideal miniplate should be biocompatible, easily adjustable, and able to withstand forces that vary depending on the location without causing the pieces to dislocate. The plates' shape, dimensions, and composition all affect these points. Mostafa Farmand unveiled a brand-new 3D plating technique in which the plate's configuration rather than its thickness or length determines its durability. Theoretically, these special plates could offer more torsional stability because they are made of linear, square, or rectangular components.

CONCLUSION

Both plating procedures can be utilized to repair mandibular fractures, and there is no significant difference in the clinical results between them. It is challenging to put a 3-D miniplate intraorally in cases of angle fractures and mental nerve fractures. In contrast to miniplates, it offers more stability. In general, 3-D miniplates have less problems than traditional miniplates. Additionally, 3-D miniplate uses less hardware than miniplate, which saves time and money in the symphysis and parasymphysis regions.

REFERENCES:

[1]Elahi Noor A, Amin N, Mustari Shanta T, Asaduzzaman Mazumder M. Close Reduction of the Unilateral Angle Fracture of the Mandible: A Case Report. EC Dental Science. 2019;18(5):1021-6.

[2]Hupp JR, Ellis E, Tucker MR. Contemporary Oral and Maxillofacial Surgery. 7th ed. Philadelphia: Elsevier; 2019. 527 p.

[3] Vyas A, Mazumdar U, Khan F, Mehra M, Parihar L, Purqhit C. A study of mandibular fractures over a 5-year period of time: A retrospective study. Contemp Clin Dent. 2015;5(4):452–5.

[4]Caesario O, Boesoirie SF, Tahid A. Characteristics of Maxillofacial Fractures Resulting from Road Traffic Accidents at Dr. Hasan Sadikin General Hospital. Althea Med J [Internet]. 2017;4(3):345–52. Available from: https://journal.fk.unpad.ac.id/in dex.php/amj/article/view/1179

[5]Subyakto Y, Sjamsudin E, Adiantoro S. The characteristics of mandibular fractures in dr. Hasan sadikin general hospital, bandung, indonesia. Bali Med J. 2021;10(2):591–4.

[6]Oruç M, Işik VM, Kankaya Y, Gürsoy K, Sungur N, Aslan G, et al. Analysis of fractured mandible over two decades. J Craniofac Surg. 2016;27(6):1457–61.

[7]Tevepaugh DB, Dodson TB. Are mandibular third molars a risk factor for angle fractures? A retrospective cohort study. J Oral Maxillofac Surg, 1995; 53: 646-9.

[8]Fuselier JC, Ellis EE 3rd, Dodson TB. Do mandibular third molars alter the risk of angle fracture? J Oral Maxillofac Surg, 2002; 60: 514-8.

[9]Champy M, Loddé JP, Schmitt R, Jaeger JH, Muster D. Mandibular osteosynthesis by miniature screwed plates via a buccal approach. J Maxillofac Surg. 1978;6:14–21. doi: 10.1016/s0301-0503(78)80062-9. [DOI] [PubMed] [Google Scholar]

[10]Farmand M, Dupoirieux L. The value of 3-dimensional plates in maxillofacial surgery. Rev Stomatol Chir Maxillofac. 1992;93:353–7. [PubMed] [Google Scholar]

[11]Farmand M. The 3d plating system in maxillofacial surgery. J Oral Maxillofac Surg. 1993;51:166–7. [Google Scholar]

[12]Farmand M. Three dimensional plate fixation of fractures and osteotomies: Facial plastic surgery. Clin North Am. 1995;3:39–56. [Google Scholar]

[13]Lai G. The three-dimensional titanium miniplate rigid fixation in the treatment of fracture of maxilla. Zhongguo Xiu Fu Chong Jian Wai Ke Za Zhi. 1997;11:196–8. [PubMed] [Google Scholar]