



## Incidence and Indications for plates removal in facial trauma patients: A Retrospective study

### KEYWORDS

Discharging sinus, plate exposure, through laceration.

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**ABSTRACT** *Patients and Methods: 1630 patient was included from sept 2013 to sept 2015. The medical records of all patients who underwent removal of bone plates after facial bone trauma were reviewed over a 2-year period. Data concerning age and gender distribution, indication for removal, site of removal were evaluated for each patient.*

*Results: Of 1630 cases, 114 cases bone plates were removed (100 males and 14 females), with an overall removal rate of 6.99 %. The age range was from 14 to 63 years. Most common age group was from 21 to 30 years (36.84%). Mean age was found to be 27.78 year. Most common reason for plate removal was discharging sinus (42.10%). Most common site of plate removal mandible parasymphysis (42.10%). Most common approach leading to plate removal was when through laceration approach was used (33.33%). Average time interval between insertion and removal was 2.6 months.*

*Conclusion: Based on this study, the incidence of bone plate removal was relatively low, and the most common indications for plate removal was discharging sinus. Since through laceration approach was most common approach, Through wound cleaning is advised in cases of lacerated wounds to reduce chances of plate infections.*

### INTRODUCTION

Maxillofacial trauma can lead to considerable long-term complications in terms of aesthetic and functional<sup>1,2</sup>. Maxillofacial fractures pattern vary from one country to another and even within the same country in different regions. Internal fixation using bone plates (BPs) and screws has been reported being used in the facial region since the late 19th century<sup>3</sup>. Fracture fixation with miniplates has been suggested in many literatures. However, much opinion but little data in the oral and maxillofacial surgery literature regarding the removal of internal fixation devices, so their long-term management remains somewhat controversial

The present retrospective study was conducted at the at department of plastic surgery S. M. S medical hospital Jaipur. The aim of this retrospective study was to assess the incidence and indication for the removal of bone plates over a 2-year period in patients with maxillofacial trauma who had received treatment at department of plastic surgery S. M. S medical hospital Jaipur from sept 2013 to sept 2015.

### MATERIAL AND METHODS

The medical records of patients seeking treatment for facial trauma were reviewed at the Department of Plastic and Reconstructive Surgery, In the study MF injuries were diagnosed after evaluation of the patients' history, physical examination, and radiological studies. Surgery (open reduction and internal fixation with Titanium plates) was done in standardized manner under full aseptic precautions. Follow up was done as 1 week, On inter maxillary wires removal, 3 month, 6 months.

### Results:

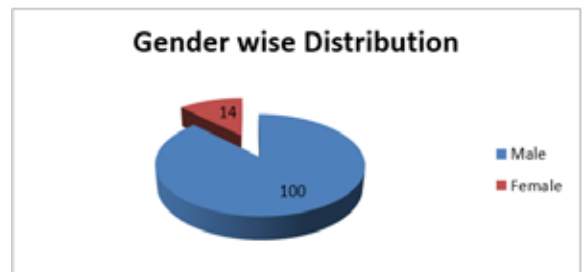
1: Total 1630 patient underwent fixation. Total plates removed in patients = 114 (6.99%)

#### 2: Males were more than females, (chart 1)

M = 100 (87.71 %)

F = 14 (12.28 %)

chart 1

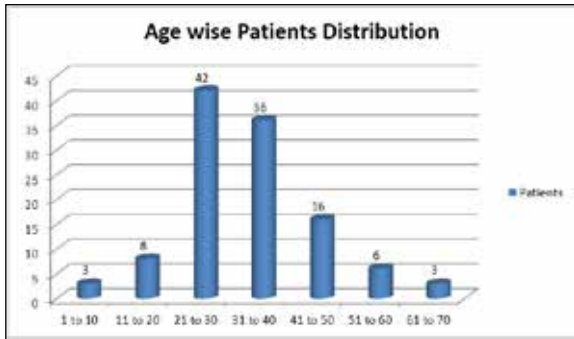


#### 3: Mean age was 27.78 years years. Age group were from 14 to 63 years. (Table 1 & Chart 2)

Table 1

S. No.	Age groups	No. of patients	percentage
1	1 – 10	3	2.63 %
2	11 – 20	8	7.01 %
3	21 – 30	42	36.84 %
4	31 – 40	36	31.57 %
5	41 – 50	16	14.03 %
6	51 – 60	6	5.26 %
7	61 - 70	3	2.63%

chart 2

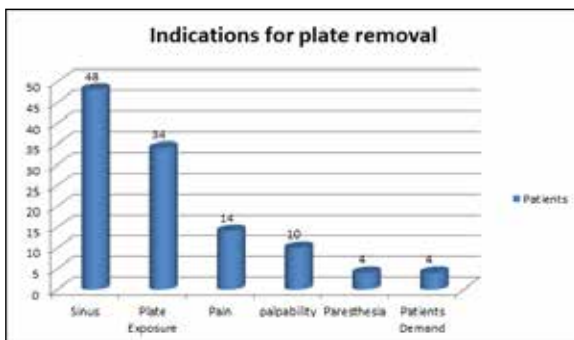


4: Most common indication for plate removal was discharging sinus. (Table 2 & Chart 3)

Table 2

s.no	Cause	No. of patients	percentage
1	Discharging Sinus	48	42.10 %
2	<b>Plate Exposure</b>	<b>34</b>	<b>29.82 %</b>
3	pain	14	12.28 %
4	Palpability	10	8.77 %
5	paraesthesia	4	3.50 %
6	Patients demand	4	3.50 %

chart 3

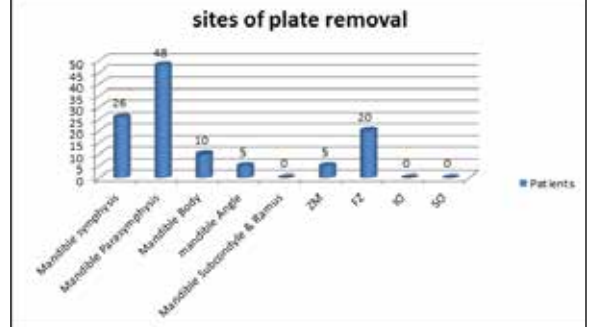


5: Most common site of plate removal was mandible parasymphysis. (Table 3 & chart 4)

Table 3

Region	Plates removed	Percentage
Mandible Symphysis	26	22.80%
<b>Mandible ParaSymphysis</b>	<b>48</b>	<b>42.10%</b>
Mandible Body	10	8.77%
Mandible Angle	5	4.38%
MandibleSubcondyle and Ramus	0	0
Zygomaticomaxillary region	5	4.38 %
Fronto zygomatic region(FZ)	20	17.54 %
Infra orbital rim (IO)	0	0
Supraorbital rim (SO)	0	0

chart 4



6: Most common approach leading to plate removal through laceration ( Table 4)

Table 4

	When intra oral incision	Through Lacerations	Subciliary	Lateral eye brow	Sub mandibular
Mandible					
Symphysis	8	18	-	-	-
<b>ParaSymphysis</b>	<b>10</b>	<b>38</b>	-	-	-
Body	0	7	-	-	3
Angle	0	3	-	-	2
Sub condyle	0	0	-	-	0
Zygomati-comaxillary region (ZM)	5	0	-	-	-
Fronto zygomatic (FZ)	0	14	-	6	-
Infra orbital rim (IO)	-	0	0	-	-
Supra orbital rim (SO)	-	0	-	-	-

7: Average time interval between insertion and removal was 2.6 months

**Discussion:**

A large number of studies have reported on the frequencies and reasons for plate removal in facial fracture fixations. The results vary depending on the population studied. Factors such as geographic region, socioeconomic status can influence results.<sup>4</sup> Similarly maintenance of hygiene is an important factor. The increasing prevalence of facial bone injuries emphasizes the necessity for epidemiological surveys to determine optimal prevention strategies and patient management. Such data can inform care-givers to help reduce the frequencies of plate removal and leads to better outcome.

Our present study evaluated the incidence and indications for plate removal in patients under going facial bone fracture fixation. Out of 1630 patient who underwent fixation between September 2013 to sept 2015, total 114 patient underwent plate removal for various reasons. The rate of plate removal in our study was 6.99 % where as in study by Atta-Ur-Rehman et al<sup>6</sup>, rate of stainless steel plate removal was 10.63 %. In a study by Abdulaziz A. Bakathir et al<sup>5</sup> rate of titanium bone plate removal was 23.4 %.

According to our study, out of 114 patients, 100 were males and 14 were females. Male : female ratio was 7.14:1. Males were more because of the more incidence of fracture and fixations in them. Where as in study by Atta-Ur-Rehman et al<sup>6</sup>, male: female ratio was 3.5:1. The mean

age was 27.78 years. Years, where as in study by Abdulaziz A. Bakathir et al<sup>5</sup> mean age was 17.8 years. Most common age group involved in plate removal was from 21 to 30 years (36.84%). Similarly in a study by Atta-Ur-Rehman et al<sup>6</sup>, most common age group involved was 21 to 30 years (29.62%)

Most common cause for plate removal was discharging sinus in 48 patients (42.10%), followed by plate exposure in 34 cases (29.82%). In study by Atta-Ur-Rehman et al<sup>6</sup> most common cause was infection/discharging sinus 37.04% cases.

Most common site of plate removal was mandible parasymphysis 48 (42.10%) was most commonly removed followed by frontozygomatic (FZ), 20 cases (17.54%). In study by Atta-Ur-Rehman et al<sup>6</sup> most common site was mandibular body 33.33% cases followed by frontozygomatic suture 18.5% cases. In study by Abdulaziz A. Bakathir et al<sup>5</sup> most common site for plate removal was mandible in 79.8% cases which has similarity with our study.

Most common approach leading to plate removal was through laceration 80 cases (70.17%) followed by intra oral approach in 23 cases (20.17%). The most common plate removed was from mandible parasymphysis region when through laceration approach was used for fixation 38 cases (33.33%)

### Conclusion:

From our study we can conclude that removal of plates is not required unless there are complications. Whenever possible one should avoid through laceration approach since wounds may be contaminated or full sterilization measures should be adopted. Through cleaning of wounds are advised. Wound margins may be cleaned adequately or debrided.

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