

Postoperative Eating Habits and Quality of Life in Mandible Fracture Repairs Comparing MMF vs ORIF

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ABSTRACT

Objective:

Because both Maxillomandibular fixation (MMF) and Open Reduction and Internal Fixation (ORIF) are used in reparation of mandibular fractures, we aimed to compare each technique and its respective postoperative eating habits and quality of life (QoL).

Study Design and Setting:

A retrospective chart review was conducted on patients who presented to the ENT and Oral and Maxillofacial Surgery (OOMFS) departments at different Ochsner locations in Louisiana with an operative mandible fracture. Patients were divided into two groups based on the surgical technique that was used: MMF or ORIF. The postoperative eating habits and quality of life were assessed using the Geriatric Oral Health Assessment Index (GOHAI).

Results

For each surgical repair technique, 49 patients were contacted and gave informed consent to answer the questionnaire. Each patient answered the GOHAI questionnaire for a 3 month to 5 year postoperative evaluation. The average total GOHAI score for patients treated with ORIF alone was 27.24 ± 5.75 , while the average total GOHAI score for the patient treated with MMF was 26.1 ± 6.92 . The t-test showed a P-value of 0.266, indicating no significant statistical difference.

Conclusion:

While there is no statistical significance highlighting the difference between the two surgery modalities. As a result, the choice of repair modality is up to the discretion of the surgeon, based on the surgeon's expertise, the patient's condition, and the location and type of fracture. A larger sample size and subclassification into mandible fracture locations may aid in defining the quality of life in these patients after treatment.

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INTRODUCTION

Mandibular fractures occur to a diverse population of people, with possible post-traumatic complications such as malocclusion, impaired mastication, speech, or compromise of the airway. The treatment paradigm for mandibular fractures include two common types of operations performed on patients. These include a closed approach with a Maxillomandibular fixation (MMF) and an open approach with an open reduction internal fixation (ORIF) of the fracture involves open or closed reduction and fixation to allow for healing. The choice for treatment depends on the specific fracture characteristics, patient factors, and surgeon's expertise. MMF is a more conservative approach that immobilizes the mandible during the bone healing time using arch bars, wires, elastics, or screws to hold upper and lower jaws together. MMF is a less invasive procedure with minimal risk. However, it has the cons of prolonged immobilization of the mandibular joint. In contrast, ORIF is a surgical technique that exposes the fracture intra or extra orally to reduce and fix it with titanium plates and screws placed directly on the bone. ORIF is a surgically invasive procedure that requires separation of the periosteum from the mandible, thus, carries higher risks of infection, bone loss, incision dehiscence, scarring, and nerve injury. However, ORIF allows for direct reduction of bone fragments with little to no immobilization of the mandibular joint with earlier return to function. There are limited studies comparing the postoperative quality of life and eating habits between MMF and ORIF. This study aims to quantify this important outcome in fracture healing and patient satisfaction.

METHODS AND MATERIALS

A retrospective chart review was conducted on patients that presented to the ENT and OOMFS departments at LSUHS with an operative fractured mandible from 2020 through 2025. The patients were divided into two groups: those who received MMF and those who received ORIF. The postoperative eating habits and quality of life in patients was quantified using the General Oral Health Assessment Index (GOHAI), surveyed 3 months to 5 years postoperatively. Informed consent was obtained from each participating patient. Each patient was evaluated using all 12 GOHAI questions, and each patient rated their responses on a scale of 1 to 4, with 1 representing "Never" and 4 representing "Always." Other important parameters noted were the patient's age, BMI, and gender. The means and standard deviations were analyzed in Excel for each surgery technique. T-tests were used to compare the means. T-test with $P < 0.05$ were considered statistically significant.

Exclusion Criteria

- Age under 18 years old
- Pathologic fractures (tumor, osteomyelitis)
- Non-operative or alternative repair modality

GOHAI Questionnaire

Number.	GOHAI Domain	Question
1.	Physical Ability	1. Limiting the type of food or amount of food because of problems with your teeth? 2. Have trouble biting or chewing any kind of food, such as hard meat or apples? 3. Can you swallow food comfortably? 4. Having trouble speaking the way you want?
2.	Psychologic	5. Eating without feeling disturbed? 6. Limit yourself in socializing with other people because of conditions in the oral cavity? 7. Are you satisfied or pleased with the appearance of your teeth? 8. Using drugs to reduce pain or discomfort in the oral cavity?
3.	Functional Aspect	9. Feeling anxious or worried about problems in the oral cavity? 10. Feeling insecure because of problems in the oral cavity? 11. Do you feel uncomfortable when eating in front of other people because of the condition in your mouth? 12. Are your teeth or gums sensitive to hot, cold or sweet foods or drinks?

Figure 1: GOHAI Questionnaire. Scored on a scale of 1-4. 1-Never, 2-Sometimes, 3-Frequently, 4-Always

Results

In the study, a total of 49 patients were willing to participate and answer all 12 items in the GOHAI questionnaire. There were 20 responses for MMF and 29 responses for ORIF. There was no significant difference in regard to the age and BMI of the patients in the MMF and ORIF groups. Additionally, across the total GOHAI and each GOHAI item, there was no significant statistical difference between the MMF and ORIF.

	MMF (n=20)	ORIF (n=29)	P-value
Gender – Male, n (%)	17 (85%)	19 (66%)	
Sex – Female, n (%)	3 (15%)	10 (34%)	
Sample Size, n	20	29	
Age, mean \pm SD (years)	39.15 ± 17.25	40.72 ± 19.72	0.387
BMI, mean \pm SD (kg/m^2)	26.84 ± 6.08	26.86 ± 7.34	0.496

Figure 2: Patient Characteristics

GOHAI Item	MMF (n=20)	ORIF (n=29)	P-value
Q1	2.30 ± 1.26	2.41 ± 1.02	0.364
Q2	2.30 ± 1.26	2.62 ± 1.21	0.187
Q3	2.95 ± 1.28	2.93 ± 1.31	0.480
Q4	1.90 ± 1.17	1.69 ± 0.89	0.239
Q5	2.75 ± 1.33	2.45 ± 1.15	0.201
Q6	1.80 ± 1.32	1.48 ± 0.99	0.170
Q7	2.65 ± 1.31	2.79 ± 1.42	0.361
Q8	1.60 ± 0.99	1.93 ± 0.92	0.119
Q9	2.10 ± 1.29	2.21 ± 1.21	0.384
Q10	1.90 ± 1.33	2.28 ± 1.31	0.166
Q11	1.70 ± 1.26	2.24 ± 1.30	0.077
Q12	2.15 ± 1.31	2.21 ± 1.21	0.438
Total GOHAI	26.10 ± 6.92	27.24 ± 5.75	0.266

Figure 3: GOHAI Questionnaire Outcomes

DISCUSSION

The retrospective study was designed to compare postoperative quality of life and eating habits between MMF and ORIF. The overall demographics of this study were consistent, with the majority of the cases males, average ages around 40 years old and average BMI being around $27 \text{ kg}/\text{m}^2$. The study found no statistical significance between the results of either surgery using the GOHAI questionnaire, however the total GOHAI favored MMF by -1.14. ORIF is known to allow for more immediate return to function in relation to MMF, however the study shows that MMF yields comparable results to ORIF in long-term satisfaction and oral function. This supports that either procedure is a viable option for patient care and on a case-by-case basis at the discretion of the surgeon. There are certain demographics of patients who might have contraindications for ORIF or MMF. For ORIF, general anesthesia may be risky in patients with severe systemic illness or injury (concurrent head injury), unstable airway or nondisplaced/minimally displaced fractures (instances where simpler treatment are as effective). MMF, on the contrary, may be less favorable for patients with controlled epilepsy, severe obstructive airway disease, treated psychiatric disorder, high risk of aspiration, or noncompliant patients.

- Limitations
 - Reporting Bias
 - Retrospective Review
 - No Separation of Fracture Location
 - Limited Sample Size

CONCLUSION

Although estimates slightly favor ORIF in total score there is no statistically significant differences between the MMF and ORIF groups in improving postoperative quality of life associated with eating habits in patients recovering from mandible fractures. As a result, a study with a greater sample size that also separates specific fracture locations could provide more useful insight for patient outcomes in the future.

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