

Quality of life of patients after treatment of mandibular fractures with Intermaxillary Fixation (IMF): An Original Study

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Abstract

Background: The restoration of mandibular morphology and physiology is the main objective of mandible fracture repair. IMF is an essential process in the treatment of maxillofacial injuries because it restores correct occlusal interconnections, which is necessary for reduction of mandibular fracture. **Aim:** To monitor quality of life of patients after treatment of mandibular fractures with Intermaxillary Fixation (IMF) by Department of Dentistry of Government Medical College. **Methods and Materials:** The study involved 60 males and females who were receiving treatment for mandibular fractures using IMF at Department of Dentistry of Government Medical College. The MMI test and the GOHAI questionnaire were employed as research tools in this study. A total value score of 50 suggests a good quality of life, 51-56 shows a decent quality of life, and 57-60 indicates a bad quality of life, according to GOHAI. **Results:** The difference in the quality of life among the participants having solitary and multiple fractures was statistically significant with participants having single fractures experiencing good quality of life. It was also observed after statistical analysis that the quality of life was significantly associated with the time elapsed since surgery. As the time elapsed since surgery increased the quality of life improved. **Conclusion:** It was concluded according to the findings of the study that quality of life is better in single mandibular fracture in comparison with multiple mandibular fractures. Moreover the quality of life is good when time elapsed since surgery is longer.

Keywords: Quality of Life, Mandibular Fracture, IMF

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Introduction

Mandibular fractures the condition in when the integrity of the mandible plate is broken due to trauma or degenerative anomalies. The restoration of mandibular morphology and physiology is the main objective of mandible fracture repair. Intermaxillary fixation (IMF) is a procedure that involves attaching bridges, curly braces, or pins to the maxillary and mandibular arches before applying surgical osteosynthesis substance to reduce and stabilize fracture of maxilla and mandible[1,2].

Physical examination of mandible activity with the Mandibular Mobility Index (MMI), which includes occlusion, maximum possible opening the mouth, maximum possible mandible protrusive movement, and a questionnaire to evaluate quality of life, can be used to evaluate management of fracture of mandible with intermaxillary fixation. One of the questionnaire used to assess quality of life after management of fracture of mandible is the General Oral Health Assessment Index (GOHAI) questionnaire[3,4].

Normalcy, such as normal bodily processes or the capacity to achieve social desires, is also linked to quality of life. Physiological or operational, psychological, and pain are the three basic dimensions of quality of life[5,6].

This research was carried out to monitor the process of healing in intermaxillary fixation patients postoperatively for fracture of mandible in order to make sure that the process of healing of IMF patients wasn't really focused primarily on the physical state, but also included evaluations of physiological, psycho - social, and pain factors.

Materials and methods

This study involved 60 participants after IMF was used to treat mandibular fractures. Patients with mandibular fractures over the age of 14 years, with solitary and numerous mandible broken bones, having undergone IMF, and getting posttreatment for mandibular fractures for at least 3 months met the inclusion criteria. The MMI test and the GOHAI questionnaire were employed as research tools in this study.

The normal category received a score of 0, the medium category received a score of 1, and the severe category received a score of 5. Each examination was added together to determine MMI's total score, which was graded as 0 for normal, 1-4 for moderate, and 5-20 for severe. A total value score of 50 suggests a good quality of life, 51-56 shows a decent quality of life, and 57-60 indicates a bad quality of life, according to GOHAI.

After assessment of the patient, a clinical examination was done using a calliper on millimetres based on the MMI scale, which included occlusion, maximal open mouth, maximal mandible to the left and right lateral, and maximal mandibular protrusion (mm). The respondents were then given a GOHAI study questionnaire to fill out

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in order to indicate their current status. To anticipate inquiries, the researcher accompanied the respondents as they completed the questionnaire.

The Kolmogorov-Smirnov test was used to check for normality in the data collected from the respondents. Following that, the Chi-Square test was used to determine the difference in quality of life between single and many people. Pearson's correlation was used to analyse the link between age and operating time and quality of life scores.

Results

The study involved 60 men and women who were receiving treatment for mandibular fractures using IMF. The research subjects had an age distribution of 29.2 years, with a variation of 17-55 years. There were 37 males and 23 females in the study. For a solitary fracture of mandible, 32 patients had IMF treatment, while for multiple fractures of mandible, 28 subjects received IMF intervention. The percentage of individuals with normal occlusion, normal opening of mouth, normal left and right lateral movement, and normal protrusive movement of mandible was higher in solitary mandibular fractures than in multiple fractures of mandible, according to the outcome of the research on standardized assessment measurements utilising MMI.

When there was analysis of answers to twelve questions of the GOHAI questionnaire it was observed that almost all participants with solitary fracture of mandible hardly faced any difficulties

of teeth, periodontium, and mandible and maxilla concerned with physiological aspects, pain aspects, and psychosocial aspects. (Table 1). When there was analysis of answers to twelve questions of the GOHAI questionnaire in participants with multiple fracture of mandible then it was observed that almost 50% of such participants hardly faced any difficulties of teeth, periodontium, and mandible and maxilla concerned with physiological aspects, pain aspects, and psychosocial aspects while remaining participants having multiple fractures of mandible faced difficulties regarding physiological aspects, pain aspects, and psychosocial aspects. (Table 2). It was observed that score for each aspect of quality of life was low in case of participants with single fracture of mandible as compared with the participants with multiple fractures of mandible. (Table 3). On the basis of answers obtained in response to questions of GOHAI it was found that all participants with solitary fracture of mandible were having good quality of life. On the other hand three fourth of participants with multiple fractures found their quality of life to be good. (Table 4). The difference in the quality of life among the participants having solitary and multiple fractures was statistically significant. It was also observed after statistical analysis that the quality of life was significantly associated with the time elapsed since surgery. As the time elapsed since surgery increased the quality of life improved.

Table 1: Distribution of frequency percentage answers of the quality of life of subjects with single mandible fractures (n= 32)

Questions	Never	Seldom	Sometimes	Often	Always
Do you have any dietary limitations as a result of your dental or jaw issues?	72.8%	22.6%	4.2%	0.1%	0.1%
Do you have a hard time biting or chewing hard things like meat or apples?	78.9%	21.2%	0.1%	0.1%	0.1%
Is it pleasant to swallow?	0.1%	0.1%	4.7%	30.2%	65.1%
Do your teeth or wires cause you to have difficulty inspeaking?	56.2%	43.9%	0.1%	0.1%	0.1%
Can you eat any type of cuisine without feeling nauseous?	0.1%	0.1%	0.1%	34.6%	65.3%
Do you avoid social situations because of the state of your teeth or jaw?	69.7%	30.5%	0.1%	0.1%	0.1%
Are you dissatisfied with the appearance of your teeth, gums, or jaws?	60.8%	34.9%	4.4%	0.1%	0.1%
Do you take medicine to help you deal with pain or discomfort in your mouth?	43.6%	56.6%	0.1%	0.1%	0.1%
Do you have any concerns or worries regarding your teeth, gums, or jaws?	69.7%	21.8%	8.8%	0.1%	0.1%
Do you have difficulties with your teeth, gums, or jaws that make you uneasy or self-conscious?	65.3%	34.9%	0.1%	0.1%	0.1%
Do you feel self-conscious about eating in public due of dental issues?	69.7%	26.2%	4.4%	0.1%	0.1%
Do you have sensitive teeth or gums to hot, cold, or sugary foods?	65.3%	26.2%	8.8%	0.1%	0.1%

Table 2: Distribution of percentage answers of the quality of life of subjects with multiple mandible fractures (n= 27)

Questions	Never	Seldom	Sometimes	Often	Always
Do you have any dietary limitations as a result of your dental or jaw issues?	35.1%	15.1%	25.1%	25.1%	0.1%
Do you have a hard time biting or chewing hard things like meat or apples?	15.1%	50.1%	10.1%	20.1%	5.1%
Is it pleasant to swallow?	5.1%	0.1%	60.1%	15.1%	20.1%
Do your teeth or wires cause you to have difficulty inspeaking?	35.1%	30.1%	10.1%	20.1%	5.1%
Can you eat any type of cuisine without feeling nauseous?	0.1%	0.1%	30.1%	30.1%	40.1%
Do you avoid social situations because of the state of your teeth or jaw?	35.1%	40.1%	0.1%	10.1%	15.1%
Are you dissatisfied with the appearance of your teeth, gums, or jaws?	15.1%	45.1%	5.1%	20.1%	15.1%
Do you take medicine to help you deal with pain or discomfort in your mouth?	30.1%	25.1%	20.1%	5.1%	20.1%
Do you have any concerns or worries regarding your teeth, gums, or jaws?	30.1%	35.1%	0.1%	30.1%	5.1%
Do you have difficulties with your teeth, gums, or jaws that make you uneasy or self-conscious?	20.1%	30.1%	15.1%	20.1%	15.1%
Do you feel self-conscious about eating in public due of dental issues?	30.1%	30.1%	15.1%	15.1%	10.1%
Do you have sensitive teeth or gums to hot, cold, or sugary foods?	30.1%	25.1%	10.1%	20.1%	15.1%

Table 3: Single and multiple mandible fracture subject's quality of life- based on GOHAI

	Single (n=32)		Multiple (n=28)	
	Mean± SD	Median (min-max)	Mean	Median (min-max)
GOHAI score	23.05 ± 3.72	22.1 (19.2-31.2)	32.76 ± 12.1	29.1 (19.3-54.8)
Pain	03.21 ± 0.81	03.1 (2.1-5.1)	05.26 ± 2.84	05.1 (2.1-10.1)
Physiological aspect	13.23 ± 1.10	13.1 (11.1-16.1)	04.76 ± 3.38	14.1 (9.2-23.1)
Psychosocial aspect	06.84 ± 1.88	06.1 (5.1-13.1)	12.76 ± 6.58	10.1 (5.1-24.1)

Table 4: Chi-Square test correlation between clinical examination of MMI and quality of life-based on GOHAI questionnaire

MMI	GOHAI categories			
	Good	Fair	Poor	p
Good	99.8%	0.1%	0.1%	0.021
Fair	83.4%	16.8%	0.1%	
Poor	41%	61%	0.1%	

Discussion

Intermaxillary fixation (IMF) is a technique that entails attaching bridges, curly braces, or pins to the maxillary and mandibular arches before administering surgical osteosynthesis substance to reduce and stabilise maxillary and mandibular fractures. The Mandibular Mobility Index (MMI), which includes occlusion, maximum possible opening of the mouth, maximum possible capacity of the mandible to move towards the right and left lateral positions, maximum possible mandible protrusive movement, and a questionnaire to assess quality of life, can be used to assess mandible fracture management with IMF[7,8].

The General Oral Health Assessment Index (GOHAI) questionnaire is one of the tools used to assess quality of life following a mandible fracture. This study was conducted to track the healing process in ORIF patients who had a mandible fracture postoperatively, in order to ensure that the healing process of ORIF patients wasn't solely focused on the physical state, but also included physiological, psychosocial, and pain variables[9,10].

When the answers to the GOHAI questionnaire's twelve items were analysed, it was discovered that practically all individuals with a solitary mandible fracture had few problems with teeth, periodontium, and mandible and maxilla in terms of physiological, pain, and psychological aspects. This study was conducted to track the healing process in IMF patients who had a mandible fracture postoperatively, in order to ensure that the healing process of IMF patients wasn't solely focused on the physical state, but also included physiological, psychosocial, and pain variables.

In our study when comparing participants with single fractures of the mandible to those with multiple fractures of the mandible, it was shown that the score for each component of quality of life was lower. On the basis of responses to GOHAI questions, it was discovered that all individuals with a solitary mandible fracture had an excellent quality of life. Three-quarters of those with numerous fractures, on the other hand, said their quality of life was good. There was a statistically significant difference in quality of life between those with solitary and multiple fractures. After statistical research, it was discovered that the quality of life was significantly related to the period since operation. The quality of life improved as the time since surgery elapsed.

Conclusion

It was concluded according to the findings of the study that quality of life is better in single mandibular fracture in comparison with multiple mandibular fractures. Moreover the quality of life is good when time elapsed since surgery is longer.

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