

The Differences of Patient Satisfaction Level Post Two-Jaw and Single-Jaw Orthognathic Surgery

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Abstract

Dentofacial deformity is a skeletal malocclusion that can be corrected by combining orthodontic treatment and orthognathic surgery. Orthognathic surgery is a surgical procedure to reposition the jaw that can be performed on a single-jaw or two-jaw to obtain good function, aesthetics, and stability.

This study measures differences in patient satisfaction levels after two-jaw and single-jaw orthognathic surgery.

The method of this study is descriptive with a retrospective comparative analytic survey design. The sample consisted of 24 subjects, 11 subjects of two-jaw orthognathic surgery and 13 subjects of single-jaw orthognathic surgery. All subjects were given a questionnaire adapted from Kufita et al. research which consisted of 16 questions divided into 5 categories: appearance, function, socialization skills, general health, patient-doctor communication.

The result of differences based on Mann Whitney analysis between the two groups for appearance category obtained $p=.790$, function category $p=.562$, socialization ability category $p=.436$, general health category $p=.562$, patient-doctor communication category $p=.446$, and result satisfaction $p=.490$, with level of confidence $p<.05$.

No significant difference existed between the patient's satisfaction levels for two-jaw and single-jaw orthognathic surgery.

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Introduction

Malocclusion is the third most common oral health problem after dental caries and periodontal disease.¹ According to Al-Gunaid et al. the prevalence of malocclusion in Indonesia is 80%.² Malocclusion is a condition where there is a deviation in tooth relations, which can involve abnormalities only in the position of the teeth or abnormalities in the relationship of the maxilla and mandible.³ Skeletal malocclusion will cause dentofacial deformity problems, which may

impact the facial appearance and functional aspects and cause psychological problems.⁴ These problems will interfere with the patient's quality of life, dental and oral health, and social interactions.⁵

The combination of orthodontic treatment with orthognathic surgery is performed to correct skeletal deformities by restoring anatomical relationships such as jaw and tooth misalignment, function (mastication, phonetics, and respiration), and facial aesthetics by repositioning the maxilla, mandible, or chin.⁶⁻⁹ Population in England or America demonstrates that at least 5% of the total population has dentofacial deformities associated with severe malocclusion (overjet > 7 mm, reverse overjet > 3 mm, open bite > 3 mm) that require orthognathic surgery as part of definitive treatment and cannot be treated with orthodontic treatment alone.¹⁰ Treatment of deformity cases can be done with various

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surgical treatments. However, the most common treatment is Lefort I osteotomy for the maxilla and Bilateral Sagittal Split Osteotomy (BSSO) for the mandible.¹¹

Orthognathic surgical treatment can be performed on patients who have passed the pubertal growth peak. Mardiaty's research suggested pubertal growth in girls would be completed at 16 and boys at 17 years old based on hand-wrist maturation indicators.¹² Patients who have undergone a combination of fixed orthodontic treatment with orthognathic surgery are reported to have a patient satisfaction rate of more than 80%, and this treatment provides excellent psychological benefits to improve self-confidence, self-esteem, and an attractive face.^{13,14} The successful combination of orthodontic treatment with orthognathic surgery is based on balanced facial aesthetics, good functional occlusion, and patient satisfaction.¹³ Patient satisfaction will increase eight times when other people notice a change in appearance.¹⁴ Factors influencing patient satisfaction with treatment outcomes are facial appearance, occlusion, articulation of speech, reduced jaw pain, numbness, self-confidence, and communication between patient and doctor.¹³ Surgeons and orthodontists must consider aesthetics as part of their treatment strategy.¹⁵ The decision-making process in the treatment strategy must involve the patient because the treatment results are related to dental and facial aesthetics, which can significantly affect the patient's psychosocial condition and self-image.^{15,16} This patient involvement also aims to increase awareness and acceptance of the results of surgical treatment.¹⁶ This relates to the patient's communication with the doctor in obtaining complete and transparent information before surgery regarding surgical procedures, complications resulting from surgery, jaw fixation, areas that will experience nerve injury after jaw surgery, diet, swelling, pain, and scar tissue after orthognathic surgery.¹⁶

This study used a questionnaire adapted from the research by Kufta et al. This questionnaire comprises 16 questions divided into 5 categories: facial appearance, function, general health, social interaction, and patient-doctor communication to assess total patient satisfaction.¹³ Evaluation of patient satisfaction after orthognathic surgery has been widely carried out, but more data still needs to be found

in Indonesia. Therefore, the authors were interested in researching the differences in patient satisfaction levels who had undergone two-jaw and single-jaw orthognathic surgery from appearance, function, socialization ability, and patient-doctor communication at Dental and Oral Hospital Padjadjaran University, Bandung.

Materials and methods

This research method is descriptive with a retrospective comparative analytic survey design that compares patients' satisfaction levels with two-jaw orthognathic surgery and one-jaw orthognathic surgery. The study population consisted of orthognathic surgery patients performed at the Dental and Oral Hospital Padjadjaran University in Bandung. The research subjects were orthognathic surgery patients who met the inclusion criteria. The study subjects consisted of orthognathic surgery patients who had completed and were still undergoing orthodontic treatment, male and female, and Indonesian citizens. The exclusion criteria in this study were patients with syndromic disorders and patients who did not agree to sign the informed consent paper. The sample comprised 24 subjects, 11 two-jaw orthognathic surgery subjects, and 13 single-jaw orthognathic surgery subjects.

The research was conducted by giving a questionnaire in the form of a Likert scale adapted from the research by Kufta et al., which consists of 16 questions divided into five categories, namely appearance, function, socialization skills, general health, patient-doctor communication, via the Google Form link to research subjects. Testing the validity and reliability of the questionnaire was carried out using the Spearman–Brown correlation test. Univariate statistical analysis of the questionnaire results was conducted using the Mann-Whitney test to see differences in the satisfaction levels of two-jaw and single-jaw orthognathic surgery patients. Statistical analysis was performed using the Excel Megastat version 10.4 Release 3.2.4 Mac program. This research has received ethical clearance from the UNPAD Research Ethics Commission with number 1023/UN6.KEP/EC/2023.

Results

This research was a descriptive study with a retrospective comparative analytic survey design to evaluate differences in patient satisfaction after a combination of orthodontic treatment with two-jaw and single-jaw orthognathic surgery. The study was conducted in June 2023. The study sample was two-jaw and one-jaw orthognathic surgery patients who had completed orthodontic treatment and were still undergoing orthodontic treatment at Dental and Oral Hospital Padjadjaran University.

The total sample of this study was 24 samples consisting of 11 two-jaw orthognathic surgery patients and 13 single-jaw orthognathic surgery patients. The research was conducted by distributing questionnaires consisting of 16 questions adapted from the research questionnaire by Kufita et al., and translations from English into Indonesian and Indonesian into English were carried out by certified translators. The questionnaire was then tested for validity and reliability, which resulted in a valid questionnaire with a high reliability of 0.99.

Reasons for orthognathic surgery treatment	Percentage
Improve the teeth	15%
Improve of the jaw and facial appearance	26%
Improve chewing ability	29%
Improve speech	12%
Improve temporomandibular joint disorder	18%

Table 1. Distribution of Respondents' Reasons for Orthognathic Surgery Treatment.

In the two-jaw or one-jaw orthognathic surgery group, the percentage of male respondents (69%) was much higher than females (31%). The most common reason patients perform orthognathic surgery is to improve their chewing ability (29%) and the appearance of the jaw and face (26%). The last reason patients did to do orthognathic surgery was to improve speech (12%) (Table 1). Table 2 shows the questionnaire results for two-jaw orthognathic surgery patients in the appearance category; 73% were very satisfied, 18% were satisfied, and 9% were dissatisfied with general appearance. The questionnaire results for single-jaw orthognathic surgery patients in the

appearance category, namely 85% were very satisfied, 15% were satisfied, and 0% were dissatisfied with general appearance. The Mann-Whitney test for the appearance satisfaction category revealed that the two-jaw orthognathic surgery patient group had a lower mean total satisfaction score than the single-jaw orthognathic surgery patient group. However, there was no significant difference between the two-jaw orthognathic and one-jaw orthognathic surgery groups ($p=.790$).

The results of the two-jaw orthognathic surgery patient questionnaire in the function category, namely 82% were very satisfied, 18% were satisfied, and 0% were dissatisfied with function in general. The questionnaire results for single jaw orthognathic surgery patients in the function category were 92% very satisfied, 8% were satisfied, and 0% were dissatisfied with general function. The Mann-Whitney test for the function category revealed that the two-jaw orthognathic surgery patient group had a higher average total satisfaction score than the single-jaw orthognathic surgery patient group. However, there was no significant difference between the two-jaw orthognathic surgery group and the single-jaw ($p=.562$).

The questionnaire results for two-jaw orthognathic surgery patients in the socialization ability category: 64% were very satisfied, 27% were satisfied, and 9% were dissatisfied with socialization skills. The questionnaire results for single-jaw orthognathic surgery patients in the category of social abilities, namely 85% were very satisfied, 15% were satisfied, and 0% were dissatisfied with their socialization skills. The Mann-Whitney test revealed that the two-jaw orthognathic surgery patient group had a lower mean total satisfaction score than the single-jaw orthognathic surgery patient group, but there was no significant difference between the two-jaw orthognathic and single-jaw orthognathic surgery group ($p=.436$).

Table 2 shows the questionnaire results for two-jaw orthognathic surgery patients in the general health category; 55% were very satisfied, 45% were satisfied, and 0% were dissatisfied with general health. The questionnaire results for single-jaw orthognathic surgery patients in the general health category, namely 77% very satisfied, 23% satisfied, and 0% dissatisfied with general health. The Mann-Whitney test revealed that the two-jaw orthognathic surgery patient

group had a lower mean total satisfaction score than the single-jaw orthognathic surgery patient group, but there was no significant difference between the two-jaw orthognathic surgery group with single-jaw ($p=.562$).

No.	Category	Very Satisfied		Satisfied		Dissatisfied		Mann-Whitney test
		Double-jaw	Single-jaw	Double-jaw	Single-jaw	Double-jaw	Single-jaw	
1	Appearance	73%	85%	18%	15%	9%	0%	$p=.790$
2	Function	82%	92%	18%	8%	0%	0%	$p=.562$
3	Socialization ability	64%	85%	27%	15%	9%	0%	$p=.436$
4	General Health	55%	77%	45%	23%	0%	0%	$p=.562$
5	Patient-doctor communication	82%	85%	9%	15%	9%	0%	$p=.446$
6	Result satisfaction	82%	69%	9%	31%	9%	0%	$p=.490$

Table 2. The satisfaction level post two-jaw and single-jaw orthognathic surgery.

Table 2 shows the questionnaire results for two-jaw orthognathic surgery patients in the patient-doctor communication category, namely 82% were very satisfied, 9% were satisfied, and 9% were dissatisfied with patient-doctor communication. The questionnaire results for single-jaw orthognathic surgery patients in the patient-doctor communication category were 85% very satisfied, 15% were satisfied, and 0% were dissatisfied with patient-doctor communication. The Mann-Whitney revealed that the two-jaw orthognathic surgery patient group had a higher average total satisfaction score than the single-jaw orthognathic surgery patient group. However, there was no significant difference between the two-jaw orthognathic surgery group and the single-jaw ($p=.446$).

The overall categories summarized in result satisfaction for two-jaw orthognathic surgery obtained: 82% felt very satisfied, 9% satisfied, and 9% dissatisfied. The overall categories summarized in result satisfaction for single-jaw orthognathic surgery obtained: 69% very satisfied, 31% satisfied, and 0% dissatisfied. The Mann-Whitney test revealed that the two-jaw orthognathic surgery patient group had a higher mean total satisfaction score than the single-jaw orthognathic surgery patient group. However, there was no significant difference between the two-jaw orthognathic surgery group with one-jaw with $p=.490$.

Discussion

The study results show that most of the reasons patients undergo surgical treatment prefer to improve their chewing abilities rather than to improve the appearance of the jaw and face, and only a few respondents choose to improve their speech (Table 1). This result does not align with previous research, which stated that the primary motivation of patients undergoing orthognathic surgery is facial appearance.^{13,14} This study results align with the research of Keefe et al., who stated that the main reason for patients undergoing orthognathic surgery is to expect changes in the teeth bite. Improvement in tooth bite is the most predictable result, so that this aspect can achieve high patient satisfaction. Patients will feel more satisfied with changes in surgical results such as chewing ability, pronunciation, confidence, smile, and appearance of teeth or mouth.¹⁷ Tabakan et al. state that the relationship between function and aesthetic facial appearance must be balanced to achieve good long-term results from orthognathic surgery.¹¹

The study results on appearance category (Table 2) in two-jaw and single-jaw orthognathic surgery patients showed that most were very satisfied with the appearance of post-orthognathic surgery. This result is supported by research by Kufta et al. because attractive aesthetic results give high patient satisfaction.¹³ The results of this study showed that there was no difference in the level of satisfaction between two-jaw and single-jaw orthognathic surgery in the appearance category, and this was not in line with the study of Tabakan et al., which states that the BSSO surgical method provides better appearance changes than the two-jaw surgical method.¹¹

The study results on function categories in two-jaw and single-jaw orthognathic surgery patients; most were very satisfied with the function of the jaws for biting or chewing, speaking, closing lips, swallowing, breathing, and sleeping after orthognathic surgery. The results of this study are the same as those of Kufta et al. in that patients are satisfied with an increase in function factor.¹³ Kufta et al. also suggested that if the patient does not have functional problems pre-surgery, post-surgery changes will not contribute to patient satisfaction.¹³ Research by Naini et al. suggested that the masticatory

system would function again after 70 days of surgical treatment.^{13,18}

The study results on the category of socialization ability in two-jaw and single-jaw orthognathic surgery patients showed that most of them were very satisfied with their socialization abilities after orthognathic surgery. This result aligns with the research of Pereira et al. that social interaction will increase after the patient is satisfied with the treatment.¹⁴ The research results on the socialization ability category align with the results of the appearance category research. With increased satisfaction in the appearance category, the patient will feel more comfortable in their social life.¹³ Better changes in facial appearance will increase patient confidence, and the patient will recommend surgical treatment. Single-jaw orthognathic surgery is recommended over two-jaw orthognathic surgery. This result is caused by pain and swelling after surgical treatment, which is felt more painful, and the surgical procedure is more difficult on a two-jaw procedure.¹¹

The study results on general health categories in two-jaw and single-jaw orthognathic surgery patients were very satisfied with their general health after orthognathic surgery. This is supported by research by Thiem et al., that patients who have undergone orthognathic surgery experience improved quality of life, and the patient's general health improved after orthognathic surgery in the long term.¹⁹

The study results on the patient-doctor communication category in two-jaw and single-jaw orthognathic surgery patients it was seen that most of them were very satisfied with the patient's communication with doctors before and after orthognathic surgery. Previous research suggests that explaining surgical procedures before orthognathic surgery has a significant positive relationship between patient trust in the surgical team and satisfaction after orthognathic surgery. Complications and surgical outcomes that doctors must discuss with patients adequately will impact patient satisfaction. A good and clear explanation of the procedure, side effects, and complications will increase overall satisfaction with the outcome and surgical recovery.¹³

The study results showed no differences in satisfaction of two-jaw and single-jaw orthognathic surgery patients. The study results align with the research of Kufta et al. and Pereira

et al., which revealed a high level of overall patient satisfaction with orthognathic surgery.^{13,14}

Conclusion

There was no significant difference in patient satisfaction with appearance, function, social skills, general health, and communication between the patient and the doctor after two-jaw and single-jaw orthognathic surgery.

Declaration of Interest

The authors report no conflict of interest.

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