

Impact of orthognathic surgery on patients' quality of life

Abstract

Objectives: To assess the impact of orthognathic surgery on patients' quality of life.

Participants: 20 patients (males=10) and (females=10) with a mean age of 21.4 years who carried out orthognathic surgery with movement of at least one jaw between November 2014 and January 2016.

Method: Patients were asked to fill an OHIP-14 questionnaire at two specific intervals, T_1 (6 weeks post-surgery) and T_2 (6 months post-surgery). OHIP-14 scores at T_0 , T_1 and T_2 were compared to assess impact of orthognathic surgery on the quality of life.

Results: There was a significant deterioration in OHIP-14 scores in physiological limitation and social disability domains from base point (T_0) to (T_1) 6-weeks from Base point to 6 months interval (T_0 - T_2) psychological domain improved significantly.

Conclusion: Patient's oral health related quality of life improved significantly following the orthognathic surgery.

Volume 7 Issue 1 - 2017

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Received: January 30, 2017 | **Published:** April 17, 2017

Introduction

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (World Health Organization). Orthognathic surgery is the correction of functional and aesthetic abnormalities of the maxilla and mandible. The treatment of such patients involves a combination of orthodontic, surgical and other disciplines. Orthognathic surgery has been indicated for cases where conservative treatment is thought to be inappropriate due to the inherent limitations of orthodontic treatment and so defined as the treatment for dentofacial deformities which includes patients with the following conditions and syndromes.¹ Patients with significant deformities of the jaw which causes functional and psychological disadvantage-Post-traumatic deformities and malocclusion-Condylar hyperplasia-Hemifacial microstomia-Cleft lip and palate-Obstructive sleep apnoea.

Rationale for orthognathic surgery

Aesthetics

Aesthetics is a primary motive for seeking orthognathic surgery from the patient's perspective. One hundred and twenty patients aged 11-33 years, who had undergone orthognathic surgery, were asked to complete a questionnaire to identify their motives for seeking surgery, the degree of satisfaction with surgical results and its effect on their quality of life. It showed that 95% sought surgery for aesthetics as a primary motive and 85% were satisfied with surgery outcome and its effect on their quality of life.² A prospective study was carried out on patients scheduled for bilateral sagittal split mandibular osteotomies. These patients were asked to complete a questionnaire to investigate the effect of surgery on the masticatory functions, temporomandibular joint disorders and their satisfaction with the results. Most of these patients (73%) reported to be satisfied with the results following the surgical procedure. They reported an improvement in mastication, self-confidence and long-term neurosensory deficits. Patients who underwent mandibular osteotomies with setback were more satisfied with the results than those with mandibular advancement.³ When it

comes to funds being provided for orthognathic surgery, NHS funding is recommended by priorities committee in order to treat patients with malocclusions and/or jaw with severe skeletal deformity that effect oral function. Patients should be assessed by a multidisciplinary team of specialists and meet the following criteria of having an IOTN of 4 or 5, quality of life being impacted by functional symptoms, patients having reached skeletal maturation and orthodontics alone is not sufficient to treat functional symptoms. However the priorities committee recommended that NHS funding for orthognathic surgery is placed as low priority, the reason being not enough evidence that there is functional improvement in patients with problems in speech and in patients with jaw pain especially associated with TMJ. However those recommendations do not affect the NHS funding when it comes to orthognathic surgery for treating cleft lip and palate, reconstruction after major surgery or trauma and complex craniofacial surgery.⁴

Psychological aspects

Psychological assessment for patients seeking orthognathic surgery has been recommended. A structured assessment would allow the clinician to get a clear understanding of the patient concerns as well as their expectations. A thorough evaluation is also necessary to identify patients with body dysmorphic disorder since it was claimed that these patients would not benefit from orthognathic surgery.⁵

Quality of life

Quality of life is an "individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". Oral health is an important factor that impacts an individual's quality of life. (The World Oral Health Report 2003, Surgeon General's Report on Oral Health). Therefore it is considered an essential part of general and well-being. The term "quality of life" (QoL) and "oral health-related quality of life" (OHRQoL) have gained broad recognition over the past five years due to a shift from the traditional clinical dental criteria such as caries or malocclusion towards a more patient-centric oral-health care delivery system that focuses on a

person's social, emotional and physical experience. Through that they will improve the patient's quality of well-being beyond treatment of only dental disorders. Through OHRQoL the public policy can be advised and help eliminate oral health imbalance. World Health Organisation (WHO) recognizes OHRQoL as an important part of the Global Oral Health Program (2003).⁶ Although malocclusion has a major role in oral health related quality of life. Not all studies show a strong correlation between emotional malocclusion, social well-being and emotional well-being. In 2012 there were more than 2718 orthognathic surgery procedures carried out in England.⁷ Orthognathic surgery has demonstrated beneficial effects on the quality of life. The aim of interventions carried out under the NHS are to improve the quality of life.⁸⁻¹² Patients with jaw deformities who and undergo orthognathic surgery are relatively young and receive life-long benefits. Cost-effectiveness of orthognathic surgery has been demonstrated.¹³ Health and effect of health care measurement must include an estimation of well-being and not only an indication of changes in severity and frequency of diseases. This can be carried out by measuring improvement of quality of life related to health care (WHOQOL, 1997). The benefits of orthognathic surgery on quality of life should be considered. Studies have shown that people who are more attractive are considered more favorably and judged to be more sociable, successful and happier than those who are less attractive, the so what is called "what is beautiful is good".^{14,15} There is a complex relationship between one's dento-facial appearance and society's response to it and therefore the desire to change dento-facial appearance is considered more than a superficial wish. Changes in facial/mouth appearance structure and function improves quality of life in the majority of cases, with satisfaction in process and outcome at over 90% in a great number of audits carried out in UK. Evidence has shown that orthognathic patients at pre-treatment have a quality of life that is poorer than individuals with no dento-facial problems and quality of life related to oral health improves following orthognathic surgery.⁹⁻¹⁶ These finding were supported by a systematic review of the literature and showed that psychological benefit including improved body and facial image, self and social adjustment was experienced by orthognathic patients as an outcome of treatment (Hunt et al.,2001). Improvement in well-being by orthognathic treatment was also noted in another systemic review.¹⁷ Altered sensation following orthognathic surgery does cause a burden on daily life. A randomized clinical trial showed those two years after surgery patients who had only opening exercises are more likely to report numbness and loss of sensitivity interfering with their daily life than those who received progressive sensory training facial exercises as well as opening exercises. Also older patients and patients who have elevated psychological distress reports are more likely to report altered sensation being persistent and having a negative effect on their daily lives. Therefore clinicians should carefully consider a patients age and psychological well-being while providing counseling prior to surgery on the impact of altered sensation on daily life.¹⁸

Oral health impact profile-14

The Oral Health Impact Profile-14 (OHIP-14) is a short version of the original OHIP-49 questionnaire. It measures the individual's insight of impact of oral condition on their well-being.¹⁹ OHIP-14 is composed of 14 questions that include 7 domains affecting oral health (functional limitations, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap).^{20,21} These 7 domains are subdivided into functional and psychological impact associated with problems including mouth, teeth and orthodontic appliance. The OHIP-14 scale ranges from a frequency of 0 being never to 4 being very often. As a result the

final score would fall between a range of 0, being best condition, no complaints and 56, being the worst condition, with maximum number of complaints.¹⁹

Aims: Assess the impact of orthognathic surgery on patients' quality of life.

Materials and method: To prospectively look at a cohort sample of 20 scheduled for orthognathic surgery. They will be asked to fill in the OHIP-14 questionnaire both pre and post-surgery.

Inclusion criteria: 1- Patients who carried out orthognathic surgery with movement of at least one jaw between November 2014 and January 2016.

Exclusion criteria: 1- Patients who had undergone SARPE (surgically assisted rapid palatal expansion) only.

2-Patients who were incapable of completing the questionnaire unaided for any reason.

Method

- 20 Patients were asked to fill an OHIP-14 questionnaire at T_0 prior to surgery as a baseline.
- Patients were followed up and asked to fill the OHIP-14 questionnaire at two specified intervals, T_1 (6 weeks post surgery) and T_2 (6 months post surgery).
- OHIP-14 scores at T_0 , T_1 & T_2 were compared to assess impact of orthognathic surgery on the quality of life.
- Data collected was entered in an Excel spreadsheet. (Microsoft Corporation-USA).

Statistical analysis

A Brunner-Langer Anova Type Statistic model was estimated in order to assess differences in OHIP-14 scores over the time.

Results

Oral Health Related Quality of Life of 20 patients showed that an overall improvement in OHIP-14 scores at T_1 in comparison to base point (T_0), following that at (T_2) the overall OHIP-14 signify a huge improvement in comparison to (T_0) (Table 1 & Figure 1). Oral health related quality of life change over time: Each question on OHIP-14 was analyzed individually over periods T_0 , T_1 and T_2 using the Brunner-Langer ATS test. At (T_1-T_0) the functional limitation and social disability domains showed a significant deterioration. At (T_0-T_2) interval showed improvement in the psychological discomfort domain in comparison to (T_0-T_1) (Table 2). It is worth to mention that other domains showed no significant improvement in comparison to base point (T_0).

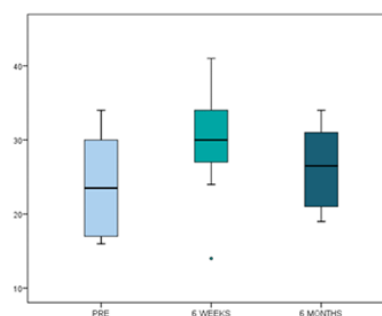


Figure 1 Distribution of OHIP-14 score from T_0 to T_2 .

Table 1 Overall OHIP-14 scores

OHIP-14	Mean	SD
T ₀	23.7	6.5
(T ₀ -T ₁)	-6.3	9
(T ₀ -T ₂)	-2.7	7.8

Table 2 *p<0.05; **p<0.01; ***p<0.001

Domains		T ₀ -T ₁	T ₀ -T ₂
Functional limitation	Troubles to pronounce some words	*Deterioration	No significant
	Sense of taste worsened	*Deterioration	No significant
Physical pain	Painful aching	No significant	No significant
	Uncomfortable to eat some foods	No significant	No significant
Psychological discomfort	Self-conscious	No significant	*Improvement
	Tense	No significant	No significant
Physical disability	Unsatisfactory diet	deterioration	No significant
	Interruption of meals	No significant	No significant
Psychological disability	Difficult to relax	No significant	No significant
	Embarrassment	No significant	No significant
Social disability	Irritability	No significant	No significant
	Difficult to do usual job	**Deterioration	No significant
Social handicap	Life in general less satisfying	No significant	No significant
	Totally unable to function	No significant	No significant

Discussion

This prospective research act as a pilot study for a larger future research. It investigated the impact of orthognathic surgery on patient's quality of life, the study consisted of 20 patients who were planned to undergo orthognathic surgery, and patients OHRQoL were assessed using OHIP-14. The main obstacle in the path of this pilot study is the scarcity of sample size since Malta is a very small island. The reasons patients seek orthognathic surgery are often related to esthetics or function, and in most cases such reasons are combined.²² Considering that the surgical procedure may result in irreversible changes on the patients' face and personality, both specialist and family should not influence the patients' decision. Thus, the final decision to undergo orthognathic surgery should come from the patients,²³ the results obtained in this research appeared promising in regards to the short-term hazards and difficulties that patients go through in order to obtain long-term benefits. Researchers have reported that persons going through orthognathic surgery, who are more concerned with esthetics aspects than others, may have psychological issues. Though, the frequency of people with psychological disorders is higher when it comes to plastic surgery.^{10,24} Found deterioration in functional limitation domain score. OHIP-14 scores at 6 weeks are exactly concordant with them. They reported a significant improvement in psychological status; similar finding was seen in this research as the psychological disability improved toward six month post-surgery.¹⁰ Did not find significant differences at total OHIP-14 score from basal to 6 weeks, but we have detected a significant improvement. Regarding comparison between basal and 6 month's quality of life,²⁵

reported a significant improvement in the overall index and all its specific items. Our results suggest that minor improvement were seen as an overall OHIP 14. A conclusion can be drawn in this research that the OHRQoL in patients who underwent orthognathic surgery showed some improvement in specific domains such as psychological discomfort domain in comparison to base point (To).²⁶⁻³⁰

Conclusion

Oral Health Related Quality of Life measured with OHIP-14 had demonstrated improvement following the orthognathic surgery.

Acknowledgments

None.

Conflicts of interest

The authors declare there are no conflicts of interest.

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