



King Saud University
The Saudi Dental Journal

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ORIGINAL ARTICLE

Changes in quality of life after orthognathic surgery in Saudi patients



Walid A. Abdullah

Oral and Maxillofacial Surgery Department, King Saud University, Saudi Arabia
Oral and Maxillofacial Surgery Department, Mansoura University, Egypt

Received 5 November 2014; revised 28 November 2014; accepted 21 December 2014
Available online 25 April 2015

KEYWORDS

Quality of life;
Orthognathic surgery

Abstract *Aim:* This study was conducted to measure the impact of orthognathic surgery on quality of life in Saudi patients.

Materials and methods: Patients with a discrepancy of 5 mm or more who underwent orthognathic surgery either single jaw or bimaxillary at the Department of Oral and Maxillofacial Surgery, College of Dentistry, King Saud University, between September 2007 and June 2013 were included in the study. They were asked to complete the Arabic version of the 22-item Orthognathic Quality of Life Questionnaire (OQLQ) preoperatively and postoperatively. Responses at these two timepoints were compared using paired *t*-tests, with the significance level set to $P < 0.05$.

Results: Seventeen patients participated in the study. Total OQLQ scores and those in the instrument's four domains (oral function, facial aesthetics, awareness of dentofacial aesthetics, and social aspects) indicated that quality of life was significantly improved by orthognathic surgery (all $P < 0.001$).

The social aspect domain was shown to be more important for patients than were facial aesthetics and oral function.

Conclusion: The present study revealed highly significant improvement in Saudi patients' quality of life following orthognathic surgery. This improvement was evident in all four OQLQ domains. © 2015 The Author. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Modern society places great importance on physical appearance. Facial appearance and aesthetics affect a person's

self-confidence and acceptance in society, which in general affect his or her quality of life (Marques et al., 2006). Orthognathic surgery, a corrective jaw procedure, is indicated in cases of severe dentofacial deformity that cannot be corrected by orthodontic treatment alone (Ong, 2004; Sadek and Salem, 2007).

Current research reflects interest in how orthognathic surgery affects patients' quality of life (Lee et al., 2007). Several quality of life measures are available in the field of dentistry. The Oral Health Impact Profile (Slade, 1997) was designed

Peer review under responsibility of King Saud University.



<http://dx.doi.org/10.1016/j.sdentj.2014.12.001>

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to determine the social impacts of oral disorders in older patients (mainly those aged ≥ 60 years). Other instruments include the Social Impacts of Dental Disease measure (Cushing et al., 1986), the Geriatric/General Oral Health Assessment Index (Atchison, 1997), and the Dental Impact Profile (Cunningham et al., 2000). These instruments were developed for use among older adults and they focus mainly on dental problems, rather than dentofacial disorders, highlighting the need for a more specific tool to measure quality of life in patients with such disorders. Cunningham et al. (2002) developed the Orthognathic Quality of Life Questionnaire (OQLQ), a condition-specific quality of life measure targeting patients with dentofacial deformities.

Instruments developed to measure quality of life and health outcomes use disease-specific or generic measures (Rustemeyer and Gregersen, 2012). Generic measures assess overall health status, whereas instruments in the first category focus on specific diseases or problems (Cunningham et al., 2002; Garratt et al., 1996; Ware, 1993). The OQLQ is a brief disease-specific tool that has shown validity and reliability (Cunningham et al., 2002).

The aim of this study was to measure the impact of orthognathic surgery on patients' quality of life using an arabic translated version of the 22-item self-reported OQLQ.

2. Materials and methods

2.1. Patients

Patients who underwent orthognathic surgery either single jaw or bimaxillary between September 2007 and June 2013 were included in this study. All surgeries were performed by the same team, including the author, at the Department of Oral and Maxillofacial Surgery, College of Dentistry, King Saud University, Riyadh, KSA. Exclusion criteria were: follow-up period < 1 year; preoperative discrepancy ≤ 5 mm; congenital deformity, psychological disorder, and/or physical disability; refusal to participate in the study or provide consent; and occurrence of any complication as a result of surgery or anaesthesia.

2.2. Ethical considerations

The study was approved by the Research Center and Ethics Committee of the College of Dentistry, King Saud University, Saudi Arabia with registration number FR0153. All patients signed an informative consent before participation in the study.

2.3. Data collection and measures

Each patient was asked to complete the 22-item self-reported OQLQ, translated into Arabic, immediately before surgery and at least 1 year postoperatively. The OQLQ measures the effects of dentofacial deformity on quality of life. Items are structured by a four-point scale ranging from 1 ("bothers you a little") to 4 ("bothers you a lot"). Items are grouped into four domains: oral function (items 2, 3, 4, 5, and 6), score 0–20), facial aesthetics (items 1, 7, 10, 11, and 14; score 0–20), awareness of dentofacial aesthetics (items 8, 9, 12, and 13; score 0–16), and social aspects (items 15–22, score 0–32). Total scores

range from 0 to 88, with lower scores indicating better quality of life (Cunningham et al., 2002).

Three bilingual (Arabic and English) native Arabic speakers translated the OQLQ into Arabic: the author; an associate professor in the Department of Oral and Maxillofacial Surgery, College of Dentistry, King Saud University; and a lecturer in Oral Biology, College of Applied Medical Sciences, King Saud University. After translating the questionnaire independently, the three translators developed the Arabic version of the OQLQ by consensus. The translated questionnaire was then validated in a sample of 15 bilingual (Arabic and English) volunteers: 10 students in the final year of study at the College of Dentistry and 5 faculty members. After administration and collection of the questionnaires, responses were discussed with these volunteers to identify any misunderstanding or vague expressions.

2.4. Statistical analysis

Questionnaire data collected from patients were analysed using SPSS (version 22, IBM Chicago, IL, USA). Paired *t*-tests were used to compare preoperative and postoperative responses, with the level of significance set to $P < 0.05$.

3. Results

Seventeen patients participated in the study. Table 1 presents demographic data and type of surgery for this sample. OQLQ total and domain scores indicated that quality of life was significantly improved by orthognathic surgery (all < 0.001) Tables 2 and 3, Fig. 1).

4. Discussion

In recent times, people have directed great care towards their appearance and how it can affect their careers, relationships, self-confidence, and, generally, quality of life. WHO defines Quality of Life as individuals' 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. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment. (Tabrizi et al., 2014). The impacts of dentofacial deformities on people's emotional and social lives have been a focus of research for a long time (Cunningham et al., 2000; Garvill et al., 1992; Hatch et al., 1998). Dentofacial deformity has long been expected to affect quality of life, which should be improved after orthognathic surgery. Among the most

Table 1 Presents the demographic data and type of surgery of the patients.

	Male	Female
Number	5	12
Age by years (mean)	20–37 (25)	19–27 (21.3)
<i>Type of surgery</i>		
Bimaxillary	2	6
BSSO*	3	6

* BSSO: bilateral sagittal split osteotomy.

Table 2 Showing the scores registered by the patients and its mean values.

Patient	Gender	D1 pre.	D1 post.	D2 pre.	D2 post.	D3 pre.	D3 post.	D4 pre.	D4 post.	OQLQ pre.	OQLQ post.
1	F	11	6	16	9	14	10	22	10	63	41
2	F	15	7	18	11	13	10	32	21	78	49
3	M	14	5	17	8	12	6	23	13	66	32
4	M	14	7	17	9	12	8	26	14	69	38
5	F	8	5	13	8	8	6	18	10	47	29
6	F	10	6	15	8	12	8	29	12	66	34
7	M	14	8	13	8	12	10	26	17	65	43
8	M	13	5	17	10	12	8	22	10	64	33
9	F	14	9	16	8	12	10	24	13	66	40
10	M	13	6	15	7	10	8	25	10	63	31
11	F	14	7	18	8	12	8	30	11	74	34
12	F	11	5	17	8	14	8	30	9	72	30
13	F	10	5	15	8	10	8	21	11	56	32
14	F	13	6	18	7	10	8	26	11	67	32
15	F	14	7	17	9	10	8	27	12	68	36
16	F	14	5	17	9	14	8	32	12	77	34
17	F	10	5	19	9	10	8	27	11	66	33
Mean		12.47	6.12	16.35	8.47	11.59	8.24	25.88	12.18	66.29	35.35

Table 3 Paired sample statistics.

		Mean	Std. deviation	Std. error mean	Sig. (2-tailed)
Pair 1	D1 preoperative	12.4706	2.03463	.49347	0.000
	D1 postoperative	6.1176	1.21873	.29558	
Pair 2	D2 preoperative	16.3529	1.69341	.41071	0.000
	D2 postoperative	8.4706	1.00733	.24431	
Pair 3	D3 preoperative	11.5882	1.69775	.41176	0.000
	D3 postoperative	8.2353	1.20049	.29116	
Pair 4	D4 preoperative	25.8824	3.95099	.95825	0.000
	D4 postoperative	12.1765	2.96301	.71863	
Pair 5	OQLQ preoperative	66.2941	7.33796	1.77972	0.000
	OQLQ postoperative	35.3529	5.26713	1.27747	

effective instruments for the measurement of this process is the OQLQ, developed through precise testing, rather than using more comprehensive instruments that cover more than one causative factor. (Cunningham et al., 2000, 2002; Lee et al., 2007; Younossi et al., 1999).

The results of the present study showed a highly significant degree of overall improvement in patients' quality of life after orthognathic surgery, in agreement with previous findings (Choi et al., 2010; Kavin et al., 2012; Rustemeyer and Gregersen, 2012; Soh and Narayanan, 2013; Tabrizi et al., 2014). Mean scores were higher in our study than in that conducted by Lee et al. (2007) using the Chinese version of

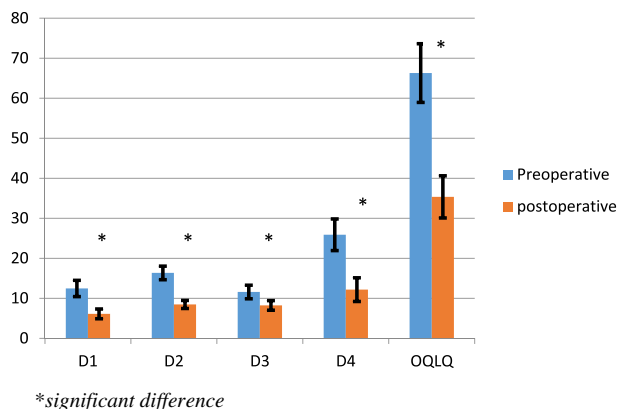


Figure 1 A graph showing the mean values of all the four domains of the questionnaire and the overall QOLQ with its significance.

the 22-item OQLQ. This difference may be explained by the degree of preoperative discrepancy [> 5 mm in our patients, not reported by Lee et al. (2007)] and/or by differences in culture and the ability of the translated instruments to suitably express patients' feelings and perspectives. We used preoperative discrepancy > 5 mm as an inclusion criterion because we believe that greater discrepancy is associated with greater psychological trauma, and to avoid dilution and biasing of scores due to sample heterogeneity.

Previous researchers (Kavin et al., 2012; Murphy et al., 2011; Rustemeyer and Gregersen, 2012) have reported that the greatest differences in preoperative and postoperative OQLQ scores were in the facial aesthetics domain. In our study, the difference in the social aspects domain was greatest, followed by those in the facial aesthetics and oral function domains. Psychosocial responses may differ considerably among cultures. Jensen (1978) and Kiyak et al. (1985) mentioned the importance of conformity between orthognathic surgery and social acceptance regarding culture-specific aims and values, which may explain the high social aspects scores

in the present study. Given the conservative and intimate nature of Saudi society, we believe that all of its members, especially women, are keenly attuned to others' opinions about and acceptance of their appearance and behaviour.

The awareness of dentofacial anomalies domain showed the smallest difference between mean preoperative and postoperative scores in this study, in line with the finding of Taylor et al. (2009) that malocclusion and its orthodontic treatment had little effect on general quality of life in an adolescent sample. The author can explain the similarity in the present study results with the results of Taylor et al., 2009 as a result to the young age of our patients in its average. The study limitation includes the limited number of patients as we included only the patients treated by the author team as a result we think that further studies are needed on a bigger sample size.

5. Conclusion

- In conclusion, the present study showed highly significant improvement in Saudi patients' quality of life following orthognathic surgery. This improvement was evident in all four OQLQ domains. The social aspects domain was shown to be more important for patients than were facial aesthetics and oral function.
- OQLQ was found to be an efficient instrument for the evaluation of quality of life of the patients in its Arabic translated version.

Conflict of interest

The authors have no conflicts of interest to declare.

Acknowledgements

The author would like to thank the College of Dentistry Research Center, King Saud University for their support during conduction of this research.

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