

ESTHETICS, FUNCTIONAL, AND PSYCHOSOCIAL SATISFACTION AFTER ORTHOGNATHIC SURGERY IN PATIENTS HAVING DENTOFACIAL SKELETAL DEFORMITIES

¹SANA TAHIR

²SADAF RAFFI

³MUHAMMAD WASIM IBRAHIM

⁴MUHAMMAD NAZIR KHAN

ABSTRACT

In this study, which was conducted at Armed Forces Institute of Dentistry Rawalpindi, the rate of satisfaction among patients who had dentofacial skeletal discrepancy and under gone orthognathic surgery along with orthodontic treatment from January 2010 till June 2015 was investigated. This retrospective study was conducted among fifty three patients who underwent Orthognathic surgery treatment from oral maxillofacial surgery department formed the study group. Patients were recalled for follow-up for their evaluation and to fill the questionnaire and those patients, who could not come for follow up were called on their personal phone numbers. Forty patients responded to fill the questionnaire. The questionnaire consisted of 19 questions. The survey response rate was 75.4%. Thirty five (87.5%) patients were satisfied with their final facial profile, and 37 (92.5%) were with their final esthetic profile. Related to the function 30 (75%) patients showed improvement in chewing ability, while 35 (87.5%) had no temporomandibular joint problem / pain post-operatively. The perception of patients for psychosocial benefits of treatment was positive, 27 (67.5%) patients stated that their social communication and 30 (75%) patient's self-confidence had improved a lot after treatment. It is concluded that orthognathic surgery was satisfactory and accepted treatment for dento-facial deformity, for improvement of appearance of individuals. On the other hand, any dissatisfaction that occurred in few individuals it was due to unrealistic expectations of the patients and expertise of surgeon and / or orthodontist.

Key Words: Orthognathic Surgery, Dento-facial Anomalies, Patient Satisfaction.

INTRODUCTION

Orthognathic surgery is used to correct any skeletal discrepancies of jaws and face, related with structure, growth, malocclusion, TMJ disorders, sleep apnea, and in which orthodontic treatment alone cannot correct the condition. The main goal to achieve in these surgeries is to have satisfaction esthetically, functionally

and psychologically. To enhance facial appearance is a chief motivation in patients undergoing orthognathic surgery.^{1,2} The treatment options to mask the skeletal discrepancy includes functional approach using a functional appliance such as a class III activator, chin-cap or face mask, fixed appliance and surgical treatment, that was used in 20th century and its most significant aim was patient satisfaction from over all treatment outcome.³ A surgical treatment option comprises maxillary and mandibular osteotomies, genioplasty, and distraction osteogenesis. Orthognathic surgery has now become significant sub-specialty in the field of oral and maxillofacial surgery for the past three decades.⁴ Dento-facial deformities can lead to adversative effects on the individual's own self-esteem and self-confidence and may induce an adverse social response. Therefore many orthodontists and maxillofacial surgeons believe that correction of dento-facial deformity of patients will result in improving their facial appearance, function and quality of life. This study aimed to investigate satisfaction levels of esthetics, functional and psycholog-

¹ Dr Sana Tahir, BDS, Registrar Oral and Maxillofacial Surgery, AFID, Rawalpindi

² Dr Sadaf Raffi, BDS, Registrar Oral and Maxillofacial Surgery, AFID, Rawalpindi

³ Dr Muhammad Wasim Ibrahim, BDS, MCPS, FCPS, Assistant Professor/Consultant, Oral & Maxillofacial Surgeon, AFID, Rawalpindi

⁴ Dr Muhammad Nazir Khan, BDS, MCPS, FCPS, Head of Department/Consultant, Oral & Maxillofacial Surgeon, AFID, Rawalpindi

Correspondence: Dr. Sana Tahir, Registrar, Oral & Maxillofacial Surgery, Armed Forces Institute of Dentistry, Rawalpindi
Email: sanatahir124@hotmail.com

Postal Address: House 550/C, Aibak Road, Westridge 1, Rawalpindi, Cell: 0321-2289842

Received for Publication: August 11, 2015

Revised: September 12, 2015

Approved: September 14, 2015

ical effects in patients who got treated by orthodontics and orthognathic surgery at Armed Forces Institute of Dentistry, Rawalpindi, with regard to dento-facial deformities.

METHODOLOGY

The study was conducted at Oral and Maxillofacial Department, Armed Forces Institute of Dentistry, Rawalpindi. This retrospective study included patients who underwent orthognathic surgery from January 2010 to June 2015. Patients having facial deformities causing unacceptable facial appearance, functional problems and psychosocial issues who underwent orthodontic/ orthognathic surgical treatment for improvement in their facial profile, esthetics, function and psychosocial problems were included. An exclusion criterion of study was patients having cleft lip and palate, mental retardation psychosocial problems and severe medical issues heralding their participation in survey.

A survey was conducted, after taking permission from the Ethical Committee of Armed Forces Institute of Dentistry, in which questions were asked by Post-graduate residents of Oral and Maxillofacial Surgery Department, from patients who reported to the institute for follow up visit and on phone who couldn't come up due to personal reason. The questionnaire included 19 questions out of which 06 questions were about orthodontic treatment, 06 were about psychosocial benefits of orthognathic surgery, 04 were about post-operative experience of patients related to orthognathic surgery and 03 were related to post-operative pain, pre-operative and post-operative temporomandibular joint pain and why they opted for getting treatment at Armed Forces Institute of Dentistry, instead from a private clinic. Every question had multiple options related to treatment and patients were asked to respond according to their post treatment satisfaction levels, post-surgical experience and psychosocial effects on their daily life routine.

RESULTS

Total number of patients was 53 out of which 13 (24.5%) patients didn't respond in light of the fact that the telephone numbers were either changed or were inaccurate. The Microsoft excel software was used to compile the results gained from the questionnaires, frequencies and percentages were reasoned, the outcomes are abridged in Fig 1, 2 and Tables 1, 2, 3.

Most of the times patients with facial deformities chose orthodontic and orthognathic surgical treatment to improve their facial appearance, to look good in their social circle, to chew the food properly as it was difficult for them to chew because of mal-aligned dentition or missing teeth which was causing digestion issues and that they had to visit medical specialists for

their gastric problems every now and then and lastly few wanted their speech quality to improve for social communications and participation at extra-curricular activities.

Out of forty patients, 30 (75%) were satisfied with the completion of their orthodontic and orthognathic surgical treatment. Number of patients who were dissatisfied all over was not more than 05 (12.5%) and the reason was the deterioration of their facial profile esthetics and function due to the expertise of the orthodontist and/or maxillofacial surgeon, for details see Table 1.

Patients were also asked about their chewing efficacy and temporomandibular joint pain disorders if any, results of which are shown in the Fig 2. Only 05 (12.5%) patients said that, they started having pain

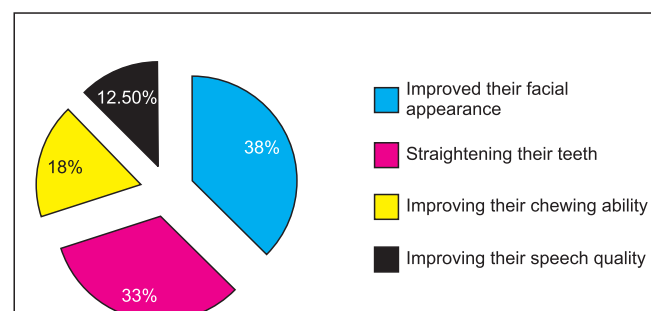


Fig 1: Reasons for seeking Orthodontic and Orthognathic surgical treatment

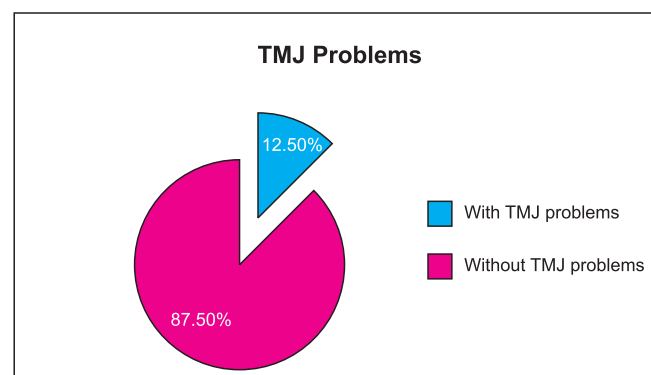
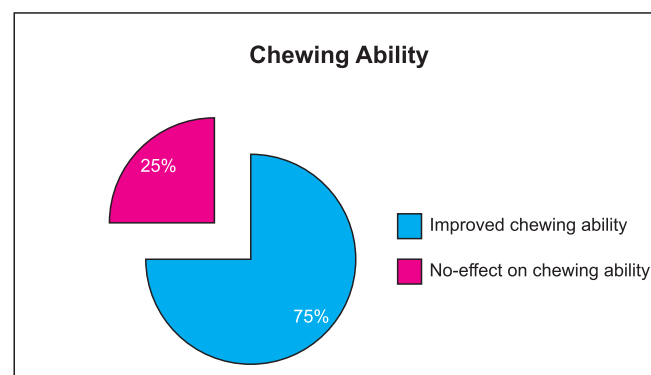


Fig 2: Post-Operative improvement in chewing ability and TMJ problems

TABLE 1: PATIENT SATISFACTION AFTER ORTHODONTIC AND ORTHOGNATHIC SURGICAL TREATMENT

	Orthodontic and Orthognathic surgery treatment results	Very Satisfied		Satisfied		Dissatisfied		Very Dissatisfied	
		N	%	N	%	N	%	N	%
1	Satisfied in relation to teeth arrangement after orthognathic surgery and orthodontic treatment?	25	62.5	10	25	04	10	01	2.5
2	Does esthetic profile please you?	28	70	09	22.5	02	5	01	2.5
3	How you find your smile?	28	70	09	22.5	02	5	01	2.5
4	Satisfaction about your general facial appearance?	22	55	11	32.5	03	7.5	02	5

TABLE 2: POST-SURGICAL EXPERIENCE OF PATIENTS

	Post-operative experience	Yes		No	
		N	%	N	%
1	Did you experience any numbness after orthognathic surgery?	10	25	30	75
2	Improvement in oral hygiene after orthodontic treatment and orthognathic surgery?	32	80	08	20
3	Do you feel any restriction in mouth opening after orthognathic surgery?	05	12.5	35	87.5
4	Do you feel that your face has returned to its pre-treatment condition?	06	15	34	85

TABLE 3: PSYCHOSOCIAL EFFECTS OF ORTHOGNATHIC SURGERY

	Psychosocial Benefits	Yes absolutely		Yes, I think so		No, I don't think so		No, absolutely not	
		N	%	N	%	N	%	N	%
1	After seeing you post-surgical facial profile and experiencing discomfort, would you still consider going for surgery if your pretreatment condition existed?	20	50	12	30	05	12.5	03	7.5
2	Has the orthognathic surgery had positive influence on your self-confidence?	23	57.5	07	17.5	08	20	02	5
3	Has the orthognathic surgery had positive influence on the performance at school/workplace?	23	57.5	07	17.5	08	20	02	5
4	Has the orthognathic surgery had positive effect on the social communication?	21	52.5	06	15	08	20	05	12.5
5	Will you recommend your friends and relatives to go for orthognathic surgery if required after experiencing your own?	12	30	12	50	07	17.5	01	2.5

unilaterally after a year of surgery while chewing food and they conservatively manage it by massaging the joint area with olive oil, using moist heat fomentation technique to soothe the pain and occasionally they take pain relieving medicines.

Results of questions regarding post-surgical experience of patients are shown in Table 2. To a question concerning numbness, out of forty 10 (25%) patients experienced it, which was related to lower lip and chin area only, probably due to the damage to inferior alveolar nerve and mental nerve during surgical procedure.

On asking about pain (pain scale 1: very mild pain and 10: severe pain) all 40 patients answered that they experienced severe pain in first three post-surgical days (values ranging between 07-10) which regressed later within one and half week to two weeks and swelling also decreased within first three to four days with surgeons' also prescribing intra venous steroid injection (decadron) 4mg-08 mg TDS for first three days only, depending upon the degree of soft tissue insult and retraction forces by surgical instrumentation handled by surgeons while operating.

As far as the psychosocial effects of the surgery are concerned 32 (80%) patients out of forty were content with the results that even if their pre-treatment condition re-occurs they agreed to go for re-surgery, only 08 (20%) patients said that they will not consider re-surgery as an option and will not recommend this orthognathic surgical procedure to any friend or relative due to the painful experience and deterioration of their facial profile and esthetics which they are still facing. Rest of the result to the questions are shown in Table 3.

Some of the patients did not agree and conform to the treatment which was administered to them by the Surgeons. One of them was in her childhood (09 years) when surgery for her Retrognathic Mandible was performed and other one was an adult female.

Mother of the young girl was totally dissatisfied with the deteriorated facial profile and esthetics of her daughter after surgery. She was of the view that she will think of surgical procedure again only when the surgeons will confirm her of dramatic change in her daughters profile and when she further grows up.

The other patient (30 years) who had bird beak like face, underwent multiple surgeries related to Temporomandibular Joint and Bi-maxillary Sagittal Split Osteotomy Surgery, strongly felt that she didn't have proper treatments which lead to her unacceptable facial appearance and restricted mouth opening. She is still facing difficulty in chewing food with paresthesia of lower lip even after 18 months of her last surgery and she was complaining that she cannot even drink water properly as it flows out of oral cavity due to improper lip closure and numbness.

Lastly majority of the patients opted Armed Forces Institute of Dentistry, for their treatment as it has well-qualified Surgeons and Orthodontists with other specialties available under one roof for a multidisciplinary approach which is a must requirement for cases of Skeletal Class II and Skeletal Class III patients, and also because of the cross-infection control which is strictly practiced at the Centre.

DISCUSSION

The response from the patients was quiet encouraging, as it was approximately 75 percent. Most of the patients responded in a positive and satisfactory manner and showed keenness while giving detailed answers to our questions, however, some patients eluded the questions and just said that they are comfortable, very few patients had reservations about follow up treatment as sometimes they weren't regular in attending to the recall visits and at occasions they were not comfortable with the doctors attending them.

People show keenness towards their appearance and its effect on their careers, relationships, self-confidence, and overall on quality of life. All these are further influenced by the individual's physical well-being, psychological state, level of independence, social relationships, personal values and their relationship to the remarkable elements of their surroundings.⁵

The effects of dento-facial anomalies on people's emotional and social lives have been a center of exploration for quite a while.⁶ A wish for better facial appearance is another significant purpose for seeking treatment.⁷ Orthognathic surgery is considered as a treatment of choice only for those patients in whom other treatment options would compromise the treatment.⁷

Important aspect to note is that the gender approach that is of male and female was different on various aspects with regard to their treatment, appearance and social aspects. In previous studies female were more beauty conscious and had more aesthetic expectations from treatment outcome than men.⁷ This was same in the present study.

In this study, 30 (75%) patients showed improvement in chewing ability post-surgically whereas, in a study conducted earlier on 28 patients out of which 20 (71%) patients observed an improvement. This outcome is in concurrence with prior studies, where reported results change somewhere around 40 and 80 percent.⁷ This is probably due to better qualified and experienced orthodontists and maxillofacial surgeons at the Center, and patient's better compliance by being more educated and well aware of their issues.

In the current study, results related to temporomandibular joint pain disorder, patients who experienced and are still having pain after one and half year of orthognathic surgery is 05 (12.5%), which they manage conservatively as advised to them by the surgeon. Temporomandibular joint issue (TMD) is a condition, generally found in patients with facial disfigurements because of the disruptions of hard tissue structures. This complication prompts over work of the temporomandibular joints. Patients with TMD have a tendency to demonstrate functional enhancements after orthognathic surgery. A few studies have reported the vicinity of TMD as a surgical intricacy after bilateral sagittal ramus osteotomy despite the fact that they didn't classify TMD as indicated by the sort of surgery.⁸

In another study⁹, 176 patients were evaluated for the effects of orthognathic surgery on temporomandibular joint, only 57 patients filled out the questionnaires, out of which 10 (24.4%) reported new TMJ pain post surgically. Postoperatively increased loading of the joints happens until the TMJs delicate tissues and

muscles achieve a condition of harmony and adjust to the new position, which can clarify the onset of TMJ side effects.⁹

In the same study 48 patients did not have limited mouth opening pre-surgery and only 06 (12.5%) patients reported with limited mouth opening post-surgery,⁹ whereas in the present study 05 (12.5%) patients replied positively about restricted mouth opening and 35 (87.5%) patients said that, there are no such symptoms. It can be concluded that, orthognathic surgeries have practically no impact on the TMJ and the reason can be ascribed to atrophy, scarring of the muscles and connectives tissues post surgically.⁹

In considering the controversial nature and multifactorial etiology associated with relapse in orthognathic surgery, key factors which are most influential are diagnosis and treatment planning which are considered imperative to the joint action of orthodontist and maxillofacial surgeons.¹⁰ In this study, 05 (12.5%) patients of relapse were due to the improper management, diagnosis and treatment planning which also led to the dissatisfaction of patients.

There was also difference in opinion of patients who were treated for different orthognathic surgical procedures like Genioplasty, Lefort-1 Osteotomy, and Bi-maxillary Sagittal Split Ramus Osteotomy Surgical procedures of jaws. Patients who underwent Genioplasty and Lefort-1 Osteotomy procedures had less severe post-surgical discomfort i.e. (Pain, swelling and dietary intake) as compared to the patients who underwent Bi-maxillary Sagittal Split Ramus Osteotomy procedure, who later experienced numbness of lower lip and chin area specifically. In the current study, mostly patients experienced numbness for maximum of six months; only 03 out of 40 patients are still having numbness post surgically for more than a year which will be regarded as neurotemesis (an irreversible injury to the nerve structure).⁸ Facial nerve injury may result from the maxillo-mandibular anatomy and the surgical technique used. In the included studies, injury to the trigeminal, mental, lingual, buccal, facial, inferior alveolar, and infraorbital nerves was observed in patients undergoing bilateral sagittal ramus osteotomy. These patients presented symptoms of paresthesia and in some cases anesthesia lasting up to 1 year after surgery.⁸ In another study displayed, patients who had bilateral sagittal ramus osteotomy and then nerve damage, which was related with specialist experience. This may be because of the difficulty of seeing the nerves in the mandibular locale, subsequently obliging broad anatomical learning with respect to the specialist to counteract neural sore.⁸

Patient's satisfaction psychosocially undergoing orthognathic surgery is another patient-related factor that

contributes a lot to the success of treatment outcome.¹⁴ In the present study the patient satisfaction psychosocially from orthognathic surgery was 80%. Whereas in another study, in which 27 (96.4%) patients out of 28 were satisfied.⁷ Patients reported improvement in oral functions, facial appearance and social relationships compared to the pre-operative and immediate stages. This is in concurrence with other studies, which specify that patients achieve psychosocial benefits through orthognathic surgeries.¹

CONCLUSION

Orthodontic treatment in children brings little changes in facial structures which are joined with developmental changes, whereas in orthognathic surgical procedure if performed at an adult stage of a patient suffering from dento-facial deformity brings drastic changes in functions such as respiration, chewing, swallowing, and speech along with improved facial appearance and better social relationships.

It was an excellent experience to carry out the study. According to our survey patients with Dento-facial deformities that underwent Orthognathic Surgery and afterwards treated Orthodontically were very satisfied with their facial profile, esthetics, functions and psychosocially.

REFERENCES

- 1 Gosney MB. An Investigation into Some of the Factors Influencing the Desire for Orthodontic Treatment. *British Journal of Orthodontics*. 1986; 13(2): pp. 87-94.
- 2 Birkeland K, Katle A, Løvgreen S, Bøe OE, Wisth PJ. 'Factors Influencing the Decision about Orthodontic Treatment. A Longitudinal Study among 11 and 15 Year Olds and Their Parents', *Journal of Orofacial Orthopedics*, 1999; 60(5): pp. 292-307.
- 3 Al-Omiri MK, Abu Alhaija ES. 'Factors Affecting Patient Satisfaction After Orthodontic Treatment', *The Angle Orthodontics*, 2006; 76(3): pp. 422-31.
- 4 Ahmed A. Zahrani, BDS, MSc, DFM, Ph.D. 'Patient Satisfaction with Orthognathic Surgery; A Study in Selected Saudi Sample.' *Pakistan Oral & Dent. Journal*, 2004; 24(2): pp. 129-34.
- 5 Walid A. Abdullah 'Changes in Quality Of Life after Orthognathic Surgery in Saudi Patients', *The Saudi Dental Journal*, 2015; 27(3): pp. 161-64.
- 6 Cunningham SJ, Garratt AM, Hunt NP. 'Development Of A Condition-Specific Quality Of Life Measure For Patients With Dentofacial Deformity: I. Reliability Of The Instrument.' *Community Dentistry and Oral Epidemiology*, 2000; 28(3): pp. 195-201.
- 7 Nurminen L, Pietilä T, Vinkka-Puhakka H. 'Motivation For and Satisfaction With Orthodontic-Surgical Treatment: A Retrospective Study Of 28 Patients.' *European Journal of Orthodontics*, 1999; 21(1): pp. 79-87.
- 8 Cristina Silva Sousa, Ruth Natalia Teresa Turrini 'Complications in Orthognathic Surgery: A Comprehensive Review', *Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology*, 2012; 24(2): pp. 67-74.
- 9 Jean Dujoncuoy JP, Ferri J, Raoul G, Kleinheinz J. 'Temporo-mandibular Joint Dysfunction And Orthognathic Surgery: A

- Retrospective Study', *Head and Face Medicine*, 2010; 6(27), doi: 10.1186/1746-160X-6-27.
- 10 Juliana Dreyer da Silva de Menezes, Cláudio Maldonado Pastori, Clóvis Marzola, João Lopes Toledo Filho, Daniel Luiz Gaertner Zorzetto, Gustavo Lopes Toledo, Marcos Maurício Capelari 'Associated Factors With Recurrence In Orthognathic Surgery Literature Review', *Revista de Odontologia ATO*, 2013; 13(7): pp. 633-88.
 - 11 Zhou YH, Hägg U, Rabie AB. 'Patient Satisfaction Following Orthognathic Surgical Correction of Skeletal Class III Malocclusion', *International Journal Adult Orthodontics and Orthognathic Surgery*, 2001; 16(2): pp. 99-107.
 - 12 Ulrich Klages, Nadine Claus, Heinrich Wehrbein, Andrej Zentner 'Development Of A Questionnaire For Assessment Of The Psychosocial Impact Of Dental Aesthetics In Young Adults', *European Journal of Orthodontics*, 2006; 28(2): pp. 103-11.
 - 13 Pietilä T, Pietilä I 'Dental Appearance And Orthodontic Services Assessed By 15-16-Year-Old Adolescents In Eastern Finland', *Community Dent Health*, 1996; 13(3): pp. 139-44.
 - 14 Hazem T. Al-Ahmad, Iyad K. Al-Omari, Laila N. Eldurini, Ahmad A. Suleiman 'Factors Affecting Satisfaction Of Patients After Orthognathic Surgery At A University Hospital.', *Saudi Medical Journal*, 2008; 29(7): pp. 998-1003.

CONTRIBUTION BY AUTHORS

- | | |
|----------------------------------|--|
| 1 Sana Tahir: | Data collection, analysis conclusion & references writing. |
| 2 Sadaf Raffi: | Abstract & introduction writing. |
| 3 Muhammad Wasim Ibrahim: | Supervisor. |
| 4 Muhammad Nazir Khan: | Patient contribution (his operated cases). |