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Complications In Orthognathic Surgery

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Abstract:
Background: Orthognathic surgery is a commonly performed oral and maxillofacial surgical procedure. The present study was conducted to assess prevalence of complications in patients treated with orthognathic surgery.
Material and methods: A retrospective study was designed to assess complications in patients treated with orthognathic surgery. Patients were included of both gender and who were between 18 and 40 years of age, subjected to a conventional orthosurgical treatment with the orthodontic sequence and preoperative dental preparation, orthognathic surgery under general anesthesia, and orthodontic completion. The postoperative variables were noted. The analysis were made with descriptive statistics using the SPSS 23 (IBM, New York, USA) software considering statistical significance when $P < 0.05$.
Results: In the present study 200 patients were included in the study. In general terms, 20% (40 subjects) had some type of complications. 10 subjects (25%) presented relapse, 5 patients (12.5%) presented postoperative infection, postoperative sinusitis respectively. 35% subjects had neurosensory deficits. 5% subjects had gingival tissue problem, 10% had wound/ suture problem.
Conclusion: In the present study concluded that in maximum patients neurosensory deficits occur followed by relapse.

Keywords: neurosensory deficits, relapse, orthognathic surgery.

Introduction: Orthognathic surgery is a commonly performed oral and maxillofacial surgical procedure. This surgery is primarily for patients with severe dentofacial deformities that require surgical repositioning of the maxilla or mandible to obtain proper occlusal function and esthetic facial harmony. The 3 main procedures are Le Fort I osteotomies (with a 1-piece or segmented maxilla), mandibular osteotomies, bilateral sagittal split osteotomy (BSSO) and intraoral vertical ramus osteotomy, and functional genioplasty (FG). All these procedures are performed intraorally. The oral cavity has a high bacterial load and contains multiple potential pathogens.[1] Orthognathic surgery is a common surgery with its own specifc set of complications.[2,3] In the postoperative stage, impaired sensation is related to patient discomfort;[4] however, other authors have described some of these alterations as being inherent to the procedure, considering that a significant percentage can present sensorial limitations that may or may not cause changes to the patient's daily life.[4,5] The present study was conducted to assess prevalence of complications in patients treated with orthognathic surgery.

Material and methods: A retrospective study was designed to assess complications in patients treated with orthognathic surgery. Before the commencement of the study ethical approval was taken from the Ethical Committee of the institute and when undergoing surgery, the patients included in the study were who signed an informed consent. Patients were included of both gender and who were between 18 and 40 years of age, subjected to a conventional orthosurgical treatment with the orthodontic sequence and preoperative dental preparation, orthognathic surgery under general anesthesia, and orthodontic completion. Patients who were outside the protocol such as those operated with ''surgery first'' or ''surgery early'' were excluded. The osteotomies were performed with a reciprocating saw; in all the patients, a maxillomandibular block was used during fixation of the maxilla and fixation of the mandible. Osteosynthesis was carried out with systems 2.0 and 1.5 in the maxilla, mandible, and chin regions; maxillary fixation was achieved with 4 L-plates and the mandible with 1 bicortical screw and 1 monocortical fixation plate, with 3 bicortical screws or with 2 plates and monocortical screws. The postoperative variables were noted. The analysis were made with descriptive statistics using the SPSS 23 (IBM, New York, USA) software considering statistical significance when $P < 0.05$.

Results: In the present study 200 patients were included in the study. In general terms, 20% (40 subjects) had some type of complications. 10 subjects (25%) presented relapse, 5 patients (12.5%) presented postoperative infection, postoperative sinusitis. 355 subjects had neurosensory deficits. 5% subjects had gingival tissue problem, 10% had wound/ suture problem.

Table 1: Postoperative complications observed

Complications	N(%)
Relapse	10(25%)
Infection/ sinusitis	5(12.5%)
Neurosensory deficits	14(35%)
Infection	5(12.5%)
Gingival tissue problem	2(5%)
Wound or suture problem	4(10%)
Total	40(100%)

Discussion:

Orthognathic surgery is widely used to correct congenital and acquired dentofacial discrepancies. Various benefits have been reported, including better masticatory function,4-6 reduced facial pain,[6-8] more stable results in severe discrepancies,[9,10] and improved facial aesthetics.[11,12] However, numerous complications have also been reported; including vascular,[13,17] technical,[18-20] and temporomandibular joint problems[21,26]; nerve injuries[27,29]; infections[30,31]; bone necrosis[32]; periodontal diseases[33]; ophthalmic[34] and middle ear changes[35]; dysphagia[36]; and psychological problems.[37] Some of the complications may even be life threatening.[38,39]

In the present study 200 patients were included in the study. In general terms, 20% (40 subjects) had some type of complications. 10 subjects (25%) presented relapse, 5 patients (12.5%) presented postoperative infection, postoperative sinusitis. 355 subjects had neurosensory deficits. 5% subjects had gingival tissue problem, 10% had wound/ suture problem.

Steel and Cope reported that nerve alterations are common in orthognathic surgery, so establishing their status as a complication may be questionable. Some degrees of sensorineural alterations are inherent to osteotomies in orthognathic surgery, with 3 conditions being observed: full recovery of sensation, incomplete recovery with or without daily problems for the patient, and definitive sensory loss.[40]

In the study by Robl et al,6 60.9% had a full recovery of sensation, 37.3% presented partial loss with or without discomfort for the patient, and 1.8% presented full sensory loss; of the patients who had a partial recovery all were under 38 years of age, indicating that age may be relevant to this recovery.[41]

In the analysis of infections, Chow et al21 conducted a 15-year retrospective study of 2910 orthognathic procedures; the complications appeared in 9.7% of the patients, of which 7.4% were associated with postoperative infections without associating them with any type of specific surgery; the resolution of this complication occurred without alterations to the orthognathic procedure. In the series of Robl et al,6 with 1000 surgeries, only 21 patients of infection were in the mandible and 4 patients in the maxilla, demonstrating a low percentage (2.5%) in this complication, which is in relation to our results which were 2.4%.

Conclusion: In the present study concluded that in maximum patients neurosensory deficits occur followed by relapse.

References:

1. Mangram A.J,Horan T.C.,Pearson M.L et al. Guideline for Prevention of Surgical Site Infection, 1999. Hospital Infections Program, National Center for Infectious Diseases, Centers for Disease Control and Prevention, Public Health Service, US Department of Health and Human Services, Washington, DC1999
2. Tereza-Bussolaro, C., Galván Galván, J., Pachêco-Pereira, C. & Flores-Mir, C. Maxillary osteotomy complications in piezoelectric surgery compared to conventional surgical techniques: a systematic review. Int. J. Oral Maxillofac. Surg. 48, 720–731 (2019).
3. Steel, B. J. & Cope, M. R. Unusual and rare complications of orthognathic surgery: a literature review. J. Oral Maxillofac. Surg. 70, 1678–1691 (2012).
4. Robl MT, Farrel BB, Tucker MR. Complications in orthognathic surgery. A report of 1000 cases. Oral Maxillofac Surg Clin N Am 2014;26:599–609
5. Kim SG, Park SS. Incidence of complications and problems related to orthognathic surgery. J Oral Maxillofac Surg 2007;65:2438–2444 6.
6. Rodrigues-Garcia RCM, Sakai S, Rugh JD, et al: Effects of major Class II occlusal corrections on temporomandibular signs and symptoms. J Orofac Pain 12:185, 1998.
7. Magnusson T, Ahlborg G, Finne K, et al: Changes in temporomandibular joint pain-dysfunction after surgical correction of dentofacial anomalies. Int J Oral Maxillofac Surg 15:707, 1986

8. Magnusson T, Ahlborg K, Svartz K: Function of the masticatory system in 20 patients with mandibular hypo- or hyperplasia after correction by a sagittal split osteotomy. Int J Oral Maxillofac Surg 19:289, 1990.
9. Proffit WR, Tulloch JFC, Medland PH: Surgical versus orthodontic correction of skeletal Class II malocclusion in adolescents: Effects and indications. Int J Adult Orthod Orthognath Surg 7:209, 1992
10. Cassidy DW, Herbosa EG, Rotskoff KS, et al: A comparison of surgery and orthodontics in "borderline" adults with Class II, Division 1 malocclusions. Am J Orthod Dentofac Orthop 104: 455, 1993
11. Cheng LHH, Roles D, Telfer MR: Orthognathic surgery: The patients' perspective. Br J Oral Maxillofac Surg 36:261, 1998
12. Tucker MR: Orthognathic surgery versus orthodontic camouflage in the treatment of mandibular deficiency. J Oral Maxillofac Surg 53:572, 1995.
13. Christiansen RL, Sudach HP: Disseminated intravascular coagulation following orthognathic surgery. Int J Adult Orthod Orthognath Surg 8:217, 1993.
14. Mehra P, Cottrell DA, Caiazzo A, et al: Life-threatening, delayed epistaxis after surgically assisted rapid palatal expansion: A case report. J Oral Maxillofac Surg 57:201, 1999.
15. Lanigan DT, Hey JH, West RA: Major vascular complications of orthognathic surgery: False aneyrysms and arteriovenous fistulas following orthognathic surgery. J Oral Maxillofac Surg 49: 571, 1991.
16. Lanigan DT, Hey JH, West RA: Hemorrhage following mandibular osteotomies: A report of 21 cases. J Oral Maxillofac Surg 49:713, 1991.
17. Hes J, de Man K: Carotid-cavernous sinus fistula following maxillofacial trauma and orthognathic surgery. Int J Oral Maxillofac Surg 17:295, 1988.
18. Quinn PD, Wedell D: Complications from intraoral subsigmoid osteotomy: Review of literature and report of two cases. Int J Adult Orthod Orthognath Surg 4:189, 1988.
19. Thyne GM, Ferguson JW, Pilditch FD: Endotracheal tube damage during orthognathic surgery. Int J Oral Maxillofac Surg 21:80, 1992.
20. Van Merkesteyn JPR, Groot RH, Van Leeuwaarden R, et al: Intraoperative complications in sagittal and vertical ramus osteotomies. Int J Oral Maxillofac Surg 16:665, 1987.
21. Bouwman JPB, Kerstens HCJ, Tuinzing DB: Condylar resorption in orthognathic surgery. The role of intermaxillary fixation. Oral Surg Oral Med Oral Pathol 78:138, 1994.
22. Cutbirth M, Van Sickels JE, Thrash WJ: Condylar resorption after bicortical screw fixation of mandibular advancement. J Oral Maxillofac Surg 56:178, 1998.
23. Merkx MAW, Van Damme PA: Condylar resorption after orthognathic surgery. Evaluation of treatment in 8 patients. J Craniomaxillofac Surg 22:53, 1994.
24. DeClercq CA, Neyt LF, Mommaerts MY, et al: Condylar resorption in orthognathic surgery: A retrospective study. Int J Adult Orthod Orhtognath Surg 9:233, 1994.
25. Hoppenreijs TJM, Freihofer HPM, Stoelinga PJW, et al: Condylar remodelling and resorption after LeFort I and bimaxillary osteotomies in patients with anterior open bite. A clinical and radiological study. Int J Oral Maxillofac Surg 27:81, 1998.
26. Nitzan DW, Dolwick MF: Temporomandibular joint fibrous ankylosis following orthognathic surgery: Report of eight cases. Int J Adult Orthod Orthognath Surg 1:7, 1989
27. Jacks SC, Zuniga JR, Turvey TA, et al: A Retrospective analysis of lingual nerve sensory changes after mandibular bilateral sagittal split osteotomy. J Oral Maxillofac Surg 56:700, 1998
28. Jones JK, Van Sickels JE: Facial nerve injuries associated with orthognathic surgery: A review of incidence and management. J Oral Maxillofac Surg 49:740, 1991
29. Westermark A, Bystedt H, von Konow L: Inferior alveolar nerve function after sagittal split osteotomy of the mandible: Correlation with degree of intraoperative nerve encounter and other variables in 496 operations. Br J Oral Maxillofac Surg 36:429, 1998
30. Martis C, Karabouta I: Infection after orthognathic surgery, with and without preventive antibiotics. Int J Oral Surg 13:490, 1984
31. Gallagher DM, Epker BN: Infection following intraoral surgical correction of dentofacial deformities: A review of 140 consecutive cases. J Oral Surg 38:117, 1980
32. Lanigan DT, West RA: Aseptic necrosis of the mandible: Report of two cases. J Oral Maxillofac Surg 48:296, 1990.
33. Schultes G, Gaggl A, Ka¨rcher H: Periodontal disease associated with interdental osteotomies after orthognathic surgery. J Oral Maxillofac Surg 56:414, 1998.
34. Lanigan DT, Romanchuk K, Olson CK: Ophthalmic complications associated with orthognathic surgery. J Oral Maxillofac Surg 51:480, 1993.
35. Baddour HM, Watson J, Erwin BJ, et al: Tympanometric changes after total maxillary osteotomy. J Oral Surg 39:336, 1981

36. Nagler RM, Peled M, Laufer D: Prolonged dysphagia after orthognathic surgery: Report of a case and review of the literature. J Oral Maxillofac Surg 54:523, 1996
37. Stewart TD, Sexton J: Depression: A possible complication of orthognathic surgery. J Oral Maxillofac Surg 45:847, 1987.
38. Lanigan DT: Injuries to the internal carotid artery following orthognathic surgery. Int J Adult Orthod Orthognath Surg 4:215, 1988.
39. Edwards DB, Scheffer RB, Jackler I: Postoperative pneumomediastinum and pneumothorax/following orthognathic surgery. J Oral Maxillofac Surg 44:137, 1986
40. Steel BJ, Cope MR. Unusual and rare complications of orthognathic surgery: a literature review. J Oral Maxillofac Surg 2012;70:1678–1691
41. Robl MT, Farrel BB, Tucker MR. Complications in orthognathic surgery. A report of 1000 cases. Oral Maxillofac Surg Clin N Am 2014;26:599–609.
42. Chow LK, Singh B, Chiu WK, et al. Prevalence of postoperative complications after orthognathic surgery: a 15-year review. J Oral Maxillofac Surg 2007;65:984–992