Available online at https://www.mmpubl.com/

International Journal of Cranio-Maxillofacial Surgery & Rehabilitation

Review Article

Complications in Orthognathic Surgery: A Mini Review

Dhaya Ann Varghese [1], *Dannel Sebastian* [2]

[1]*Postgraduate Student, Department of Oral and Maxillofacial Surgery, KVG Dental College and Hospital, Sullia, Karnataka.*
[2] *Postgraduate Student, Department of Oral and Maxillofacial Surgery, KVG Dental College and Hospital, Sullia, Karnataka.*

How to cite: *Dhaya Ann Varghese, Dannel Sebastian, Complications in Orthognathic Surgery: A Mini Review.Int J Cranio Maxillofac Surg Rehab Volume 2023, Article ID 23482514, 4 pages.*

Received:24/04/23 *Accepted:03/05/23* *Web Published:13/05/23*

Abstract

The review aimed to identify the most prevalent types of complications associated with orthognathic surgery and its possible risk factors. This study reviewed the literature on patients who underwent orthognathic surgery and the types of complications encountered. Intraoperative complications were identified, such as the occurrence of the bad split, bleeding, tissue injury, and postoperative variables such as impaired sensation, infection, and alterations in osteosynthesis systems.

Keywords: *Orthognathic Surgery, Complications, Malocclusion, Nerve Disturbances, Bleeding, Relapse*

Address for Correspondence:

Dannel Sebastian
Postgraduate Student,
Department of Oral and Maxillofacial Surgery,
KVG Denatl College and Hospital,
Sullia, Karnataka.
email: dannel93@gmail.com
Phone: 9745633441

INTRODUCTION

Orthognathic surgery procedures are frequently used to correct skeletal angle class II and III deformities, dento-maxillofacial deformities, mandibular laterognathia, and maxillofacial asymmetries. As with any surgical procedure, various preoperative, intraoperative, and postoperative complications may occur [1,2]. Bad splits appear as the most common complications. Modifications to the technique and the use of other osteotomy systems have been proposed as options to reduce the risk of bad splits [3].

COMPLICATIONS IN ORTHOGNATHIC SURGERY

According to a study [4], overall, 73 complications were reported (rate: 1.453%). The complications recorded were infections, bleeding, cranial base fractures, pseudarthrosis, and ophthalmologic complications. According to another study [5], intraoperative complications occurred in 20 patients (8%), of which 8 had deficiencies in the orthodontic device, either by breakage or because it lost its bonding, and 10 patients with a bad split in the sagittal split osteotomy, 1 patient with increased bleeding during the surgery, 1 patient with dental injury verified during surgery, and 1 patient with damage to the lower lip. Several studies have reported similar results [6,7].

In a study, deficiency of the mandibular nerve sensitivity was the most common early postoperative complication. Overall, 33 patients (27.7%) presented with hypesthesia. Myopathy was present in 9/23 cases of single BSSO and overall, 6/22 cases of LeFort-I + BSSO. Arthropathy was revealed in 6/23 single BSSO cases and 8/22 cases following LeFort-I + BSSO [8].

Several complications are reported in orthognathic surgery, and they are varied even if they remain rare [5-9]. However, it is difficult to carry out comparative studies because of heterogeneous data regarding complications, and because of the challenges in determining the general reasons for these complications. However, according to several authors, the risk of complications is higher in syndromic patients or for those with cleft lip and palate; for others, the bimaxillary osteotomies appear to have a higher risk of complications; while for another group of practitioners, there seems to be no difference between mono or bimaxillary procedures in terms of complications [7,8,10].

A study reported the occurrence of vascular complications including ischemia or bleeding occurred between 7 to 10 days after the surgery. There was optic nerve damage, lesions of lachrymal ducts, and fractures of the cranial base [11]. There can also be pseudarthrosis, insufficient contact of the cutting area, and an unstable occlusion. There are also reports of infections of the osteotomy site, sinus dysfunction, infections, and pulmonary complications [12 -14].

According to a study, complications occurred more frequently in surgeries performed on the mandible [15]. Conduction of segmental Le Fort I osteotomy was the second most common reason for complication occurrence, as reported in a study [16]. It seems reasonable to state that the more segmentations or osteotomies that are performed, the greater the technical difficulty; consequently, there is more chance of intra and postoperative complications.

CONCLUSION

It can be concluded that postoperative malocclusion, hemorrhage, inferior alveolar nerve injury, bad split, and infection are the most prevalent complications in orthognathic surgery. They seem to be related to sex, duration of surgery, number of surgeries, surgical site, and type of osteotomy performed.

Financial support and sponsorship - Nil

Conflicts of interest - There are no conflicts of interest.

REFERENCES

1. Jędrzejewski M, Smektała T, Sporniak-Tutak K, Olszewski R. Preoperative, intraoperative, and postoperative complications in orthognathic surgery: a systematic review. Clinical oral investigations. 2015 Jun;19(5):969-77.

2. Pelo S, Saponaro G, Patini R, Staderini E, Giordano A, Gasparini G, Garagiola U, Azzuni C, Cordaro M, Foresta E, Moro A. Risks in surgery-first orthognathic approach: complications of segmental osteotomies of the jaws. A systematic review. Eur Rev Med Pharmacol Sci. 2017 Jan 1;21(1):4-12.

3. Wolford LM. Comprehensive post orthognathic surgery orthodontics: complications, misconceptions, and management. Oral and Maxillofacial Surgery Clinics. 2020 Feb 1;32(1):135-51.

4. Ohrmann D, Hoyte-Williams PE, Chen PK. Update on complications in cleft orthognathic surgery. Current Opinion in Otolaryngology & Head and Neck Surgery. 2018 Aug 1;26(4):260-5.

5. Ferri J, Druelle C, Schlund M, Bricout N, Nicot R. Complications in orthognathic surgery: A retrospective study of 5025 cases. International orthodontics. 2019 Dec 1;17(4):789-98.

6. Olate S, Sigua E, Asprino L, de Moraes M. Complications in orthognathic surgery. Journal of Craniofacial Surgery. 2018 Mar 1;29(2):e158-61.

7. Kalmar CL, Humphries LS, Zimmerman CE, Vu GH, Swanson JW, Bartlett SP, Taylor JA. Orthognathic hardware complications in the era of patient-specific implants. Plastic and Reconstructive Surgery. 2020 Aug 26;146(5):609e-21e.

8. Zaroni FM, Cavalcante RC, da Costa DJ, Kluppel LE, Scariot R, Rebellato NL. Complications associated with orthognathic surgery: a retrospective study of 485 cases. Journal of Cranio-Maxillofacial Surgery. 2019 Dec 1;47(12):1855-60.

9. Peck CJ, Pourtaheri N, Shultz BN, Parsaei Y, Yang J, Park KE, Allam O, Steinbacher DM. Racial disparities in complications, length of stay, and costs among patients receiving orthognathic surgery in the United States. Journal of Oral and Maxillofacial Surgery. 2021 Feb 1;79(2):441-9.

10. Hwang DS, Choi HS, Kim UK, Song JM. Complications following orthognathic surgery for patients with cleft lip/palate. Journal of Craniofacial Surgery. 2019 Sep 1;30(6):1815-9.

11. Kim YK. Complications associated with orthognathic surgery. Journal of the Korean Association of Oral and Maxillofacial Surgeons. 2017 Feb;43(1):3-15.

12. Kantar RS, Cammarata MJ, Rifkin WJ, Alfonso AR, DeMitchell-Rodriguez EM, Noel DY, Greenfield JA, Levy-Lambert D, Rodriguez ED. Bimaxillary orthognathic surgery is associated with an increased risk of early complications. Journal of Craniofacial Surgery. 2019 Mar 1;30(2):352-7.

13. Friscia M, Sbordone C, Petrocelli M, Vaira LA, Attanasi F, Cassandro FM, Paternoster M, Iaconetta G, Califano L. Complications after orthognathic surgery: our experience on 423 cases. Oral and Maxillofacial Surgery. 2017 Jun;21(2):171-7.

14. Steinbacher DM, Kontaxis KL. Does simultaneous third molar extraction increase intraoperative and perioperative complications in orthognathic surgery?. Journal of Craniofacial Surgery. 2016 Jun 1;27(4):923-6.

15. Thiem DG, Schneider D, Hammel M, Saka B, Frerich B, Al-Nawas B, Kämmerer PW. Complications or rather side effects? Quantification of patient satisfaction and complications after orthognathic surgery—a retrospective, cross-sectional long-term analysis. Clinical oral investigations. 2021 May;25(5):3315-27.

16. Riekert M, Kreppel M, Schier R, Zöller JE, Rempel V, Schick VC. Postoperative complications after bimaxillary orthognathic surgery: A retrospective study with focus on postoperative ventilation strategies and posterior airway space (PAS). Journal of Cranio-Maxillofacial Surgery. 2019 Dec 1;47(12):1848-54.

Published by MM Publishers
https://www.mmpubl.com/ijcmsr