

COMPLICATIONS OF ORTHOGNATHIC SURGERY

Oviya. M

BDS 1st year,
Department of oral surgery,
Saveetha dental college and hospitals,
Chennai - 77.

AIM: To do a review on complications of orthognatic surgery.

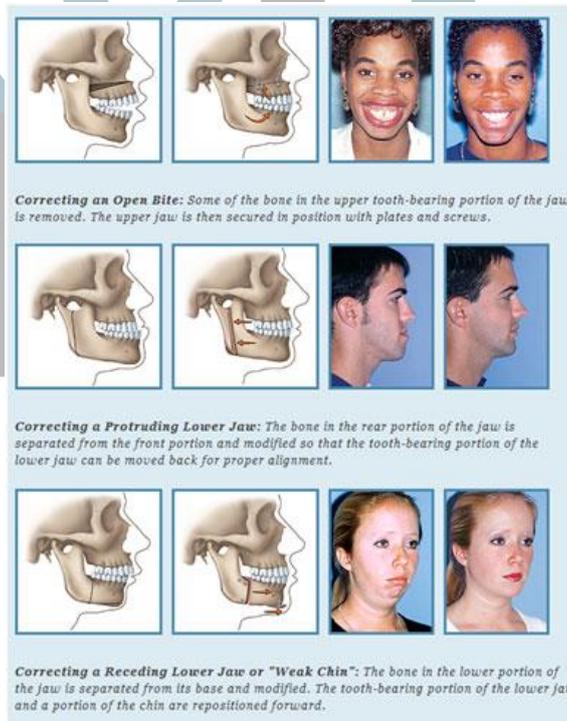
BACKGROUND: It is usually impossible to predict which patients will experience a specific complication. Age is the strongest indicator for potential complications, especially permanent nerve deficit. Large orthognatic skeletal moves seem to have greater relapse potential. Commonly held beliefs may not stand up to evaluation of the evidence, such as proposition that mandibular setbacks are more stable than others. There is a small, but real, risk that orthognatic surgery may create TMD problems also.

REASON: By knowing the complications of orthognatic surgery we can avoid them and give a better treatment to the patient.

KEYWORDS: nerve deficit, tempo mandibular joint disorder, relapse, orthognatic surgery.

INTRODUCTION:

Orthognatic surgery corrects conditions of jaw and face that can not be easily treated with braces. Bones may be cut and repositioned, held in place with screws or plates. This procedure is sometimes used in cleft lip and palate correction procedures. The surgery can be performed both in maxillofacial and mandible. General anesthetisa is commonly used for this procedure. Le Fort I osteotomy and bilateral sagittal split osteotomy (BSSO) are the most common surgical techniques performed in patients with maxillo mandibular malformations. There are some surgical complications related to the use of wire osteosynthesis and inter-maxillary fixation. Even though there are many advantages like proper bite, proper mastication process and physical appearance, there are few complications. For example, TMJ disorder, bone fractures, infection, condylar resorption, relapse and some miscellaneous.



GENERAL COMPLICATIONS:

Complications can be preoperative, operative and post-operative. These are some of the General complications after the surgery.

Loss of sensation resulting in numbness or tingling sensation of the chin, cheek, nose or tongue may occur after surgery. Sensation returns to the affected areas as the nerve fibers regenerate and mend themselves, after a few months of surgery. Rarely some

individuals may experience permanent altered sensation. Non vitality of teeth near the osteotomy site is seen rarely. This may require root canal treatment of the involved tooth at a later date. Relapse or unpredicted shifting of the new jaw position occurs uncommonly. If it does then further surgical intervention would be necessary. Periodontal infections around the teeth near the osteotomy site may cause mobility of the concerned teeth. This may be corrected by periodontal flap surgery and bone graft.

TMJ DISORDER:

Common matter of debate is represented by the correlation between orthognatic surgery and TMJ complications (1-6). Several Authors tried to evaluate the frequency of TMD in a population with maxillo-mandibular deformities treated throughout orthognatic surgery. Till now, about 500 articles have been published on TMJ complications as a consequence of orthognatic surgery. The results and the conclusions of the various Authors differ substantially because the follow- up period is different.

TMD are not only represented by click, pain and functional limitation but also by hemicranias, cervical pain, postural disturbs and, finally, we need also to consider the psychological aspects.

INFECTION:

The incidence of infections in orthognatic surgery is difficult to evaluate because most studies combine all orthognatic procedures. Numerous antibiotic regimens also have been used without any standardisation. Overall, the incidence of infection is reported to be between 0% and 18% with either a preoperative [7– 10] or a combined preoperative and postoperative antibiotic course [7-9,11 – 13]. Rates of infection between 0% and 53% have been reported without antibiotics [10 – 13]. Whereas the use of antibiotics seems to reduce the incidence of infection, the evidence to support continuing anti- biotic after the preoperative period is marginal

BONE FRACTURE:

Unsuitable fractures of the upper maxilla, as described in the literature 17.. In some cases incongruent fractures of the mandibular ramus or angle occurred during the sagittal split osteotomy (SSO). The risk of causing a fracture seems to become higher for the presence of a third molar. In several studies [8,13-16] mandibular fractures during the sagittal split osteotomy (SSO) occur with a frequency between 3% and 23%. The “ideal” split could be difficult to realize as it is conditioned by many anatomical variations of the mandibular ramus and by the ability to properly draw the osteotomy¹⁵. The extraction of the third molars in the same surgical time might cause the incongruent fracture of the bone fragments, so it is advisable to extract the dental elements at least 6 months before.

In some cases (0.14%) the dental elements were damaged. The dentist was required in order to perform the endodontic treatment. It should be highlighted that all those patients who showed such complication received a segmentary osteotomy.

RELAPSE:

Relapse may be defined as a postoperative movement either toward the preoperative position or farther away from it. Relapse is usually three dimensional, with vertical, horizontal, and sagittal components that may occur concurrently. Relapse of mandibular ramus osteotomies may be caused by mandibular condyle positioning intraoperatively, condylar remodelling or resorption, surface remodelling, or osteotomy slippage. The latter should be minimal with the use of adequate RIF.

Different methods of cephalometric analysis have been used in myriad studies undertaken to evaluate relapse. For BSSO or TOVRO, intramandibular measurements are theoretically more accurate for evaluating stability, but most studies for these and all orthognatic procedures use the cranial base as a reference. The influence of condylar position on relapse must be kept in mind.

CONDYLAR RESORPTION:

Condylar resorption has been reported as a source of relapse. Although not relapse per se, this process represents pathologic and destructive remodeling. It is known to occur in the general population and in the orthodontic populations without orthognatic surgery. Whether it occurs more frequently in orthognatic surgery patients is not known. Although several case series have been reported, a small number of retrospective studies have reported on the frequency of condylar resorption with a range of 2.3% to 26% . The criteria used to diagnose condylar resorption varied between studies, which likely accounted for the large range reported. Condylar resorption continues to be a condition with high predilection for Angle’s class II, white women. It has been reported, albeit less frequently, in men .

Periodontal defects with segmental Le Fort I osteotomies:

The potential for periodontal defects with segmental surgical procedures has been an area of some concern. This has been the focus of several studies, but there is little evidence to suggest an increased incidence of clinically significant periodontal defects [18 – 22]. It is apparent that periodontal defects rarely follow Le Fort . When they happen, however, they are dramatic and of great consequence to patients, especially if they occur in the anterior region.

Miscellaneous complications:

There are numerous reports of rare complications associated with orthognathic surgery. It is not possible to evaluate the incidence of these case reports, and the etiology is often unclear or speculative. Many of these complications are mentioned but not elaborated in this article for the sake of completeness.

Some instances of rare complications reported with bilateral sagittal split osteotomy are as follows: [23-33]

- _ Intraoperative hemorrhage that required special intervention: 10 cases
- _ Aseptic necrosis: 1 case
- _ Facial nerve palsy: 9 cases

Instances of rare complications reported with Le Fort I are as follows

- _ Blindness: 3 cases, 2 of which were permanent
- _ Nasolacrimal obstruction or injury: 3 cases treated with dacrocystorhinostomy or turbinectomy/septoplasty
- _ Postoperative hemorrhage that required interventions: 21 cases
- _ Intraoperative hemorrhage that required special intervention: 18 cases
- _ Orbital compartment syndrome: 1 case
- _ Vascular necrosis: 36 cases (most of which were segmental)
- _ False aneurysm of sphenopalatine artery: 2 cases
- _ False aneurysm of maxillary artery: 1 case
- _ Carotid-cavernous sinus fistula; 1 case
- _ Vomerospheoidal dysarticulation : 1 case
- _ Cranial nerve III palsy: 1 case, which spontaneously resolved

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