

# Complications of Orthognathic Surgery



Orthognathic surgery is one of the most commonly performed facial esthetic enhancing procedures performed. This could be for functional reasons as in severe Class III occlusion, craniofacial growth-related abnormalities such as in syndromic or facial cleft patients.<sup>[1]</sup>

The unfavorable outcomes in orthognathic surgeries could reach above 80% as with long-term sensory loss without any transection of the nerves and up to 10% in other conditions.<sup>[2-4]</sup> Besides the complications associated with the nerves, there is a list of complications and unfavorable outcomes associated with orthognathic surgeries.<sup>[2-4]</sup> A host of these problems could be limited by proper presurgical workup, proper diagnostic measures including radiographical studies as well as using standard surgical procedures, quality materials, and proper postoperative follow-up.<sup>[2,3]</sup>

However, the least studied complication or unfavorable fallout in orthognathic surgery stems from planning. In clinics, during the preoperative evaluation, the radiological studies and dental casts are more often used to plan the surgery. Rarely, three-dimensional models are also used. These are static impressions of a dynamic masticatory apparatus.<sup>[2,3]</sup> Under standard acquisition condition, the role of muscle pull and tone is not captured, and often, the lead surgeon does not consider the role of the muscle pull or the muscle anatomy and physiology associated with the surgical site while studying the radiographs and casts.<sup>[5,6]</sup> Clinically, all examinations are done without any muscle relaxants, capturing the muscle, occlusion, and jaw movement dynamics in real time.

After planning, with or without due consideration of the muscles, when the surgery is performed under general anesthesia with muscle relaxants, the surgeon often uses the occlusion as a single and most important guide and or a checkpoint before the splits are joined with plates and later with intermaxillary fixation (IMF).<sup>[1-3]</sup>

After achieving optimal occlusion, the plates and IMF are completed.<sup>[1-3]</sup> All these steps usually happen with minimal or no muscle tone due to the effects of relaxants when the patient is anesthetized and lying in a supine position.<sup>[5]</sup> At this stage, the patient is in a state of “Gnatoretusion” state and more severe than in awake patients.<sup>[5]</sup> Resultantly,

the yielding pattern of the muscle and the split jaw by the manipulation of the surgeon would differ significantly from nonanesthetic, awaken state. The condylar position under anesthesia if uncoordinated with that of nonanesthetic state could potentially lead to condylar sag and thus a relapse. In a mandibular osteotomy, the empirical positioning is the most widely used method while repositioning the condylar fragment. It consists of manually trying to place the condyle in its most superior and anterior position in the glenoid cavity. A combination of these would lead to posteriorization of the condyle, which has the potential to cause pathological changes in the joint.<sup>[5]</sup>

The summative effect of the occlusion pattern, in the postsurgery period, after the release of the IMF would be governed by the muscle pull at a new position. This would potentially contribute to the derangement of occlusion, relapse rate, and possibly require “redo” surgery if the results are unfavorable.<sup>[6]</sup> There are very few reports dealing with the influence of muscle relaxants during orthognathic surgeries on the postoperative occlusion among orthognathic surgery patients, especially in the mandible. Intraoperative awakening has been suggested as a method to prevent these discrepancies.<sup>[6]</sup>

An astute orthognathic surgeon should anticipate complications, take every effort to prevent complications, and avoid unpleasant and unfavorable outcomes. Function and esthetics of the jaw remain a dynamic, continuously modifying entity, which is influenced by several factors. The surgeon should take every effort to minimize the possibilities that could contribute to the failure, relapse, and complications. In this regard, consideration of the muscle relaxants and understanding the occlusion dynamics are essential for a proper orthognathic surgery.

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