Journal of Population Therapeutics & Clinical Pharmacology

REVIEW ARTICLE
DOI: 10.53555/jptcp.v30i16.4766

SURGERY FIRST APPROACH TO ORTHOGNATHIC SURGERY

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Abstract:
Orthognathic surgery is complex surgical procedure used to correct a range of skeletal and dental abnormalities in the maxillofacial region. Traditionally, the surgery first approach involved pre-surgical orthodontic treatment to align the teeth before the surgical correction of the jaw position. However, in recent years, a new approach known as the Surgery First Approach (SFA) has gained popularity. This approach involves performing the orthognathic surgery first, followed by post-surgical orthodontic treatment. This essay explores the concept of the Surgery First Approach to Orthognathic Surgery, its methods, results, limitations, and implications for orthodontic practice.

Keywords: Orthognathic surgery, Surgery First Approach, maxillofacial region, orthodontic treatment

Introduction:

Orthognathic surgery is a procedure used to correct skeletal and dental abnormalities in the maxillofacial region. These abnormalities can lead to functional issues such as difficulty in chewing, speech problems, and breathing difficulties, as well as aesthetic concerns. Traditionally, orthognathic surgery has been performed following a period of pre-surgical orthodontic treatment to align the teeth and prepare the jaw for surgery. However, in recent years, there has been a growing interest in the Surgery First Approach (SFA) to orthognathic surgery.

The Surgery First Approach involves performing the orthognathic surgery first, followed by post-surgical orthodontic treatment. This approach is based on the idea that correction of the skeletal abnormalities through surgery can lead to faster and more stable results compared to the traditional approach. By avoiding the need for pre-surgical orthodontics, patients can benefit from a shorter overall treatment time and reduced discomfort associated with wearing braces for an extended period.

The "Surgery First" approach, also known as the "Orthodontics-Surgery First" or "Surgery First Orthognathic" approach, is an alternative treatment strategy for orthognathic surgery. Traditionally, orthognathic surgery involves a sequence where orthodontic treatment precedes the surgical

procedure. However, in the Surgery First approach, the orthognathic surgery is performed at an earlier stage in the treatment plan, typically before or immediately after orthodontic preparation.

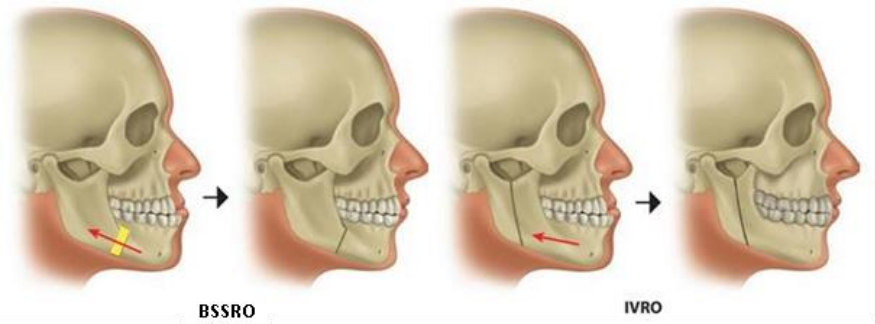

Fig1: Two major methods for mandibular setback surgery; sagittal split ramus osteotomy and intraoral vertical ramus osteotomy (Choi and Lee, 2021).

Here are some key points regarding the Surgery First approach to orthognathic surgery:
Advantages:

a. Improved Aesthetics: By addressing the skeletal discrepancies through surgery early in the treatment process, patients can experience immediate improvements in facial appearance.
b. Reduced Treatment Time: The Surgery First approach can potentially shorten the overall treatment duration compared to the traditional approach, as the surgical correction is performed earlier.
c. Enhanced Patient Experience: Patients may find the Surgery First approach more appealing as it avoids the lengthy pre-surgical orthodontic preparation phase, which can be uncomfortable and time-consuming.

Treatment Planning:

a. Comprehensive Evaluation: A thorough assessment of the patient's facial and occlusal characteristics is performed to determine the feasibility and suitability of the Surgery First approach.
b. Virtual Surgical Planning: Advanced imaging techniques, such as cone-beam computed tomography (CBCT) and computer-aided surgical simulation, are utilized to precisely plan the surgical movements and predict the post-operative outcomes.

Orthodontic Considerations:

a. Alignment and Stabilization: Following the surgery, orthodontic treatment is initiated or continued to fine-tune the occlusion, align the teeth, and stabilize the surgical changes.
b. Interdisciplinary Collaboration: Close collaboration between the oral and maxillofacial surgeon and the orthodontist is essential in coordinating the surgical and orthodontic aspects of the treatment.

Patient Selection:

a. Skeletal Discrepancies: The Surgery First approach is most suitable for patients with primarily skeletal discrepancies rather than primarily dental malocclusions.
b. Mild to Moderate Dental Crowding: Patients with mild to moderate dental crowding are typically better candidates for the Surgery First approach, as severe crowding may complicate the orthodontic phase.

Potential Challenges:

a. Surgical Planning Accuracy: Precise surgical planning is crucial to achieve optimal outcomes, and any miscalculations or inaccuracies may lead to suboptimal results.
b. Orthodontic Challenges: Addressing dental details and occlusal refinement may be more complex in the Surgery First approach, as the orthodontic phase follows the surgery.

c. Patient Compliance: Patients must be committed to following post-surgical instructions, which may involve dietary restrictions, oral hygiene practices, and regular follow-up appointments.

The Surgery First approach to orthognathic surgery offers several potential benefits, but it requires careful patient selection, thorough treatment planning, and close collaboration between the surgical and orthodontic teams. This approach can be an attractive option for patients seeking immediate aesthetic improvements and a potentially shorter overall treatment duration. However, it is important to note that not all patients are suitable candidates for the Surgery First approach, and a comprehensive evaluation by an experienced orthodontist and oral and maxillofacial surgeon is necessary before deciding on the most appropriate treatment plan.

Methods:

The Surgery First Approach to orthognathic surgery involves several key steps. Firstly, comprehensive clinical and radiographic assessments are performed to determine the extent of the skeletal abnormality and plan the surgical correction. A multidisciplinary team of orthodontists, oral and maxillofacial surgeons, and other specialists work together to develop a treatment plan tailored to the individual needs of the patient.

Once the surgical plan is finalized, the orthognathic surgery is performed first, followed by immediate post-operative orthodontic treatment. This involves the use of temporary anchorage devices (TADs) to help stabilize the surgical corrections and facilitate tooth movement. The post-surgical orthodontic treatment aims to fine-tune the occlusion and achieve optimal functional and aesthetic outcomes.

Results:

Several studies have reported positive outcomes with the Surgery First Approach to orthognathic surgery. These include shorter overall treatment times, improved post-operative stability, and enhanced patient satisfaction. A systematic review by Liou et al. (2015) found that patients treated with the Surgery First Approach had shorter treatment durations and better facial esthetics compared to those treated with the traditional approach.

Discussion:

The Surgery First Approach to orthognathic surgery offers significant advantages in terms of treatment efficiency, patient comfort, and post-operative stability. By eliminating the need for pre-surgical orthodontics, patients can undergo surgery sooner and achieve faster results. The use of temporary anchorage devices and immediate post-operative orthodontic treatment helps to stabilize the surgical corrections and optimize the final occlusion.

Limitations:

Despite its benefits, the Surgery First Approach is not suitable for all patients. Patients with severe malocclusions, skeletal discrepancies, or other complex issues may still require pre-surgical orthodontic treatment to achieve optimal results. Additionally, the Surgery First Approach requires close coordination between the surgical and orthodontic teams to ensure successful treatment outcomes.

Conclusion:

The Surgery First Approach to orthognathic surgery is a promising new technique that offers significant advantages in terms of treatment efficiency, patient comfort, and post-operative stability. By performing the orthognathic surgery first, followed by immediate post-operative orthodontic treatment, patients can benefit from shorter overall treatment times and improved outcomes. However, the approach is not suitable for all patients and requires careful patient selection and treatment planning. Further research is needed to evaluate the long-term stability and outcomes of the Surgery First Approach in orthognathic surgery.

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