

CASE REPORT

Surgical correction of a Class II skeletal malocclusion associated with anterior open bite and temporomandibular joint pain

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This case report describes the treatment of a 24-year-old woman with anterior open bite, Class II skeletal malocclusion, and a history of temporomandibular joint pain and sounds. She also had significant anteroposterior and vertical discrepancies and a convex profile with protrusive lips. Initially, she had an anterior open bite of 3 mm and an angle of 6 mm. Mandibular surgical rotation, associated with mandibular incisor extraction, was performed to reduce the protrusion, close the open bite, and minimize the temporomandibular joint disorder. (Am J Orthod Dentofacial Orthop 2025;XX:XX-XX)

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**This case report presents a 24-year follow-up of a previously treated Class II malocclusion with an anterior open bite and temporomandibular joint pain. Mandibular advancement with counterclockwise rotation and nonrigid fixation was employed to avoid bimaxillary surgery, given the favorable positioning of the maxilla. Postoperative outcomes revealed significant improvements in occlusion, esthetics, and temporomandibular joint function. Twenty-four years later, the patient still had a stable occlusion, excellent esthetics, and periodontal health. There was no recurrence of temporomandibular disorder symptoms, which demonstrates the treatment's long-term success. (Am J Orthod Dentofacial Orthop Clin Companion 2025;XX:XX-XX)**

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# A 24-year follow-up on the surgical correction stability of Class II skeletal malocclusion associated with anterior open bite and temporomandibular joint pain

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Anterior open bite occurs when the front teeth fail to overlap during occlusion, and it can have either dental or skeletal origins. Dental anterior open bite is often caused by teeth that are inclined outwardly or positioned improperly, typically resulting from habits such as tongue thrusting or thumb sucking. In contrast, skeletal anterior open bite stems from inherited growth patterns or temporomandibular joint and temporomandibular disorder, which can lead to improper jaw rotation. Temporomandibular joint issues are most observed in patients with Class II malocclusion, mandibular retrognathia, and an increased occlusal plane angle. Treatment options range from orthodontic camouflage to orthognathic surgery, with the latter being the preferred approach in patients with severe cases.<sup>1</sup>

Background information and details of the initial treatment are provided in the original manuscript.<sup>2</sup>

The surgical procedure positions the center of mandibular rotation posteriorly and inferiorly to the condylar center, which may alleviate painful symptoms associated with temporomandibular disorder.<sup>3</sup> Sagittal osteotomy follows Jeffrey Posnick's<sup>4</sup> principles. The initial cut is made just above the occlusal plane of the mandibular molars and well below the ramus area, in which the medial and lateral cortices converge, and the medullary cavity ends. The medial osteotomy need not extend >2 cm posteriorly. Keeping the medial cut low and short significantly reduces the risk of a bad split, preserves the pterygoid-masseteric sling, and enhances stability.<sup>4</sup>

The procedure used nonrigid fixation, which is characterized by a bone fixation method that allows limited movement between fractured bone fragments during function. This approach helps prevent temporomandibular joint complications, such as proximal segment malposition, condyle displacement from the articular fossa, counterclockwise rotation of the distal segment, excessive mandibular advancement, and altered suprahyoid muscle activity.<sup>5-8</sup>



**Fig 1.** Facial and intraoral photographs of 24-year posttreatment follow-up.

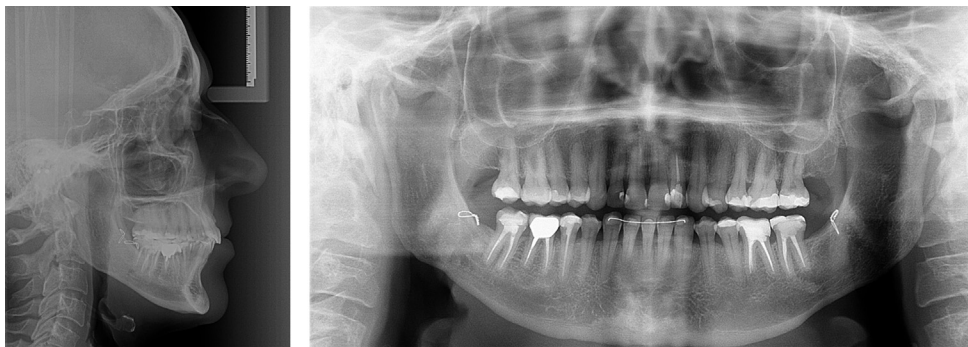
The procedure achieved excellent facial and occlusal results (Fig 1) and significantly improved temporomandibular disorder symptoms and occlusal function without recurrence.

Esthetic outcomes included reduced facial convexity, decreased lower facial height, improved lip competency, and a less retrognathic appearance. The patient was satisfied with the results.

Retention included a fixed lower lingual bar from canine to canine, a maxillary Hawley appliance with a grid for nighttime use, and myofunctional therapy, which focused on reeducating the facial, tongue, and mouth muscles to promote optimal oral posture, nasal breathing, and proper swallowing patterns. Attended regular sessions for 6 months postoperatively. Active participation in the prescribed exercises ensured the development of new muscle habits.

Treating skeletal Class II malocclusion, anterior open bite, and vertical tendency is challenging because of the risk of recurrence and the limited ability to address joint issues. In this patient, mandibular advancement with counterclockwise rotation was chosen instead of bimaxillary surgery because the maxilla was in the correct position and the patient had a vertical facial pattern. Gingival grafting was performed to control connective tissue loss in the anterior region of the mandible.

Orthognathic surgery can significantly improve temporomandibular disorder symptoms within 6 months by enhancing neuromuscular coordination and reducing joint stress and abnormal joint load. It also reduces temporomandibular joint degeneration by alleviating inflammation in the synovial and articular discs.



**Fig 2.** Lateral cephalometric and panoramic radiographs of 24-year posttreatment follow-up.

Improved condyle-articular disc alignment improves chewing efficiency, facial expression, and psychological well-being. Postoperative improvement in intercuspation enhances dental occlusion stability, emphasizing the functional and esthetic benefits of orthognathic surgery for patients with temporomandibular disorder.<sup>9-11</sup>

The treatment significantly improved both function and esthetics. The patient achieved excellent skeletal, dental, and occlusal outcomes (Fig 2), and experienced a notable reduction in temporomandibular joint pain. In addition, she reported improved self-esteem and greater satisfaction with her appearance. Twenty-four years after appliance removal, at the retention examination, the corrected occlusion remained stable, with excellent esthetics and periodontal health. There were no signs or symptoms of temporomandibular disorder.

#### AUTHOR CREDIT STATEMENT

Dr. Miguel was the orthodontic care provider and collected all the records, text writing, review and editing. Dr. de Paula and Dr. Cal- Neto - text writing, review and editing. Dr da Silveira - responsible for the orthognathic surgery, text review and editing.

#### CONFLICTS OF INTEREST

All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest, and none were reported.

#### STATEMENT OF INFORMED CONSENT

Informed consent was obtained from the patient.

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