

# Bilateral Sagittal Split Osteotomy: a Case Report

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## Abstract:

Class III skeletal malocclusion with isolated mandibular prognathism is common among kerala population. They may cause both function and esthetic compromise adversely affecting the quality of life of a young individual. Class III skeletal deformity show a familial inheritance pattern. Isolated mandibular prognathism can be treated with bilateral sagittal split osteotomy and mandibular setback. Along with orthodontic treatment, this young adults can be given a new face improving their social well being without compromising the function. Here we present a case report of a 22 years old male with isolated mandibular prognathism and class III malocclusion treated with bilateral sagittal split osteotomy and mandibular setback.

**Keywords:** bilateral sagittal split osteotomy; class III malocclusion, Mandibular prognathism.

## Introduction

Mandibular prognathism is a disorder characterized by excessive growth by mandible with respect to maxilla<sup>1</sup>. Patients with jaw deformities presents with both functional and esthetic disturbances<sup>4</sup>. The correction of this deformities are most challenging and require multidisciplinary approach<sup>4</sup>. At present, bilateral sagittal split osteotomy(BSSO) is the most common method employed in treating prognathism<sup>2</sup>. Here we present a case of 22 years old male diagnosed with mandibular prognathism and treated with bilateral sagittal split osteotomy and mandibular setback.

## Case Report

A 22 years old male patient reported to department of oral and maxillofacial surgery with chief complaint of forwardly placed lower jaw and wants to improve his facial esthetics.

On extraoral examination, patient had concave profile with prognathic mandible. Inter-canthal and

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Interpupillary distance coincide with ala of nose and lips. Vertically, face can be divided into three equal parts and transversally, into five equal parts.

On intraoral examination, skeletal and dental Class III malocclusion was noted. The dental midline coincide with the facial midline.

A posteroanterior radiograph and a cephalogram was done to confirm class III skeletal and dental malocclusion.

Presurgical orthodontics was done with extraction of all third molars. Model casts were made. Surgical simulation was done in the model casts following which splint was fabricated.

Bilateral sagittal split osteotomy with mandibular setback was planned under general anesthesia. Patient was placed in supine position and is intubated using ET tube No.7 through right nostril. Painting was done with betadine and draped following aseptic protocols. Incision line is marked by taking into consideration the intraoral landmarks - anterior border of ramus and external oblique ridge. Local anesthesia infiltration was done along the incision line. For adequate access a bite block is placed on the contralateral side. Incision is done with electrocautery from a point halfway up the anterior border of the ramus which is then continued inferiorly lateral to external oblique ridge to the distal of first permanent molar. Incision is further carried deep through submucosa, muscle and periosteum. Periosteum is elevated off the bone using a periosteal elevator to expose the external oblique ridge upto the coronoid notch. Using a periosteal elevator further the tissues along buccal surface of ramus and proximal mandibular body were dissected till the inferior border of body of mandible and posterior border of mandibular ramus.

All the attachments to the anterior ramus upto the coronoid are released. In order to visualize the medial aspect of ramus, subperiosteal dissection is carried out along the internal oblique ridge to the level of occlusal plane. The lingual is identified and soft tissue dissection is completed. Channel retractor is placed. Using a reciprocating saw, the cut is made through cortical bone into the cancellous bone medial to ascending ramus, parallel to the occlusal plane and superior to lingual. Then the saw is turned and the osteotomy cut is continued anteriorly down the oblique ridge to the level of second molar teeth. Along the inferior border cut is made completely through the cortical bone.

The osteotomy is completed using small curved osteotomes as it progress from anterior to posterior. The position of inferior alveolar nerve in relation to distal segment is verified while opening the split segment. Also the attachment of condylar head to proximal segment is verified. Once this is done, set back is done by removing the intervening bone and mandible is placed in the desired position with the help of a prefabricated splint. The segments are stabilized with the help of miniplates and screws; three on either side.



Figure 1: Preoperative profile



Figure 2: Intraoperative photograph



Figure 3: Postoperative Profile

Occlusion is checked. Closure is done with the help of absorbable sutures. Follow up is done at 1 week, 1 month, 3 months and 6 months interval.

## Discussion

Only little number of patients are diagnosed with isolated mandibular prognathism requiring bilateral sagittal split osteotomy alone, that is about 20 to 25% of all class III patients<sup>9</sup>. Studies have shown that about 63-73% of skeletal class III malocclusions are caused by developmental shortening and anteroposterior diminution of palatomaxillary complex<sup>8</sup>. Bilateral sagittal split osteotomy is an indispensable tool for the correction of this deformity<sup>10</sup>.

Trauner and Obwegeser were the first to describe bilateral sagittal split osteotomy for correction of facial deformities in the year 1957<sup>3</sup>. Since then, several modifications were made by Dal Pont, 1961, Hunsuck, 1968, and Epker 1977 to decrease complications, improve stability and for better access<sup>5</sup>.

Treatment options for skeletal class III include orthodontic camouflage or combined orthodontic-orthognathic surgical treatment. The choice of treatment depends on the severity of malocclusion,

amount of skeletal discrepancy and the degree of tooth movement that is needed<sup>10</sup>. BSSO may be performed for mandibular advancement or can be utilized for a mandibular setback of small to moderate magnitude (7 to 8 mm)<sup>5</sup>.

The most common complications following BSSO include bad split, inferior alveolar nerve injury causing permanent paresthesia of lower lip, bleeding, relapse etc<sup>6,7</sup>.

## Conclusion

Class III skeletal deformity have severe adverse outcomes in the quality of life of an adult. It can affect both an individual's function and esthetics. Correction of severe skeletal deformities require combined orthodontic and surgical treatment for optimal results and stability.

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