

Our Experience with A Bimaxillary Surgery - Complexity in Cosmetic Convalescence - A Case Report

¹Dr. Sunil Vasudev, MDS, Professor and HOD, Department of Oral and Maxillofacial Surgery, D A Pandu Memorial R V Dental College, Bangalore- 560078

²Dr. Deepak S, MDS, Fellow and Diplomate (ICOI), Associate Professor, Department of Oral and Maxillofacial Surgery D A Pandu Memorial R V Dental College, Bangalore- 560078

³Dr. Gowrishankar R, PG Student, Department of Oral and Maxillofacial Surgery, D A Pandu Memorial R V Dental College, Bangalore- 560078

⁴Dr. Sarayu Gopal, MDS, Assistant Professor, Department of Oral and Maxillofacial Surgery, D A Pandu Memorial R V Dental College, Bangalore- 560078

⁵Dr. Sahana M S, MDS, Fellow (ICOI), Assistant Professor, Department of Oral and Maxillofacial Surgery, D A Pandu Memorial R V Dental College, Bangalore- 560078

⁶Dr. Dallen Shone Dmello, PG Student, Department of Oral and Maxillofacial Surgery, D A Pandu Memorial R V Dental College, Bangalore- 560078

Corresponding Author: Dr. Sunil Vasudev, MDS, Professor and HOD, Department of Oral and Maxillofacial Surgery, D A Pandu Memorial R V Dental College, Bangalore- 560078

Citation of this Article Dr. Sunil Vasudev, Dr. Deepak S, Dr. Gowrishankar R, Dr. Sarayu Gopal, Dr. Sahana M S, Dr. Dallen Shone Dmello, “Our Experience with A Bimaxillary Surgery - Complexity in Cosmetic Convalescence - A Case Report”, IJDSIR- June – 2025, Volume – 8, Issue – 3, P. No. 89 – 94.

Copyright: © 2025, Dr. Sunil Vasudev, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution non-commercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given, and the new creations are licensed under the identical terms.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Aesthetic concerns have now eclipsed functionality beyond a scope of our understanding and hence prompt treatment that caters to both is the need of the hour. Bimaxillary surgery, although not bereft of complications, is a complete change in the patients overall appearance and hence requires careful and methodical treatment planning. Here we received a patient with a Class III skeleton jaw base and performed a Le Fort 1 advancement with a Bilateral Sagittal Split

osteotomy, setback. The change in facial appearance is noticeable with the final skeletal base being a Class 1 setup followed by post surgical orthodontics to restore both form and function optimally.

Keywords: Bimaxillary Surgery, Skeleton Jaw, Maxillomandibular, Upper Lip

Introduction

In contemporary clinical practice, facial aesthetics significantly influence psychosocial development, impacting both professional and social spheres. While

the adage "beauty lies in the eye of the beholder" persists, empirical evidence suggests that human perception of beauty is intrinsically linked to specific facial proportions, often aligning with the golden ratio (phi).

Orthognathic surgery, targeting the skeletal structures of the maxillomandibular complex, aims to correct dentofacial deformities. However, patients primarily perceive changes in their soft tissue profiles postoperatively. The correlation between skeletal modifications and resultant soft tissue adaptations is complex and influenced by various factors, including tissue elasticity, muscle attachments, and individual anatomical variations.

Understanding the soft tissue response to hard tissue movements is crucial for accurate surgical planning and predicting postoperative outcomes. Studies have demonstrated that soft tissue changes do not always mirror skeletal movements in a 1:1 ratio. For instance, mandibular advancements often result in approximately 66% soft tissue movement at the lower lip point, whereas maxillary advancements yield about 21% soft tissue movement at the upper lip point. ^[1]

In the surgical management of skeletal Class III dentofacial deformities, clinicians may opt for maxillary advancement, mandibular setback, or bimaxillary procedures. While each approach can effectively correct dental malocclusion, they differ in their impact on facial aesthetics, necessitating a nuanced decision-making process.

Maxillary advancement has been associated with favorable esthetic outcomes. A study comparing maxillary advancement and mandibular setback found that maxillary advancement led to significant improvements in parameters such as the nasolabial angle and upper lip position. Observers, including

orthodontists, oral and maxillofacial surgeons, and laypeople, rated the facial profiles resulting from maxillary advancement as more attractive compared to those from mandibular setback.

Mandibular setback surgery, while effective in correcting prognathism, may lead to less favorable esthetic changes. Patients undergoing mandibular setback have reported issues such as increased cervical length and potential for a less harmonious facial profile.

^[4] Bimaxillary surgery, involving both maxillary advancement and mandibular setback, offers a comprehensive approach to correcting skeletal discrepancies. This procedure has demonstrated superior soft-tissue outcomes and improved facial balance compared to single-jaw surgeries. ^[3]

While all three surgical options can address Class III malocclusions, maxillary advancement and bimaxillary procedures tend to yield more favorable esthetic results. The choice of surgery should be individualized, taking into account the patient's specific anatomical considerations and esthetic goals.

Case Report

A 18 year old male patient presented to the Department of Oral and Maxillofacial Surgery DAPM RV Dental College, Bangalore with a chief complaint of forwardly placed mandible. On clinical examination, he had a dental class III malocclusion and hence an orthodontic opinion was sought.(Figure 1) The facial profile shows reduced mid facial height, asymmetry of the mandibular jaw line on either side and a more prominent mandibular show at the chin.



Figure 1: Pre-Operative Profile and Occlusion

Surgery was advised post de-compensation by orthodontic team. (Figure 2) This allows for simple sliding of the jaws after the osteotomies have been made during surgery.



Figure 2: Post Orthodontic Phase - Pre Surgery

Lateral cephalograms and OPG done in order to plan for orthodontic and surgical movements. (Figure 3)



Figure 3: Lateral Cephalometry and Opg Views

Airway assessment was also done using Mc Namara analysis and a provisional treatment plan was advised. Patient was taken up for Le Fort 1 advancement and Bilateral Saggital Split Osteotomy (BSSO), setback for the same under General Anaesthesia.

Surgery Performed

General anaesthesia was achieved via right nasal intubation. Painting and draping was done following standard aseptic protocols. Local anaesthesia (2% lignocaine with 1:20000 adrenaline) was administered to proposed surgical site. A Le Fort 1 circumvestibular incision was placed and mucoperiosteum raised. The anterior and posterior nasal spines were identified and marked. The intended osteotomy was marked through the maxilla and the piriform rim was identified. The osteotomy was planned 3mm above the base of the piriform rim. The osteotomies were performed using a saw system under copious amounts of saline. Pterygoid disjunction was carried out using a pterygoid chisel. The maxilla was freed. An advancement of 5.5 mm on the left and 1.5 mm on the right side was achieved (asymmetric advancement). The maxilla was also intruded 3mm in the posterior region. The maxilla was then fixed using two 1.5mm L shaped mini-plates and two 1.5mm 4 holed mini-plates and locked into position using 1.5 x 6mm titanium screws. The maxillary positioning was aided by the use of an intermediate splint.(Figure 4)

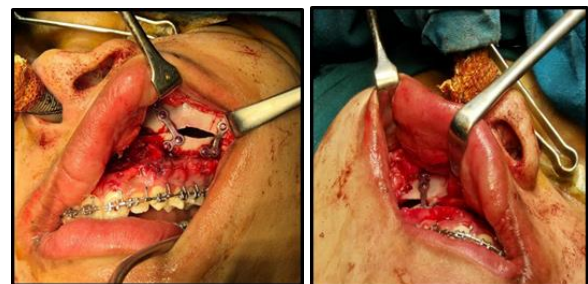


Figure 4: Titanium Mini Plates Used To Fix The Maxilla In Position After The Osteotomies Have Been Done

Post fixation of the maxilla in its final position in the intermediate splint, the mandible setback was initiated. A bilateral Ward's incision with vestibular extension was placed and mucoperiosteal flap was raised. Once the bare mandible was exposed, surgical marking of the same was done and punch hole osteotomies performed using the 701 bur. An initial buccal cut, followed by vertical cut was done and the lingula was identified before the final cut. Once the nerve was identified, the horizontal cut was made to ensure the nerve remains undisturbed and the osteotomies were completed using a saw system under copious amounts of saline. The condylar positioner held the condyle in its fossa to prevent any post operative condylar sag and the pterygo-mandibular sling was retracted using an Otis channel retractor. Post freeing the mandible, the maxillomandibular complex is rested upon the final splint. The mandible was setback 4.5mm on the right side and 5mm on the left with complete lateral movement of the mandible to the right by 2mm. After the mandible was placed in the final splint and stabilised, plating was done. A 2 mm single 6 holed plate was used on either side and fixed using 2x8 mm titanium screws. The mandible was then freed to check for the condylar movements. Intra operative occlusion and surgical model occlusion were verified. Closure was achieved using 3 - 0 Vicryl sutures and patient had an uneventful recovery (Figure 5)



Figure 5: Mandibular Plating Done Using 2mm

Titanium Plates

The patient was reviewed post operatively and showed no delayed complications associated with bijaw surgeries. The form and function of the patient had been restored to clinically acceptable outcomes of orthognathic surgery (Figure 6)

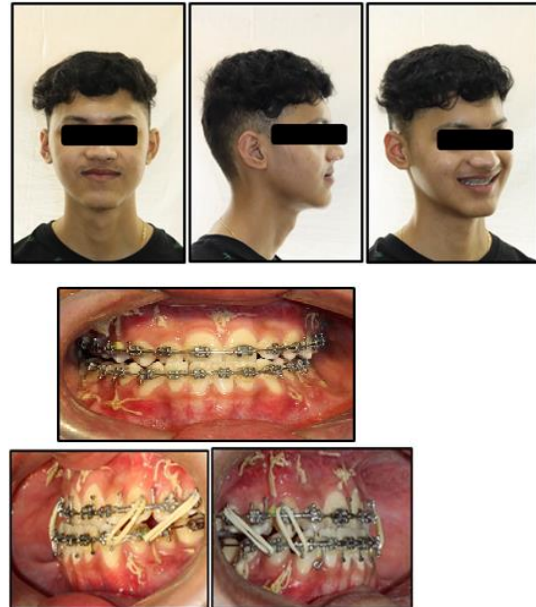


Figure 6: Post Operative Records

Pre operative vs post operative comparison shows restoration of facial symmetry, optimally placed maxillomandibular occlusion, frontal and lateral profiles of clinically acceptable outcomes and improved facial aesthetics. (Figure 7)

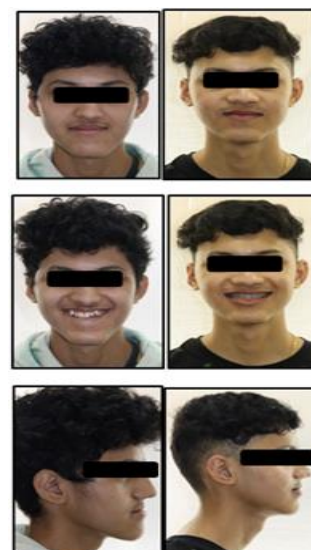




Figure 7: Pre Vs Post Operative Comparison

Discussion

Bimaxillary orthognathic surgery, involving simultaneous surgical repositioning of both the maxilla and mandible, is a cornerstone in the correction of complex dentofacial deformities, particularly skeletal Class III malocclusions. This comprehensive approach addresses both functional occlusal discrepancies and aesthetic concerns, offering a holistic solution for patients. [2]

One of the primary advantages of bimaxillary surgery is its superior aesthetic outcomes. Studies have demonstrated significant improvements in facial symmetry, contour, and overall appearance postoperatively. For instance, a study published in the *Journal of Oral and Maxillofacial Surgery* reported that 86% of patients experienced enhanced facial profiles following bimaxillary procedures. These enhancements are particularly notable in the midface and chin regions, contributing to increased patient satisfaction. [6]

Beyond aesthetics, bimaxillary surgery offers functional benefits, notably in airway management. Research indicates that this surgical approach can lead to an expansion of the upper airway space, potentially reducing the risk of obstructive sleep apnea in patients with Class III malocclusions. This contrasts with mandibular setback surgeries, which have been associated with a reduction in airway volume. [2]

However, bimaxillary surgery is not without its challenges. The procedure is technically demanding and carries risks such as unfavorable bone splits, nerve injuries, infections, and condylar resorption.

Postoperative complications, including changes in the posterior airway space, have also been documented. These potential complications necessitate thorough preoperative planning and patient counseling. [7]

Psychologically, patients undergoing bimaxillary surgery often report improvements in self-esteem and reductions in social appearance anxiety. A study highlighted that while there is a positive shift in psychological well-being post-surgery, patients may still experience challenges that require ongoing support. This underscores the importance of a multidisciplinary approach to patient care, integrating psychological support throughout the treatment process. [8]

Bimaxillary orthognathic surgery presents a comprehensive solution for correcting complex dentofacial deformities, offering significant aesthetic and functional benefits. While the procedure carries inherent risks, careful patient selection, meticulous surgical technique, and comprehensive postoperative care can mitigate complications, leading to high levels of patient satisfaction and improved quality of life.

Conclusion

Bimaxillary orthognathic surgery has emerged as a transformative intervention for individuals with skeletal Class III malocclusions, offering substantial improvements in both functional and aesthetic domains. Clinically, this procedure enhances facial symmetry and balance, leading to increased patient satisfaction with their appearance.

Psychologically, the surgery contributes to enhanced mental well-being. Patients report reductions in social appearance anxiety, sensitivity to criticism, and overall psychological distress. These improvements are crucial for individuals whose dentofacial deformities have previously impacted their social interactions

In summary, bijaw orthognathic surgery offers comprehensive benefits, addressing both the physical and psychological challenges associated with dentofacial deformities. Its ability to improve facial aesthetics, enhance functional outcomes, and bolster psychological health underscores its value as a holistic treatment approach.

References

1. Kanwal, Bushra; Shetty, Akshai; Mani, Varghese I; Prashanth, C. S.; Pramod, K. M.; Arjunan, Sharmila. Esthetic Outcome and Airway Evaluation following Bi-Jaw Surgery V/S Mandibular Setback Surgery in Skeletal Class III Malocclusion Using Surgery First Approach. *Annals of Maxillofacial Surgery* 8(2):p 270-275, Jul-Dec 2018. | DOI: 10.4103/ams.ams_152_18
2. de Souza Pinto GN, Iwaki Filho L, dos Santos Previdelli IT, Ramos AL, Yamashita AL, Stabile GAV, et al. Three-dimensional alterations in pharyngeal airspace, soft palate, and hyoid bone of class II and class III patients submitted to bimaxillary orthognathic surgery: A retrospective study. *J Craniomaxillofac Surg.* 2019 Jun;47(6):883-94. doi:10.1016/j.jcms.2019.02.007.
3. Kanwal B, Shetty A, Mani V, Prashanth CS, Pramod KM, Arjunan S. Esthetic Outcome and Airway Evaluation following Bi-Jaw Surgery V/S Mandibular Setback Surgery in Skeletal Class III Malocclusion Using Surgery First Approach. *Ann Maxillofac Surg.* 2018 Jul-Dec;8(2):270-275. doi: 10.4103/ams.ams_152_18. PMID: 30693244; PMCID: PMC6327815.
4. Ghassemi M, Hilgers RD, Fritz U, Modabber A, Ghassemi A. Maxillary advancement versus mandibular setback in class III dentofacial deformity: are there any differences in aesthetic outcomes? *Int J Oral Maxillofac Surg.* 2017 Apr;46(4):483-489. doi: 10.1016/j.ijom.2016.11.017. Epub 2016 Dec 30. PMID: 28041886.
5. Togninalli D, Antonarakis GS, Schatz JP. Condylar resorption following mandibular advancement or bimaxillary osteotomies: A systematic review of systematic reviews. *J Stomatol Oral Maxillofac Surg.* 2022 Nov;123(6):e948-e955. doi:10.1016/j.jormas.2022.03.008.
6. Aubry C, Bouchard C, Paris M, Sauvé C. Satisfaction with Facial Appearance following Bimaxillary Orthognathic Surgery. *Journal of Oral and Maxillofacial Surgery.* 2021 Oct 1;79(10):e19-20.
7. Zaroni M, Salles MB, Toledo-Filho JL, Gabrielli MAC, Pereira-Filho VA, Gabrielli MFR. Complications in orthognathic surgery: A retrospective study of 5025 cases. *J Craniomaxillofac Surg.* 2019 Aug;47(8):1285-91. doi:10.1016/j.jcms.2019.05.003.
8. Wang BL, Yang ML. Psychological status of patients with skeletal Class III malocclusion undergoing bimaxillary surgery: A comparative study. *Medicine.* 2024 Aug;103(34):e39435.