

Case Report

Chin Wing Osteotomy Using Individual Cutting-Guide: Case Report

Pinheiro G*, Almada T, Pimentel T, Bravim B, Leite J, Gonçalves S and Prado R

Surgery Department - Brazilian Association of Odontology
- ABO/RJ, Brazil

***Corresponding author**

Pinheiro G, Surgery Department - Brazilian Association of Odontology - ABO/RJ, Brazil; E-mail: giuliannal@gmail.com

Submitted: 27 May 2018; **Accepted:** 02 June 2018; **Published:** 25 June 2018

Introduction

Chin wing osteotomy of the lower border was first described by Triaca, et al. [1]. It can correct the profile of the lower face without changing the interocclusal relations and it can often obviate a sagittal split osteotomy [2,3]. It is a modified genioplasty who considers the basilar border as a whole anatomical unit, allowing to obtain better aesthetic result with long-term stability.

Reproduce the treatment plan during surgery has always been a challenge. The rapid development of 3D imaging technology computer-aided modelling (CAD/CAM) has changed surgery in the last 2 decades. CAD/CAM technology allows surgeons to transfer the virtual planned movements from computer to the operation room using custom made patient's specific surgical guides.

Case Report

A 54-year-old woman with class II profile and class I bite was referred to maxillofacial surgeon to improve her facial convex profile and lip posture (Figure 1). Treatment plan options were discussed and, since she had no complaints regarding maxillary position and no intention to be submitted to orthodontic treatment again, the chin wing osteotomy was the treatment choice for her.



Figure 1: Pre operative photographs

The treatment plan was performed using clinical evaluation, cone beam computed tomography (CBCT) scan images in Digital Imaging and Communications in Medicine (DICOM) format were processed using Dolphin software. The dental casts were scanned using a high resolution 3D optical scanner. After planning, data were used to create and print the specific CAD-CAM design cutting and fixation guides, according to the osteotomy lines upon the images (Figure

2). The upper flange of the guide was designed to guide piezo saw to pass under the mandibular canal. The guide design allows the integrity of the inferior alveolar and mental nerves and the integrity of lower border cortex.



Figure 2: Osteotomy Cutting and Fixation Guides

After incision of the mucosa from ascending ramus of mandible to the opposite ramus and stable intermaxillary fixation, the cutting guides were fixed with monocortical screws (Figure 3). The mental nerve was isolated at the mandibular foramen and preserved (Figure 4 and 5). Initially only the outer cortex was cutting using piezo saw in mandibular border until mandible angle bilaterally. Horizontal bicortical chin osteotomy was done with regular saw. About 1cm anterior to the mental foramen the osteotomy was completed with piezo saw. Mobilization of segments was performed carefully to avoid bad split or segment fracture.

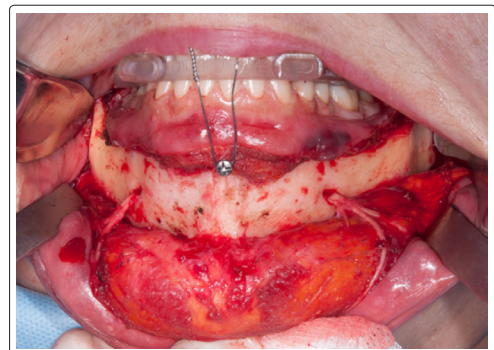


Figure 3: Incision and Subperiosteal Dissections

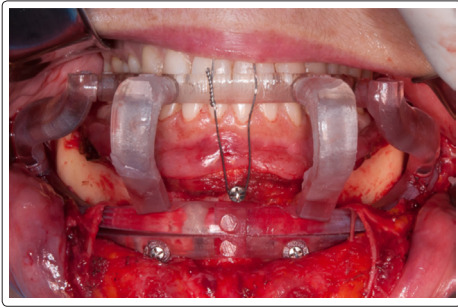


Figure 4: Osteotomy Guides Allows the Integrity of mental and Alveolar Inferior Nerves

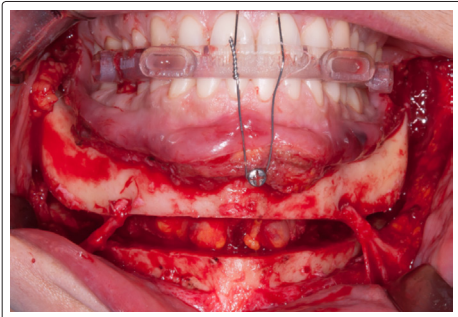


Figure 5: Integrity of mental nerve

The design cutting guide was used to permit fixation of segments and to maintain the desired vertical position. The segments were fixed with 2 Z plates and 1 chin plate and 12 screws (Figure 6). Eight months after surgical operation patient was satisfied with the achieved results and had no clinical issues (Figure 7).

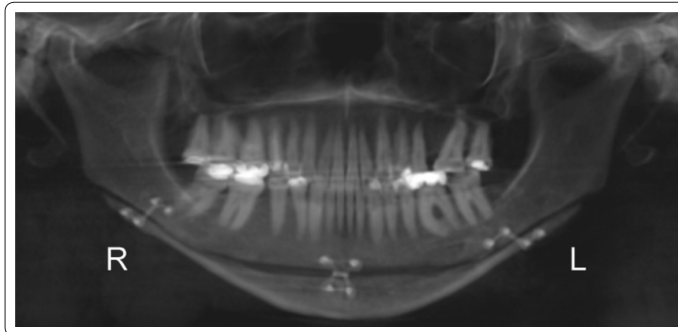


Figure 6: Panoramic Radiography Showing Rigid Fixation with 3 Plates and 12 Screws



Figure 7: Post-Operative Photographs with 8 Months of Follow Up

Discussion

In this case the expected treatment would have been counter clockwise rotation of the bimaxillary complex with a Le Fort I and bilateral sagittal split, but the patient refused this treatment because her occlusion was already acceptable following a previous orthodontic treatment. In the traditional mentoplasty method there is often aesthetics dissatisfaction with the result, especially in great advances, because of the deformity in the lower edge who mimics ages and no adequate tension of the overlying skin.

Chin wing osteotomy improves aesthetics of the face, reshaping aesthetically mandibular morphology by increasing the posterior height and width with preservation of the lower border contour.

The possibility to use design cutting guides during surgery nowadays is the most accurate and reliable method to transfer to surgery the planning treatment and to control the three possible rotation movements (pitch, yaw and roll) around the three axes of the space. Besides, the surgical cutting guides eliminate the need for intraoperative manipulation to reposition the segments, reducing the operative time.

Conclusion

Chin wing osteotomy allows achieving better aesthetic results with a minimal invasive procedure when comparing to orthognatic surgery. The use of cutting guides during surgery makes the procedure more predictable and reduces the risk of nerve damage during surgery [4,5].

References

1. Triaca A, Minoretti R, Saulacic N (2010) Mandibula wing osteotomy for correction of the mandibular plano: a case report. *Br J Oral Maxillofac Surg* 48: 182-184.
2. Coopman R, Aerden T, De Temmerman G, Politis C (2017) Mandibular wing osteotomy: technical modification. *Br J Oral Maxillofac Surg* 55: 635-636.
3. Triaca A, Brusco D, Guijarro-Martínez R (2015) Chin wing osteotomy for the correction of hyper-divergent skeletal class III deformity: technical modification. *Br J Oral Maxillofac Surg* 53: 775-777.
4. Cortese A, Pantaleo G, Amato M, Claudio PP (2015) Chin Wing Osteotomy for Bilateral Goldenhar Syndrome Treated by “Chin Wing Mentoplasty”: Aesthetic, Functional, and Histological Considerations. *J Craniofac Surg* 26: 1628-1630.
5. Pouzoulet P, Cheynet F, Guyot L, Foletti JM, Chossegros C, et al. (2017) Chin wing: Technical note. *J Stomatol Oral Maxillofac Surg* S2468-7855: 30234-30233.

Copyright: ©2018 Pinheiro G. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.