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Research Article

Bilateral Mandibular Sagittal Surgery in Prognathism Patients Aged 25-45 Years

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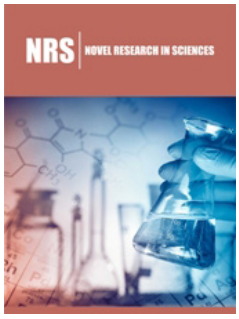

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Abstract

Maxillary alterations identified after surgical treatment of mandibular prognathism with Bilateral Sagittal Split Osteotomy (BSSO). At 4 weeks, 2 years, and long-term follow-up, 40 patients underwent mandibular retraction BSSO, and pre-and post-operative cephalometric radiographs were collected (meaning 24 months). To determine intraoperative and postoperative alterations, cephalograms were tracked and measured. Correlation analyses were carried out to investigate the association between the failure rate and the rate of long-term alterations following surgery in point B and pogonion. The size of regression and the rate of recurrence at point B and pogonion had no association. There was a substantial relationship, however, between the extent of vertical, downward surgical displacement and the rate of vertical recurrence at point B and pogonion. The majority of the jaw and facial changes occurred within a year following the surgery [1].

Keywords: Surgery; Bilateral mandibular; Dentistry; Prognathism; Oral and maxillofacial surgery

Abbreviations: BSSRO: Bilateral Sagittal Split Ramus Osteotomy; MMO: Maximum Mouth Opening; IMF: Inter Maxillary Fixation

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Introduction

Recently, the significance of cosmetic features has been stressed in mandibular setback surgery in addition to the advantages of functional improvement [2]. Therefore, when assessing a patient and creating a treatment strategy, it is crucial to foresee facial changes after setback surgery [3]. Following orthognathic surgery, changes in both the hard and soft components of the face result in complicated facial modifications [4]. Even if the osteotomy is carried out as intended, unanticipated bone regeneration may take place right away. The majority of research on predicting the appearance of the face following surgery focuses on the changes to the hard and soft tissues on the frontal aspect from the side. The modifications on the posterior side are the subject of relatively few investigations [5]. Additionally, a lot of observations on the post-operative modifications have centered on the mandible's gonial angle from a lateral aspect. There are few reports on alterations in the mandibular angle, including the condyle [6]. Predicting the change in the condyle's position and the change in the mandibular angle's width is crucial after mandibular Bilateral Sagittal Split Ramus Osteotomy (BSSRO) in the prognathic mandible. This study looked at whether the width shift was caused by mesial and distal intersegmental bone interference, which diminished after healing [7]. During the mandibular osteotomy, the mesial distal intersegmental interference was cut in a way that favored widening the face. In order to better understand how to forecast postoperative changes at the mandibular angle after the prognathic mandible sets back, this study was carried out [8].

Methods

This study included 40 participants in total based on the following standards: Mandibular prognathism without or with chin deviation of less than 3mm; mandibular setback caused by a BSSO with or without genioplasty; lack of associated maxillary orthognathic procedures; availability of preoperative and postoperative radiographs with a follow-up of 12 months or

longer; and absence of trauma or associated craniofacial anomaly [9]. The same surgeon used the Haunsack technique to perform bilateral sagittal split ramus surgery on all patients in the same hospital setting. Internal fixation was accomplished with three titanium screws on each side. The patients were assessed over the course of the study in four stages, and the Maximum Mouth Opening (MMO) was determined by using the incisal edges of the upper and lower first incisors as two fixed points and a caliper with a calibrated plate that had a 0.2-millimeter precision [10]. Consequently, two screws were put in the lower jaw's top border, while a third screw was put in the bottom border (inverted L method). IMF (Inter Maxillary Fixation) was not carried out for any of the patients who had wires in their mouths, and for 7-10 days, just 3.16 medium intermaxillary elastic was employed. All patients taking part in the research on how they were given the freedom to leave the study whenever they chose, and the implementation phases of the indicated strategy were justified. Compared to Mr. Argon's comparable study, which included 20 patient samples, the study samples were larger than what was necessary (42 patients) [11]. After data collection, SPSS software was used to statistically evaluate the collected data. The four groups of data were subjected to the Smirnoff Kolmograph test, which was used to determine the mean and standard deviation. The Repeated measurement test was applied to compare the data from the first stage of the examination after one, three, and six months following the operation.

Results and Discussion

Long-term horizontal and vertical alterations and mean surgical motions. The average forward horizontal displacement at B point was 2.3mm (or 32.0%), with a mean surgical setback of 7.4mm. The average surgical setback at the pogonion was 7.3mm, with a 2.7mm (or 43.1%) average forward horizontal displacement [12]. The average surgical setback at the gonion was 6.4mm, with a 3.1mm (or 48.7%) average forward horizontal displacement. The Kolmogorov-Smirnov test was employed to verify the data's assumed normality following final recording of the data, which did not receive a rejection for any of the four levels of normalcy. The maximal mouth opening of the patients was compared in four time periods before the operation and in 1, 6 and 12 months after the operation using the repeated measurement technique. The test's outcome revealed a substantial distinction between the four groups (P 0.001). At the error level of =0.05, a two-by-two comparison of the amount of mouth opening in several examinations was performed using the pairwise comparison test [13]. Although there was a statistically significant difference between the patients' maximum opening of the mouth before the operation and 1 month after the operation, as well as before the operation and 6 months after the operation, the maximum opening of the mouth before the operation and 6 months after the operation. In other words, even if there was a difference, the size of it was so minor that it was not regarded as statistically significant.

Conclusion

Except for the correction of the ramus height and volume, the results of this study indicated a favorable effect and stability of BSSRO on asymmetric mandibular prognathism.

Acknowledgment

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