

INCIDENCE OF SKELETAL CLASS 3 MALOCCLUSION IN PATIENTS WHO UNDERWENT SURGICAL CORRECTION

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ABSTRACT

Introduction: Skeletal class III malocclusion represents dentofacial deformity with mandibular prognathism. Orthognathic surgery along with orthodontic treatment is required for the correction of mandibular prognathism. The surgical correction procedures in orthognathic surgery includes advancement of the maxilla, deprojecting the mandible or a combination of both. In the present study we assessed the incidence of mandibular prognathism who underwent surgical correction.

Materials and methods: Data is extracted from Patient management software of Saveetha dental college. The data is segregated based on inclusion and exclusion criteria. The data includes patients who underwent surgical procedures for correction of jaws. The collected data is entered in MS Excel sheet, and transferred to SPSS for analysis. Chi square test is used for analysis. P value less than 0.05 is considered statistically significant. Results were made into graphs and evaluated.

Results: 16.44% patients underwent BSSO surgery for class 3 malocclusion in lower arch. 4.11% patients underwent genioplasty for chin correction. 1.37% patients underwent a combination of BSSO and genioplasty. Chi square test was done, p value was found to be statistically significant ($p < 0.05$).

Conclusion: Bilateral sagittal split osteotomy (BSSO), is the most commonly performed surgery for correction of the mandible. Within the limits of the present study, it is concluded that 16.44% patients underwent BSSO surgery for class 3 malocclusion in lower arch.

Keywords: malocclusion, class 3, orthognathic surgery, BSSO, innovative study.

INTRODUCTION

Skeletal class III malocclusion represents dentofacial deformity with mandibular prognathism (1). Class III malocclusion arises due to deficient growth of maxilla (maxillary retrognathism) or increased growth of the mandible (mandibular prognathism) (2). Nonsurgical treatment of Class III problems remains a challenge in this profession. However, early diagnosis and intervention of Class III malocclusion may be helpful in reducing the extent of class III malocclusion in late adolescence (3).

Factors like growth stimulus, habits like thumb sucking, mouth breathing, tongue habits, atypical swallowing, airway obstruction, functional mandibular shifts because of respiratory needs, size of the tongue, hormonal imbalances, trauma, premature loss of primary teeth, congenital defects like cleft lip, cleft palate plays an etiological role in causing mandibular prognathism (3,4). Treatment can be started in the developing stage when the problem is identified. Some studies stated that treatment should be carried out in patients below 10 years of age to enhance the orthopedic effect (5). In cases of severe malocclusion there are three possible treatment options- early modification of growth, orthodontic camouflage through dental compensation, or combined orthodontic and surgical repositioning of the jaws i.e., orthognathic surgery (6).

Orthognathic surgery is a set of procedures to establish an aesthetic facial profile, in correcting the malocclusion and to improve the quality of life in these patients. The surgical corrections include advancing the maxilla, deprojecting the mandible or combination of both (7). Orthognathic surgery along with orthodontic treatment is required for the correction of mandibular prognathism in adults. The two most commonly applied surgical procedures to correct class 3 malocclusion are sagittal split ramus osteotomy and intraoral vertical ramus osteotomy (8). Our team has extensive knowledge and research experience that has translated into high quality publications (15), (16–25) (26), (27–

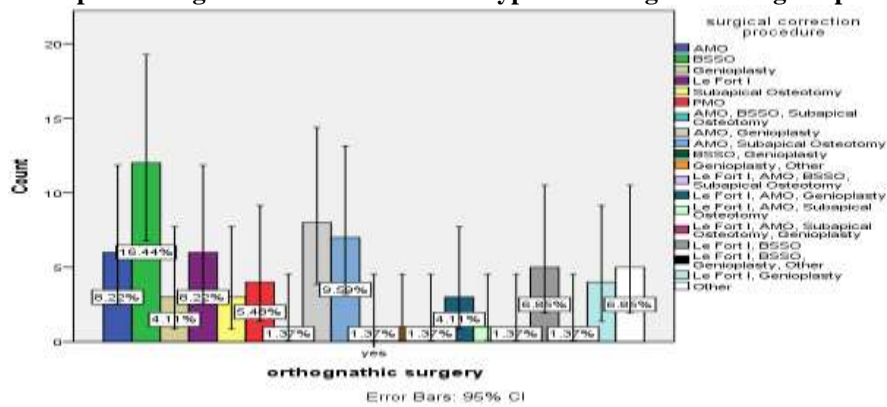
29).(30,31),(32,33),(34) (Su et al. 2019; Wan et al. 2020; Felicita and SumathiFelicita 2018). The present study is aimed at analysing the incidence of mandibular prognathism who underwent surgical correction.

MATERIALS AND METHODS

The present study is a retrospective study. This study was approved by the institutional ethnic board. The data was collected from patients visiting Saveetha dental college who underwent orthognathic surgery. Data is extracted from Patient management software of Saveetha dental college from the time period feb 2020-feb 2021. Inclusion criteria- patients who underwent surgical correction procedures and site; Exclusion criteria- PID, name, age, gender. The data collected were reviewed and cross verified. The collected data is entered in MS Excel sheet, and transferred to SPSS for analysis. Chi square test is used for analysis. P value less than 0.05 is considered statistically significant. Results were made into graphs and evaluated.

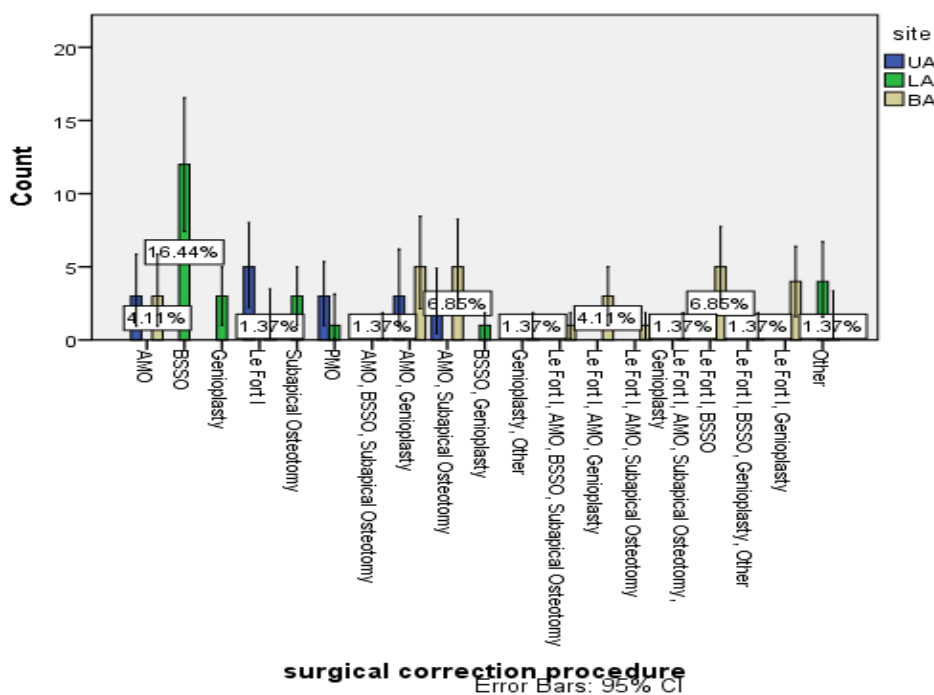
RESULTS AND DISCUSSION

Figure 1. Graph showing distribution of different types of orthognathic surgical procedures:



X axis represents the different types of procedures and Y Axis represents its number. From the graph it is inferred that BSSO is a more commonly performed surgical procedure when compared to others.

Figure 2: Graph showing association of jaws and Orthognathic surgical procedures:



X Axis represents different surgical procedures performed in different arches where the blue bar represents the upper arch, green bar represents the lower arch and the yellow bar represents both arches. Chi square test was done, p value was

found to be statistically significant ($p < 0.05$) which indicates that there exists a statistically significant difference among different procedures in different arches.

Bilateral sagittal split osteotomy (BSSO), is the most commonly performed surgery for correction of the mandible with or without maxillary correction. Indications for bilateral sagittal split osteotomy include horizontal mandibular excess / deficiency / asymmetry. It is the commonly performed procedure for mandibular advancement and can also be utilized for a mandibular setback (7,9). In the present study, 16.44% patients underwent BSSO for mandibular correction.

The chin is considered as one of the most notable structures of the face and the aesthetic contour of the lower third of face has become a frequent complaint among patients with facial deformities. Chin morphology contributes to facial aesthetics as a result of the maintenance of the balance between nose, lips, chin and perioral region (7,9,10). Genioplasty is indicated when there is significant retrogenia of the chin, but with an acceptable occlusion (11). This procedure is accepted in patients with dentofacial deformities, where it can be used in combination with BSSO, as well as in isolated situations of complaints by the patients in relation to chin (12). The present study showed that 4.11% patients underwent genioplasty for chin correction and 1.37% patients underwent a combination of BSSO and genioplasty.

The LeFort I osteotomy is named after the fracture pattern that extends from the nasal septum, along the tooth apices, and through the pterygomaxillary junction (13). It is a common and safe orthognathic intervention with reliable long-term results. It is indicated for the correction of class II and III malocclusions and other dentofacial asymmetries. This surgery is also performed along with BSSO in some cases where it requires surgery of both the jaws (Hyman and Buchanan 2013). In the present study, 6.85% patients underwent Lefort I osteotomy along with BSSO and 1.37% patients underwent Le fort I osteotomy along with BSSO and genioplasty.

Our team has extensive knowledge and research experience that has translated into high quality publications (J et al. 2018), (Wahab et al. 2018), (Mudigonda et al. 2020), (Perumal et al. 2020), (Wang et al. 2021), (Li et al. 2019)

CONCLUSION

Orthognathic surgery is one of the useful procedures in restoring the patient's natural face. Within the limits of the present study, we concluded that 16.44% patients underwent BSSO surgery for class 3 malocclusion and 1.37% patients underwent a combination of BSSO and genioplasty for correction of the mandible. Further studies should be conducted in a larger population to know more about the available treatment options for a better diagnosis and treatment planning.

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Conflict of interest:

The author declares no conflict of interest.

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