Orthodontic Consideration of Surgical-orthodontic treatment for Facial Asymmetry

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Facial asymmetry is one of the most challenging dentofacial deformities and is not uncommon in skeletal Class III deformity. Appropriate surgical-orthodontic treatment starts with accurate diagnosis by evaluating all dimensions and determining the nature of the asymmetry because it might be a combination of hard-tissue and soft-tissue components. General skeletal and dental morphologic features of asymmetric skeletal Class III deformity are maxillary hypoplasia and roll asymmetry, mandibular hyperplasia as well as roll and yaw asymmetry, proclined maxillary incisors, retroclined mandibular incisors, and buccal/lingual tilting of maxillary/mandibular posterior teeth on the deviated side. In severe form of this deformity, a functionally and aesthetically acceptable result can only be achieved by combined surgical-orthodontic treatment. Surgical-orthodontic treatment planning should not only base on skeletal and dental assessment of the deformity, but also on post-treatment stability. In our center, the preferred surgical plan is bimaxillary osteotomies. At present, asymmetric posterior impaction of the maxilla in association with asymmetric mandibular setback using bilateral mandibular ramus osteotomies and genioplasty is usually the treatment of choice. During planning in orthognathic surgery four factors should be considered: (1) the need for maxillary segmentation, (2) the need for overcorrection, (3) the setup of surgical occlusion, and (4) the limit of proximal segment rotation. This presentation will introduce the orthodontic consideration for treating asymmetric Class III deformity using surgery-first approach.

Orthodontic Consideration for Bimaxillary Advancement for Obstructive Sleep Apnea

Maxillomandibular advancement (MMA), although effective, typically is reserved for refractory or severe obstructive sleep apnea (OSA), or for those with significant maxillomandibular deficiency. The MMA procedure traditionally consists of bilateral sagittal split osteotomies of the mandible and a Le Fort I osteotomy of the maxilla, and it generally involves 10-12 mm maxillomandibular advancement. However, it is important to achieve maximal advancement while maintaining a functional dental occlusion as well as balanced aesthetic facial appearance. Interestingly, although many patients may be left with bimaxillary protrusion after such advancement surgeries, very few patients are dissatisfied with their appearance. It can primarily be explained by the fact that all the surgeries reported were done on Caucasian patients. Subjecting Asian patients to MMA for OSA usually results in aesthetic problems because majority of them have bimaxillary protrusion before surgery, which leads us to develop a modified MMA technique (ie., anterior segmental osteotomies and standard Le Fort I and bilateral sagittal split osteotomies with or without counter-clockwise rotation).

In order to achieve a functionally and aesthetically acceptable result, combined surgical-orthodontic treatment is warranted. Surgery-first approach can achieve improvement early. This presentation will introduce the modified MMA technique and report its stability and outcome for treating OSA. The principles of planning surgical-orthodontic treatment for adult OSA also will be offered.

Long-Term Results of Surgery-First Approach in Correction of Class III Asymmetry

Although several studies have reported the advantages of the surgery-first approach for orthognathic correction of Class III deformity, these studies rarely worked on patients with facial asymmetry. The purpose of this study was therefore to evaluate the outcome of bimaxillary surgery for asymmetric skeletal Class III deformity using surgery-first approach. Sixty-five patients who consecutively underwent at least a Le Fort I and a bilateral sagittal split osteotomy of the mandible were identified in the author's patient database. Standardized frontal photographs were used to measure the change in midfacial, intercommissural, chin to midface, chin as well as upper, middle and lower contour to ideal facial midline angles. The facial midline symmetry index, facial contour symmetry index, and an overall score of facial symmetry, were also calculated. The results showed that there is a statistically significant improvement of the angles measured and of the facial midline and facial contour symmetry index. These findings demonstrate that the surgical-orthodontic treatment with surgery-first approach can successfully maintain or improve facial symmetry.