Surgical-Orthodontic Treatment in Class III Skeletal Anomalies

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Abstract—The correction of dento-facial deformity often requires combined surgical and orthodontic therapy. Poor facial appearance and functional difficulties are the motivating factors for seeking treatment in patients with Class III skeletal anomalies. This presentation aims to show the surgical and orthodontic procedure in correcting Class III patients.

Keywords—skeletal anomalies, orthognathic surgery, class III malocclusion.

I. INTRODUCTION

During the last few decades our profession has witnessed an intense interest in the treatment of facial deformities.[1,2,3,4] Orthognathic surgery has become an acceptable treatment plan for patients with various maxillofacial deformities with pleasing results. The rehabilitation of severe Class III adult patients requires a complex interdisciplinary orthodontic and orthognathic approach. The interdisciplinary team provides the professional opinion and guidance for diagnosis of the problem, selection of orthodontic and surgical treatment plan.[5,6]

This presentation aims to show the surgical and orthodontic procedure in correcting complex Class III patients with long faces.

The goals of combined surgical and orthodontic treatment are:

• to improve facial and dental aesthetics
• a functional, balanced and stable occlusion
• a satisfied patient.

The management protocol for facial deformity should comprise the:

• History
• Clinical examination
• Investigations
• Initial diagnosis
• Treatment plan
• Presurgical orthodontics
• Final treatment plan
• Surgery

• Postsurgical orthodontics.
• Retention.

When appropriate, restorative dentistry, psychological intervention or support and speech therapy will be required[7].

II. CASE REPORT

A 19 year old male patient presented to the orthodontist requesting a better dental and facial appearance. The medical and familial history were not significant in determining the etiological factor.

Facial features consisted of large lower facial height, lack of malar proeminence, concave profile, prognathic mandible, retruded maxilla.

Intraoral findings were also significant: severe class III malocclusion, large openbite, midline shift, protrusion of lower incisors, posterior crossbite.

The lateral cephalogram was analysed with the Cephx software and revealed:

• Extremely large lower face height
• Retruded maxilla
• Retruded upper incisors
• Large intercincisal angle(139.34°)
• Mandible forward to maxilla(concave profile)
• Class III skeletal relationship(ANB – 6.18°)
• Severe high angle associated with openbite
• Upper lip retraction.

Fig.1 Initial facial situation. Large lower facial height, lack of malar proeminence, concave profile.
Fig. 2 Initial occlusion. Severe class III malocclusion, large openbite.

The cephalometric prediction suggested that surgical movement would optimize the dental and facial balance.

The treatment plan consisted of:
- Pre-surgical orthodontics
- Bimaxillary surgery
- Post-surgical orthodontics
- Genioplasty, rhinoplasty.

The patient underwent presurgical orthodontics in order to achieve the alignment and to facilitate surgical intervention.

The surgery consisted of a Le Fort I osteotomy impaction of the posterior maxilla and bilateral sagittal split ramus osteotomy setback of the mandible (Obwegeser DalPont). Rigid internal fixation with plates and screws were used for stabilisation of the osteotomy sites. Heavy intermaxillary elastics maintained the occlusion immediately after surgery. In a second phase, genioplasty and rhinoplasty were performed in order to obtain a good facial balance.

Postsurgical orthodontic treatment was required in order to establish normal occlusal relations. The evaluated parameters significantly improved following orthodontic/surgical treatment.
Fig. 7 The orthodontic treatment was continued after the surgical intervention and provided good intermaxillary contacts and alignment.

Fig. 8 Dental study models – before and after treatment, lateral view.

Fig. 9 Dental study models – before and after treatment, frontal view.

Fig. 10 Post-surgical frontal and lateral facial characterics.

Fig. 11 Post treatment OPG.

III. DISCUSSION:

Among all dentofacial abnormalities, skeletal class III anomalies are one of the most complicated problems in both childhood and adulthood[8,9]. Class III skeletal problems are treated with a combination of orthodontic and orthopedic mechanics in growing individuals. In adulthood, correction of the Class III malocclusion usually requires complex surgical procedures.

Surgical/orthodontic treatment allows attainment of an optimal aesthetic and functional result in Class III long face patients[10]. This approach represents a useful option for the treatment of these anomalies.

IV. CONCLUSIONS

Surgical-orthodontic treatment is often the only option to obtain good facial balance in cases with dento-facial deformity.

The outcome results greatly depends on the experience and clinical skills of the interdisciplinary team.

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V. REFERENCES


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