Abstract
This case report describes the surgical-orthodontic treatment of a 26-year-old post-pubertal male patient with a Class III dentofacial deformity. In the pre-surgical orthodontic phase of treatment, a reverse overjet of 5.5 mm was created and arch compatibility was obtained. A mandibular set back with BSSO was performed during surgery to restore ideal overjet, overbite, occlusion and optimal esthetics. After 1 year of treatment, the results remained stable.

Keywords: Interdisciplinary approach, orthognathic surgery, skeletal Class III

Introduction
Many things must be considered when a patient presents with a class III malocclusion. Is growth still present? Will a surgical procedure be necessary? If so, will the patient and/or parents be amenable to a surgical treatment plan? As Graber[1] states in his text, "Many diagnostic factors must be analyzed, a differential diagnosis must be made and in light of your clinical experience as well as that of others, the indication and the contraindications of therapeutic modifiability must be weighed."

In today’s often complex treatment plans, other physicians and dentists are integrated into the planning and treatment process. The contemporary orthodontist must not only keep up with current technical trends in orthodontic treatment but also successfully communicate, negotiate, and navigate the patient to a successful result. Often the patient’s primary reason for seeking treatment is to improve his or her dental and/or facial esthetics.[2] Today’s orthodontist has many treatment options to choose from in reaching his or her goals. Virtually all these treatment options are designed to reach the same general orthodontic goal: class I occlusion. However, each treatment choice almost always has an effect on the face and facial esthetic. This is very true in orthodontic treatment and may be even more dramatic in the area of combined orthodontics and orthognathic surgical cases.[3] Adult patients with dentofacial skeletal deformities like a Class III malocclusion require careful treatment planning, an integrated approach, and patient cooperation.[4]

In almost all soft-tissue relationships of the face, the position of the underlying hard tissue is a primary determinant of overlying soft-tissue morphology. This is true for the lips, teeth, chin and bony chin projection, and malar prominence. Growth of the face is an enormously complex function of skeletal, dental and soft-tissue growth, with genetic and environmental factors both playing significant roles in the final facial form. The idea that orthodontics and facial esthetics should be considered concurrently is not new.

Facial esthetics has been of great interest to orthodontists in the year since Angle, Hellman, Case and Farkas Opinions of what constitutes an attractive face have come from many sources and have been more than adequately covered in the orthodontic literature.[5-12] Contemporary orthodontists are familiar with the principles of designing treatment to improve the profile rather than affecting it adversely.

Although Class II dentofacial deformities are more common, the need for treatment and improvement in terms of facial profile is generally greater in class III patients. The purpose of this article is to illustrate such a case and to show the positive effect that certain treatment decisions have on the profile.

Case Report
A 26-year-old male patient presented with the chief complaint of unaesthetic facial and dental appearance [Figures 1a-1c]. He was treated by a general dentist when he was 14 years old. The dentist had extracted in-standing 22. He also reported that there was no family history of class III malocclusion. After thorough clinical examination and cephalometric analysis, surgical-orthodontic treatment was recommended.

Discussion
To allow adequate surgical movement, 14 were extracted and the maxillary incisors were retracted. No extractions were performed in the mandibular arch because there was minimal crowding, no retraction was necessary, and a class II molar relationship at the end of the treatment was considered acceptable. The mandibular incisors were
Devanna and Kakkirala: Surgical-orthodontic correction of a Class III dentofacial deformity

Figure 1: (a-c) Pre-treatment photographs

Figure 2: (a-b) Prior surgery photographs

Figure 3: (a-b) Surgical treatment objective (STO)
aligned and the archforms were coordinated [Figures 2a and 2b].

Surgery included a BSSO set back of about 7.5 mm bilaterally which was as determined by the prediction tracing [Figures 3a and 3b]. No surgery was planned for the maxilla as the patient had a prominent nose. Rigid internal fixation with screws and plates was used to stabilize the osteotomy site, and splint fixation was done during the
surgery to maintain the result [Figures 4a-4c]. The patient was followed up closely after the procedure and orthodontic treatment was resumed 6 weeks after the surgery.

Six months later, the fixed appliances were removed [Figures 5a and 5b], and a retention program was initiated. Ricketts superimposition of pre- and post-treatment cephalometric tracings confirmed the success of treatment [Figures 6a-6d]. Intentional root canal treatment and tooth reshaping was done w.r.t. 13. Another 1 year later, the results had remained stable [Figures 7a-7e].

Surgical-orthodontic treatment is sometimes the only option for achieving an acceptable occlusion and a good esthetic result in a patient with a class III dentofacial deformity, as illustrated in this case report with [Figure 8] showing the improvement in the profile of the patient. Correction of a Class III dentofacial deformity requires a multi-disciplinary team approach to ensure a satisfactory outcome. This case report emphasizes upon an interdisciplinary approach to improve the quality of life.

References

1. Graber TM. Orthodontics, principles and practice. Philadelphia: WB Saunders; 1967.
2. Dann C 4th, Phillips C, Broder HL, Tulloch JF. Self-concept, class II malocclusion, and early treatment. Angle Orthod 1995;65:411-6.
3. Sarver DM. Esthetic Orthodontics and orthognathic surgery. St. Louis, Missouri, U. S. A: Mosby; 1998.
4. Vig KD, Ellis Erd. Diagnosis and treatment planning for the surgical-orthodontic patient. Dent Clin N Am 1990;34:361-84.
5. Tweed CH. Indications for the extraction of teeth in orthodontic procedures. J Orthod Oral Surg 1944;30:401-28.
6. Angle EH. Treatment of malocclusion of teeth and fractures of the maxilla. 6th ed. Philadelphia: SS White Dental Mfg; 1900.
7. Peck S. A concept of facial esthetics. Angle Orthod 1970;40:284-317.
8. Shaw WC. The influence of children’s dentofacial appearance on their social attractiveness as judged by peers and lay adults. Am J Orthod 1981;79:299-314.
9. Burstone CJ. The integumental profile. Am J Orthod 1958;44:1-25.
10. Holdaway RA. A soft tissue cephalometric analysis and its use in orthodontic treatment planning. Am J Orthod 1984;84:1-28.
11. Holdaway RA. A soft tissue cephalometric analysis and its use in orthodontic treatment planning. Am J Orthod 1984;85:279-93.
12. Merrifield L. The profile line as an aid in critically evaluation facial esthetics. Am J Orthod 1966;52:21-84.

Source of Support: Nil, Conflict of Interest: None declared.