Research Paper Medical Science

Combined Orthognathic and Facial Aesthetic Surgery- A Case Report.

Dr. RiteshSinglaMDS Assistant Professor, Dept. of Orthodontics, Manipal College of Dental Sciences, Manipal 576 104.

Dr. RiteshSinglaMDS Assistant Professor, Dept. of Public Health Dentistry, Manipal College of Dental Sciences, Manipal 576 104.

ABSTRACT

A fast metamorphosis has taken place from the late 1960s to the present period. This has carried orthognathic surgery from its infantile state of a technical procedure to a sophisticated surgical procedure(s).There are multiple hard- and soft-tissue considerations in facial surgery. Proper diagnosis coupled with a comprehensive treatment plan utilizing a team approach provides safer and more predictable outcomes. The expanding range of possibilities exists to provide patients with treatment options for improvement in the aesthetic, functional, and rejuvenative aspects of their facial features. Orthognathic surgeries create outcomes that are unsurpassed by any other specialty. This article presents a case in which orthognathic surgery is combined with genioplasty, angular osteotomy and rhinoplasty.

KEYWORDS Orthognathic surgery, Rhinoplasty, Genioplasty.

Introduction

For nongrowing patients with skeletal Class II malocclusions, there are only 2 possible treatment approaches: (1) orthodontic camouflage, based on retraction of the protruding maxillary incisors to improve both dental occlusion and facial esthetics without correcting the underlying skeletal problem; or (2) orthognathic surgery to reposition the mandible or the maxilla. Skeletal Class II problems are due to mandibular deficiency or downward backward rotation of the mandible caused by excessive vertical growth of the maxilla. Surgical treatment, therefore, consists of mandibular advancement, superior repositioning of the maxilla, or a combination. Mandibular deficiency is the problem in about two thirds of surgical patients; one third require maxillary surgery, either alone (15%) or combined with mandibular surgery (20%).[1]

Case Report

A 16years-old post-pubertal female patient came to the department with the chief complaint of forwardly placed upper and backward placed lower front teeth. History of orthodontic treatment (with removable appliance) and extraction of all first premolars 4years back. Extra orally she had a mesoprosopic facial form, mesomorphic body type with a concave facial profile. Intra orally she had class I molar relation on right side, end on left side and class II canine relation on left side, edge to edge on right side with an overjet of 8 mm, and overbite of 5 mm (Fig.1). Cephalometric analysis showed a skeletal Class-II relationship with average growth pattern (Fig.2).

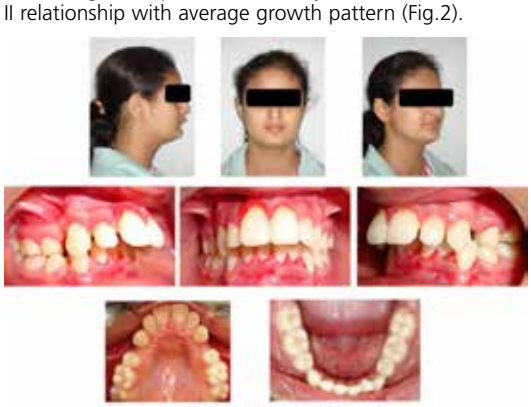

Figure 1: Pre-treatment Photographs

Figure 2: Pre-treatment OPG and Lateral Cephalogram

Treatment Objectives

- Correction of Skeletal discrepancy.
- Achieving class I molar and canine relation.
- Obtaining ideal over jet and overbite.
- Attaining a pleasing profile.

Treatment Plan

Pre-surgical Orthodontics:

- Non-Extraction treatment plan.
- Fixed mechanotherapy (022" MBT slot).
- Minimum anchorage.
- Initial alignment.
- Retraction.

Surgical Treatment:

- Bilateral saggital split osteotomy (BSSO).
- Genioplasty.
- Angular osteotomy.
- Rhinoplasty.

Post-surgical Orthodontics:

Finishing and Detailing.

Treatment Progress

Pre-surgical Orthodontics:
The mandibular third molars were extracted. First and second molars were banded and the remaining teeth bonded with preadjusted .022-in straight-wire fixed appliances. After initial leveling and aligning of both arches, remaining space in the maxillary arch was closed with a 0.019 × 0.025.-in stainless steel (SS) archwire by using sliding mechanics with a power chain (Fig.3,4) The presurgical orthodontic phase lasted approximately 11 months.

Figure 3: Pre-Surgical Photographs

Figure 4: Pre-Surgical OPG and Lateral Cephalogram

Preoperative Surgical Planning & Surgery:
Upper and lower impressions were taken, and study casts were prepared. A wax bite was recorded in Class I molar relation. The models were mounted on a semi-adjustable articulator. Final splint was fabricated using orthodontic cold-cure resin (Fig.5). Surgical hooks were then soldered to the SS archwires and placed in both arches. The surgery involved sagittal split osteotomies (Fig.6) with approximately 5 mm advancement of the mandible along with reduction genioplasty, angular osteotomy and rhinoplasty (Fig.7,8,9).

Figure 5: Fabrication of Surgical Splint

Figure 6: BSSO

Figure 7: Angular Osteotomy

Figure 8: Reduction Genioplasty

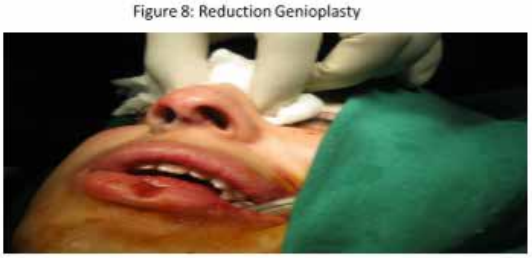

Figure 9: Rhinoplasty

Results
Because of the skeletal pattern and the surgical approach that was chosen, excellent facial and occlusal results were achieved (Table 1) Esthetically, facial convexity decreased, the face became less retrognathic, and lower face height decreased. Lip competency was improved significantly, and the patient was satisfied with the results of treatment. Well-established Class I canine and molar relationships were obtained, rotations were corrected, and the teeth were aligned. Ideal overjet and overbite were established (Fig.10), and the final panoramic radiograph confirms root parallelism (Fig.11).

Figure 10: Post-Surgical Photographs

Discussion

The surgical correction of such severe dentofacial deformities is a functional and esthetic surgery that affects patients' self-perception. The patient appreciated the improvement in his facial appearance after orthognathic surgery that was associated with a noted improvement in his psychosocial adjustments.[2]

Orthognathic surgery is only one part of the process to correct a dentofacial deformity. The process starts with the initial diagnosis, followed by a treatment plan, and then patient consent.[3,4] Treatment generally begins with a dental assessment to correct decay, followed by orthodontic decompensation in preparation for surgical intervention. Orthognathic surgery is followed by postoperative orthodontia to maximize the occlusal relationship.

Table 1: Cephalometric Analysis

Area of study	Measurement	Mean	Pretreatment	Post treatment
Sagittal relationship	SNA	82	84	82
	SNB	80	77	80
	ANB	2	7	2
	N Pg/FH	87	84	87
	Wits appraisal	–1–0mm	5mm	1mm
	Pg to NB dist.	2–3mm	5mm	2mm
Vertical relationship (divergency)	Mand. Pl. to FH	25	28	26
	Mand. Pl. to SN	32	33	32
	axis S Gn/SN	60–66	64	60
	Lower face height	64mm	60	65
Dental relationship (incisor position)	U Inc. to SN	103	115	100
	U Inc. to NA	22	26	21
	U Inc. to NA dist.	4mm	6mm	3mm
	U Inc. to L Inc.	130–132	118	130
	L Inc. to Mand.	90	95	90
	L Inc. to NB	25	27	25
	L Inc. toNB dist.	4mm	5mm	4mm
Soft tissue relationship	Upper lip to E-line	–4mm	0mm	-3mm
	Lower lip to E-line	–2mm	-5mm	-2mm
	Nasolabial angle	90–110	88	95

REFERENCES

1. P. M. Sinclair. Orthodontic considerations in adult surgical orthodontic cases. Dent Clin North Am 1988;32:509–28. 2. K. DrylandVig, E. Ellis. Diagnosis and treatment planning for the surgical-orthodontic patient.ClinPlastSurg 1989;16:645–58. 3. R. Sabri. Orthodontic objectives in orthognathic surgery: state of the art today. World J Orthod 2006;7:177–91. 4. T. Kitahara, A. Nakasima, S. Kurahara, Y. Shiratsuchi. Hard and soft tissue stability of orthognathic surgery. Angle Orthod 2009;79:158–65.