

Management of Class III malocclusion with Facemask therapy and comprehensive orthodontic treatment: A Case Report

Rekha Sharma¹, Vinni Arora², Deepak Sindhu³

¹Professor & Head, department of Orthodontics, Post graduate Institute of Dental Sciences, Rohtak

^{2,3} Junior Resident, department of Orthodontics, Postgraduate Institute of Dental Sciences, Rohtak

Abstract

Orthopedic correction of Class III malocclusion in a growing patient is crucial as it can circumvent surgical procedures after growth completion. Interception carried out at early age with various growth modification procedures helps to avoid the detrimental effects produced by the facial disfigurement on the patient's social life. This case report describes the treatment of a patient aged 13 years 6 months who had a skeletal Class III malocclusion. The treatment plan involved the use of a reverse pull headgear (facemask) and multibracket appliance therapy resulting in successful correction of the Facial profile and Jaw bases with a Dental Class I molar and canine relationship, an ideal overjet and overbite.

Keywords: Facemask, Class III malocclusion

INTRODUCTION

Skeletal Class III malocclusion is one of the most challenging orthodontic problem. When deciding between orthodontic and surgical approaches to the malocclusion, a good understanding of the age, amount, and direction of growth in Class III patients comes into play.¹ Class III malocclusion is presented as mesially positioned lower first molar relative to the upper first molar as described by Edward H Angle.² This relationship may result from a normal maxilla and a mandibular skeletal protrusion or a maxillary retrusion and a normal mandible or a combination of maxillary retrusion and mandibular protrusion.³ Patients of Class III malocclusion are managed well with maxillary expansion and facemask therapy. The correction occurs by a combination of skeletal and dental movements in both the vertical and antero-posterior planes of space.⁴

CASE REPORT

This was a case report of a 13 year-old male patient who reported to the clinic with the complaint of her lower jaw being in front. The pre-treatment records showed that the patient had normal vertical proportions, a concave profile and good facial symmetry. Intraorally there was reverse over jet [Figure 1]. The cephalometric evaluation confirmed a Class III skeletal relationship with maxillary deficiency.

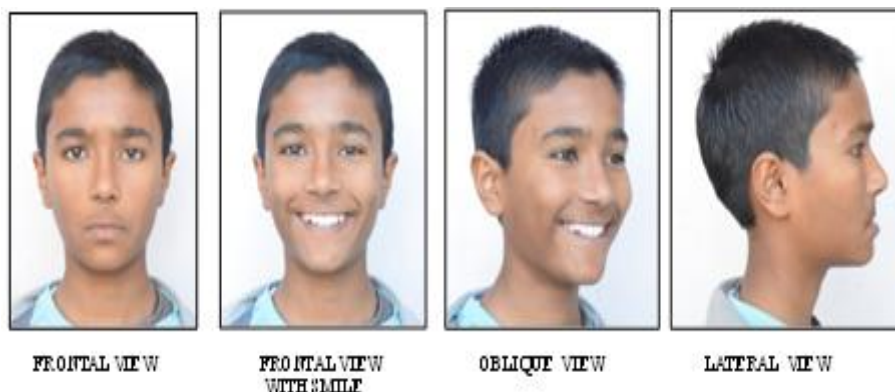




Fig. 1: Pretreatment Photographs

TREATMENT OBJECTIVES

Early Class III treatment creates an environment in which more favorable dentofacial growth can occur.

Treatment objectives include:

1. Prevention of progressive irreversible soft tissue or bony changes - Class III malocclusion is often accompanied with an anterior crossbite.
2. Improvement of skeletal discrepancies - Early orthopaedic treatment using facemask improves the skeletal relationship, which in turn minimizes overclosure of the mandible and retroclination of the mandibular incisors.
3. Improvement of occlusal function - Early orthopedic treatment may help in eliminating centric occlusion/centric relation (CO/ CR) discrepancies and avoid adverse growth.
4. Early correction in mild and moderate Class III patients may eliminate the necessity for future orthognathic surgery.
5. Pleasing facial esthetics helps in improving the psychosocial development of the child.

TREATMENT PROGRESS

Treatment was started with a Petit type facemask, which was used along with a bonded maxillary expansion appliance with hooks, to engage elastics [Figure 2]. Intraorally, a bonded hyrax appliance was cemented. Though, the patient did not have a constricted upper arch, Alternate rapid maxillary contraction and expansion protocol was followed to disarticulate the maxilla from the circum-maxillary sutures.



Fig. 2: Bonded Hyrax Appliance with Facemask Therapy

TREATMENT RESULTS

After 6 months of Facemask therapy, the anterior crossbite was corrected. Analysis of the cephalometric radiograph and photograph revealed a marked improvement in patient's facial profile with slight fullness in the maxillary anterior region.

DISCUSSION

The protraction facemask therapy has been used in the treatment of patients with Class III malocclusion and a maxillary deficiency. The facemask has an adjustable anterior wire that can accommodate a downward and forward pull on the maxilla with elastics. Extraoral elastics are attached near the maxillary canines with a downward and forward pull of

30° to the occlusal plane in order to minimize the tipping of the palatal plane. Protraction of maxilla usually requires force of 300-600 g per side, depending on the age of the patient. Patients are instructed to wear the appliance for 12-14 hours/day.

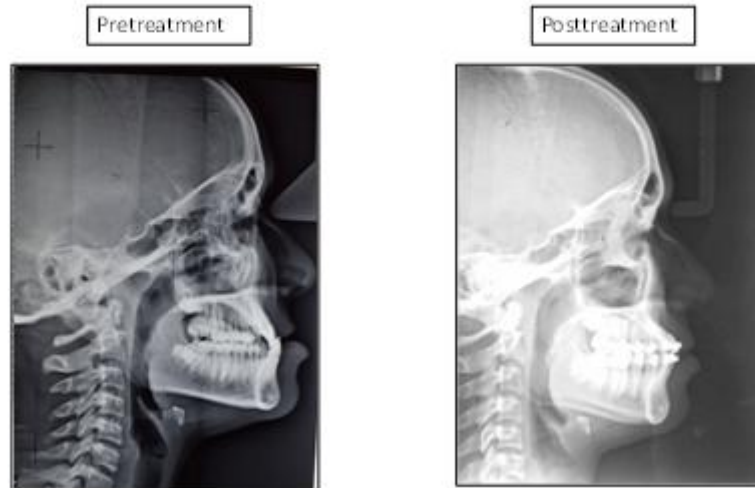


Fig. 3: After Facemask Therapy

Correction using facemask therapy along with palatal expansion occurs by a combination of skeletal and dental changes. These changes occur as a result of forward movement of the maxilla, downward and backward rotation of the mandible and proclination of the maxillary incisors.



Fig. 4: After Comprehensive Orthodontic Treatment



Alternate Expansion and contraction protocol helps to “disarticulate” the maxilla at the circum-maxillary sutures. Such a “disarticulated” maxilla would respond better to the anteriorly directed orthopedic forces exerted by the facemask. Depending on the severity of the malocclusion, anterior crossbite can be corrected from 5 to 6 months of maxillary expansion and protraction with facemask. Comprehensive orthodontic treatment was done for levelling and alignment of upper and lower arches.

REFERENCES

- [1]. Baccetti T, Reyes BC, McNamara JA Jr. Craniofacial changes in Class III malocclusion as related to skeletal and dental maturation. *Am J Orthod Dentofacial Orthop* 2007;132:171.e1-171.e12.
- [2]. Proffit WR, Fields HW Jr. Contemporary orthodontics. 3rd ed. *St Louis: Mosby*; 2000 [Textbooks].
- [3]. William S, Andersen CE. The morphology of the skeletal potential Class III skeletal pattern in the growing child. *Am J Orthod* 1986;89:302-11.
- [4]. Nartallo- Turley PE, Turley PK. Cephalometric effects of combined palatal expansion and facemask therapy on Class III malocclusion. *Angle Orthod* 1998; 68: 217-224.
- [5]. Ngan P. Treatment of Class III malocclusion in the primary and mixed dentitions. In: Bishara SE, editor. *Textbook of Orthodontics*. Philadelphia: WB Saunders; 2001. p. 375-411.
- [6]. Ngan P, Hägg U, Yiu C, Merwin D, Wei SH. Soft tissue and dentoskeletal profile changes associated with maxillary expansion and protraction headgear treatment. *Am J Orthod Dentofacial Orthop* 1996;109:38-49.