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RESEARCH ARTICLE

TREATMENT OF SKELETAL CLASS III MALOCCLUSION IN AN ADOLESCENT PATIENT SUFFERING FROM GROWTH HORMONE DEFICIENCY (GHD) USING FACEMASK THERAPY: A CASE REPORT

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ABSTRACT

Skeletal class III malocclusion is a growth related facial deformity which increases if left untreated. The management of this malocclusion should be started as soon as the case is noted. The banded palatal arch in combination with a facemask appliance is one of the methods to treat skeletal class III malocclusion associated with maxillary deficiency. This case report was effectively treated using Petite facemask therapy to enhance the maxillary growth and to achieve balanced profile.

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INTRODUCTION

The initial management of skeletal class III (CL III) malocclusion has been an actual task. A majority of patient with skeletal CL III malocclusion present with maxillary deficiency that may or may not be accompanying with the protrusion of mandible (Saadia and Torres, 2000). The management should be conducted as early as possible with the purpose of allowing natural growth and development (Kapur et al., 2008). Furthermost patients with developing CL III malocclusions show antero-posterior (AP) and vertical deficiency of maxilla with a natural to faintly mandibular prognathism and normal to deep over-bite (Turley, 2002). The main objective of early management is a modification of growth throughout the most effective periods of dental and cranio-facial development (Maheshwari and Gupta, 2001). Patients of skeletal CL III malocclusion are treated satisfactory with facemask therapy. The improvement occurs by a combination of skeletal and dental movements in both vertical and AP planes of space (Nartallo-Turley and Turley, 1998). Optimum timing for treatment and possible skeletal effects of growth modification therapy in skeletal CL III remain a major topic for discussion.

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Case report: A 12-year-old male patient referred to the Department of Orthodontics at Mansoura University with the chief complaint of forwardly positioned mandibular jaw. Clinical examination showed concave profile with competent lips. Cephalometric tracing revealed skeletal CL III malocclusion due to maxillary deficiency. The patient is undergoing from "Growth Hormone Deficiency" (GHD).
Records: Photographs, OPG, lateral cephalogram, study cast were taken to achieve a proper diagnosis (Figure 1,2).

Intraoral examination

Bilateral CL III molar relationship.
Bilateral CL III canine relationship.

Maxillary arch: All permanent teeth are erupted from the first permanent molar of one side to the other. Mandibular arch: All permanent teeth are erupted from the second permanent molar of one side to the other.

Diagnosis: Skeletal CL III with maxillary deficiency and normal mandible.

Treatment objective: Protraction of the retruded maxilla to achieve CL I molar and canine relationships with ideal over-jet and over-bite.

Figure 1. pre-treatment photos

Figure 2. pre-treatment OPG and lateral cephalogram

Treatment plan: Facemask therapy with banded palatal arch and lower posterior bite plane for maxillary protraction.

Treatment procedure: Consent form was signed by the patient parent. A banded palatal arch was made-up and hooks were positioned distal to canines above the occlusal plane for the attachment of elastics, Petite facemask was used with this appliance to forwardly protract the retruded maxilla. (Figure 3) The overall management period was 8 months. Chin-cup was used for 6 months for retention.

Figure 3. Facemask and banded palatal arch with hooks

Post-treatment: The photographs and lateral cephalogram were taken. (Figure 4,5)

Figure 4. Post-treatment photos

Figure 5. Post-treatment lateral cephalogram

Treatment result: After active treatment, nearly all skeletal and dental objectives had been achieved. The skeletal CL III malocclusion had been corrected. The sagittal discrepancy was enhanced appreciably. (Table 1)

Table 1. Cephalometric analysis

	Pre-treatment value	Post-treatment value
SNA	76°	81°
SNB	77°	78°
ANB	-1°	3°
MPA	27°	31°
UI-LI	127°	134°

DISCUSSION

The development of skeletal CL III malocclusion is one of the greatest challenging complications facing the orthodontist in practice. If left untreated, the malocclusion leans to deteriorate and these patients will eventually involve a significant percentage of demanding surgical orthodontic as adults (Maheshwari and Gupta, 2001). A main aim for starting early CL III growth modification was to avoid the problems often accompanying with it, such as recession of gingiva (Harrison et al., 1991), excessive incisal wear, increased probabilities of TMJ dysfunction (Wisth, 1984). Therefore, early management of this case is the choice of treatment. The outcomes on the cranio-facial skeleton stimulated by facemask treatment have seldom been examined in sufficient samples (Mermigos et al, 1990 and Wisth et al., 1987), especially with regard to the determination of optimum timing for this type of therapy. In this case report, I used facemask therapy for maxillary protraction associated with banded palatal arch with hooks distal to canines. In addition, lower posterior bite plane was used to facilitate correction.

There was an abundant success in the treatment outcome, the SNA changed from 76° to 81° after maxillary protraction. Furthermore, an alteration of 1° in SNB from 77° to 78° due to natural growth of mandible. The ANB was improved from -1° to 3°. Our patient showed an optimistic effect to maxillary protraction and enhancement in mid-facial aesthetics, over-jet and over-bite.

Skeletal CL III malocclusion should be treated as soon as possible to alter the abnormal cranio-facial growth. (Table 1)

Conclusion

Facemask therapy with banded palatal arch and lower posterior bite plane is a successful way to treat skeletal CL III malocclusion due to maxillary deficiency in an adolescent patient suffering from GHD. Proper diagnosis at early stage and appropriate use of the appliance ensure faster and long-term results.

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