ORTHODONTIC MANAGEMENT OF A CROWDED CLASS III MALOCCLUSION ON A CLASS III SKELETAL BASE: A CASE REPORT


ABSTRACT

A late adolescent patient presented with a Class III malocclusion on a skeletal Class III base, complicated by severe upper arch and moderate lower arch crowding, reverse overjet, anterior and bilateral posterior crossbites with displacement, proclined upper incisors, retroclined lower incisors, distally tipped lower canines and non-coincident centres. Treatment was undertaken on an extraction basis by employing the use of an upper removable appliance with Z-springs and posterior bite blocks to correct the anterior crossbite, quad helix and jockey arch for arch expansion, and pre-adjusted edgewise fixed appliance to level and align, space closure and achieve a mutually protective functional occlusion. This paper discussed the rational and evidences behind the treatment employed.

Key words: Class III, orthodontic camouflage

INTRODUCTION

In Class III malocclusion, the lower incisor edge lies anterior to the cingulum plateau of the palatal surface of the upper incisors (1). Class III malocclusion often presents with a Class III skeletal base relationship. The Class III relationship is thought to be due to polygenic multifactorial inheritance with variable mode of transmissions although there has been suggestions that environmental factors such as enlarged tonsils and nasal blockages may contribute to mandibular prognathism (2). Generally the soft tissues are regarded to be of lesser importance in the aetiology of the malocclusion. The lip and tongue pressures are thought to influence the dental inclinations to compensate for the underlying skeletal discrepancy.

Early treatment of the skeletal and dental Class III relationships could be addressed orthopaedically such as by the use of facemask with rapid palatal expansion (3,4) which has been shown to demonstrate long term favourable improvement in the skeletal relationship (5). In older patients with moderate to severe skeletal Class III pattern, cases usually do not camouflage well to conceal the skeletal problem and may need combined orthodontic-orthognathic treatment.

When making a decision to treat by orthodontics alone, Proffit and colleagues (2007) suggested that the good characteristics for camouflage treatment were mild or mild to moderate skeletal Class III patients who have passed their peak pubertal growth spurt with good vertical proportions and reasonably good alignment of the teeth. It was also outlined that camouflage treatment should be avoided in cases with severe or moderate to severe skeletal Class III, vertical skeletal discrepancies, severe crowding or protrusion of the incisors, in adolescents with potential growth and in non-growing adults with more than mild discrepancies where surgery may offer better long-term results (6). Cephalometrically, the suggested thresholds below which surgery was decided include ANB value of -4°, lower incisor angulation of 83°, maxillary to mandibular ratio of 0.84 and Holdaway angle of 3.5° (7).

These were good guidelines for treatment planning but the decision should be made on individual basis. This paper will present a case of a late adolescent patient who presented with Class III malocclusion on a skeletal Class III pattern, complicated by crowding and existing dentoalveolar compensation that was borderline for orthodontic-orthognathic treatment but was treated by orthodontic camouflage.

CASE REPORT

A 16 years and 3 months old male attended the orthodontic clinic and complained that his front teeth were not straight. On clinical examination he presented with a Class III malocclusion on a mild skeletal Class III base with average lower face height and Frankfort mandibular plane angle. There was no significant transverse discrepancy. The lips were competent at rest with a low smile line and the nasolabial angle was obtuse.
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Re: Orthodontic management

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Comments:
- As aetiology of skeletal Class III has a strong genetic link, information of family history should be reported
- In order to better understand severity of malocclusion, mandibular displacement should be quantified
- Extra-oral findings and lat ceph measurements that are most vital for diagnosis should be reported at the earlier part of the report
- Treatment objectives should be included
- Consent-taking should indicate that parents/guardians have been consulted as child may not be of appropriate legal age

Generally:
- Good case report with sound management and important issues well-discussed

Recommendation:
- Good to publish with minor additional information to be included
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Reviewer’s Comments (please type or write clearly):

Orthodontic management....

Well written case report with up to date references. Almost all of the mechanics supported by references. However, this manuscript would be more meaningful if radiographs (OPG and lateral cephalometric) are included.

Thank you.

(Please attach separate sheets if space is insufficient)

Recommendation: Accept(✓)  Reject( )  Major Revision( )

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