

EARLY CORRECTION OF SKELETAL CLASS III MALOCCLUSION - FACE MASK THERAPY WITHOUT PALATAL EXPANSION

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Abstract:

Correction of class III malocclusion is most challenging probably because of unpredictable & unfavourable nature of growth in these patients. The treatment plan remains always controversial as regards the expansion Vs non expansion. A case is presented for an orthopaedic management of a young girl with skeletal class III malocclusion with negative overjet.

Key Words: Class III Malocclusion, Cross Bite, Elastics , facemask, Non Expansion.

INTRODUCTION

Untreated Class III malocclusion with skeletal prognathism^{1,2} can be one of the most disfiguring facial developments. Patients with Class III malocclusion can have components of maxillary size deficiency, maxillary repositioning, true mandibular excess, mandibular forward positioning, or any combination of these.³ Typically, treatment approaches for young patients with Class III malocclusion have been directed at growth modification.

This strategy often compels the orthodontist to resort to dental compensation. If this approach fails to achieve satisfying results, it leaves clinicians with only one choice for optimal treatment: orthognathic surgical correction. This option, however, necessitates decompensation and reversal of previous treatment. Conversely, clinicians may attempt to maintain the dentition as is, deferring definitive treatment until growth has ceased.

Patients can then be treated with a combination of orthodontic and surgical therapies. Historically, clinical observation has led to the claim that the Class III skeletal relationship results primarily through over-development of the mandible.

More recently, however, several authors⁴ have reported maxillary retrusion as the most common contributing component of Class III features. In any event, with the limited ability to influence mandibular growth and the malleability of maxillary growth well established, treatment modalities for influencing mild to moderate Class III alveolar base discrepancies have shifted to a maxillary protraction paradigm.

CASE REPORT

A patient named Nimisha Gangwal, 7 years old reported to the department of orthodontics of modern dental college & research centre, with a chief complaint of forwardly placed lower front jaw & teeth (fig 1a).

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Fig. 1a : front & profile view of patient

On profile examination she is having a concave profile with high clinical FMA & competent lips (fig 1a). On smile analysis she is having a non-consonant smile arc with lower incisor and canine visibility (fig 2a).

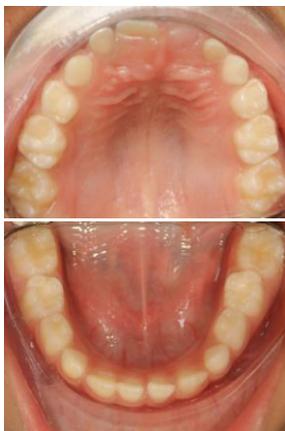


Fig 2a : smiling front, upper & lower arch

On intra oral examination she is having mixed dentition & 'U' shaped upper & lower arches (fig 2a), with class I molar & canine relation bilaterally with anterior crossbite & reverse overjet of 2mm (fig 2b).

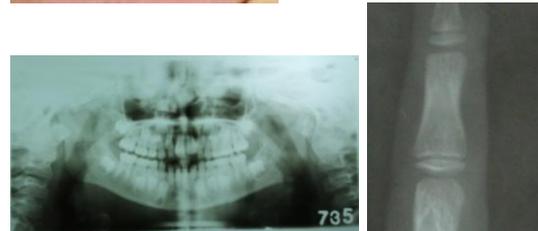


Fig 2b : intraoral front, right, left, OPG & MP3

OPG shows erupting permanent dentition. MP3 shows that maximum part of growth is still left

TREATMENT OBJECTIVES

1. Correction of skeletal class III discrepancy.
2. Correction of anterior crossbite.
3. Proper inclination of upper & lower anterior teeth.
4. Improve facial esthetics.

TREATMENT OPTIONS

1. Double plate appliance-
In maxilla hook is at molar level, in mandible hook is at canine level. Results were same as facemask but more of dental correction.
2. Maxillary protraction bow appliance – effects were similar to face mask.
3. Bionator III appliance.
4. Modified fixed nanobite tandem appliance.
5. Hyrax screws with mental plates.
6. Bone anchored system – apply pure bone born orthopaedic forces 24

hrs/day, avoiding dento alveolar compensations.

- Reverse twin block appliance.

TREATMENT PLAN

After considering all the factors, it was decided to advance the maxilla with reverse pull head gear. Recent studies suggest that it is possible to advance the maxilla even without palatal expansion in a growing patient⁵, so acrylic plate was placed in maxillary arch without expansion screws having hooks, at the level of first deciduous molars, to accommodate extraoral elastics.

TREATMENT PROGRESS

The plate was fixed in the arch by coloured GIC on buccal and occlusal surface of teeth (fig 2c).



Fig 2c : acrylic plate on maxillary arch
A delair type of face mask was placed. Yellow extraoral elastics were used to attach face mask & maxillary plate applying a force of 450 gms. (fig 3a)

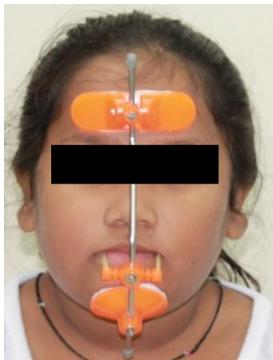


Fig 3a : face mask with extra oral elastics

The patient was instructed to wear the appliance for 14-16 hrs/day which patient & her parents followed strictly. The patient was

followed up every month (fig 3b) with regular check on the force level maintaining a constant force level ranging from 350-450 gms.



Fig 3b : pretreatment & after 6 months

TREATMENT RESULT

Overall treatment time for orthopaedic phase is nine months which is not yet over. Reverse overjet of -2 mm has been corrected to +1.3 mm (fig 3b), with correction of anterior crossbite. The profile also improved from concave to straight (fig 3c). Correction of inclination & alignment of teeth, if required, will be done in orthodontic phase when the deciduous teeth will shed off.



Fig 3c : facial profile pretreatment & after 6 months.

DISCUSSION

On comparing the mean values for maxillary protraction between expansion & non expansion group the literature show that there is no difference between cephalometric mean values of the two except for maxillary incisor angulation, the angulation is more in non expansion group⁵. Also the treatment results were far better in younger patients than older ones⁵.

The treatment effects of the protraction face mask therapy are a combination of skeletal and dental changes of the maxilla and mandible. The maxilla moves downward and forward with a slight upward movement in the anterior and downward movement in the posterior palatal plane as the result of protraction force; at the same time posterior teeth extrude somewhat. As a consequence, downward and backward rotation of the mandible improves the maxillomandibular skeletal relationship in the sagittal dimension but results in an increase in lower anterior facial height.

If case of skeletal class III is treated with protraction of maxilla without the expansion screw in early age the results achieved is comparable to expansion treatment.

CONCLUSION

The treatment of a young case of skeletal class III malocclusion shows improvement in facial profile, overjet & crossbite with a treatment of facemask therapy without the use of expansion screws, with increase in maxilla in downward & forward direction.

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