

Facemask- an Indispensable Tool for Class III Orthopedic Disharmony.

Jalis Fatima¹, Subrata Saha², Tamal Kanti Patra³, Kashika Arora⁴

¹PG student, Department of Paedodontics and preventive dentistry, Dr. R. Ahmed Dental College and Hospital, India.

²Professor, Department of Paedodontics and preventive dentistry, Dr. R. Ahmed Dental College and Hospital, India.

³Professor, Department of Orthodontics and Dentofacial orthopedics, Burdwan Dental College and Hospital, India.

⁴Dental Speciality practitioner, Department of Paedodontics and preventive dentistry, Dr. R. Ahmed Dental College and Hospital, India.

ABSTRACT

Abnormality in the relationship of the maxillary and mandibular jaw bases is one of the commonly encountered problems, which when treated within the period of growth with the help of orthopaedic appliances help in the attainment of correct jaw relationship. This timely use of several orthopaedic appliances like chin cup, head gear, face mask also called as reverse pull head gear, assists in preventing a more complex and compromised treatment options like camouflage or surgical correction. Orthopaedic malrelation, which occurs due to deficient maxilla, while the patient is in mixed dentition stage are the best candidates for the use of facemask therapy.

Keywords: Facemask, orthopedic appliance, class III malocclusion

INTRODUCTION

Orthopaedic appliances are those appliances with the help of which growth can be modified while an individual is still in active growth period. Growth modification with the help of an orthopedic appliance like Facemask helps in overcoming the maxillary deficiency by protracting maxilla and adding bone posteriorly. This is done by applying traction force on circummaxillary sutures with anchorage derived from forehead and chin.^[1-6]

Following is a case, reporting the use of the Delaire type of facemask to compensate for the maxillary deficiency in a twelve-year boy.

Name & Address of Corresponding Author

Dr. Jalis Fatima,
PG Student, Dept of Paedodontics and Preventive Dentistry,
Dr. R. Ahmed Dental College and Hospital, India
E-mail: jlsfatima3@gmail.com

CASE REPORT

A 12 year old male patient reported to the department of pedodontics and preventive dentistry with the chief complaint of the anterior edge to edge bite. An exclusive intraoral and extraoral examination was done to rule out any discrepancy [Figure 1]. A class III molar relation to anterior edge to edge bite was seen with unerupted canine in the maxillary right quadrant. The incisaledge of incisors of all the four quadrants were thin and hypoplastic effected by amelogenesis imperfecta. An OPG (Pan view) and lateral cephalogram were done to see the present status of the entire dentition or to rule out any abnormality and assess the skeletal relationship [Figure 2]. Cephalometric

tracing ruled out the presence of mild deficiency in maxillary jaw base following, which, the use of facemask was decided as a treatment option [Figure 3, 4]. A fixed acrylic bite plate with hooks from the label side of the arch was incorporated in the canine region for attaching the elastics, which was then cemented in the patient's oral cavity. Facemask was then delivered to the patient to be worn for 16 hours a day with 8-ounce elastics for the first 3 weeks, which was later followed by 14-ounce elastics.

The challenge faced in this particular case was the vertical growth pattern of the patient with FMA of 33° and also the growth period which was almost at cessation. To prevent further enhancement in the vertical height of the patient after treatment, a 15° downward pull of the elastics in relation to the occlusal plane was not given, as this would prevent the further downward and backward rotation of the mandible corresponding to the downward and forward movement of the maxilla during protraction.

The maxillary deficiency was made up by the use of Delaire face mask within a period of 8 months, followed by which the patient was kept in period of retention for another 6 months by only night time appliance wear [Table 1].

The finer adjustments needed to correct the tip and torque of maxillary incisors was done by giving a 2X4 fixed appliance [Figure 5, 6].

The last contribution to the esthetic appearance was made by covering up the yellowish stained areas of hypoplastic amelogenesis imperfecta only provisionally by composite veneering the effected teeth, permanent restoration of which will be done following complete eruption of maxillary permanent canine [Figure 7].



Figure 1:Intraoral Preoperative



Figure 2:Preoperative Lateral Cephalogram



Figure 3:Preoperative Lateral Cephalogram



Figure 4:Extraoral During Treatment



Figure 5:Extraoral Postoperative With 2x4 Appliance

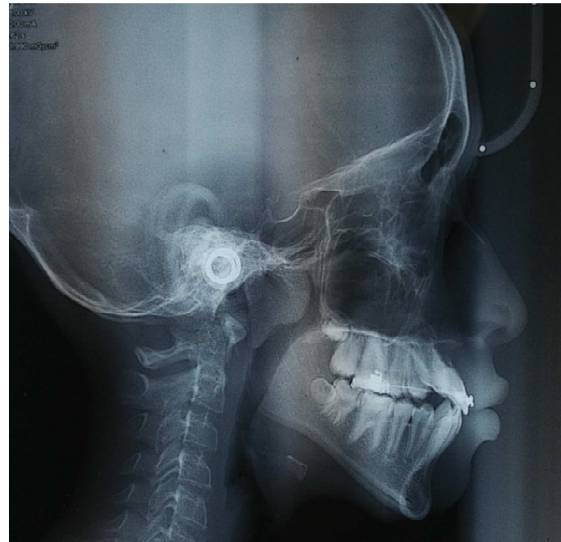


Figure 6:Extraoral Postoperative With 2x4 Appliance



Figure 7:Intraoral Postoperative With Composite Veneer

DISCUSSION

Class III malocclusions are the most difficult type of malocclusions to be treated, especially if they have a skeletal cause as its contributor. Optimum treatment result with maxillary protraction appliance like face mask is best obtained when applied in pre-pubertal period or early mixed dentition stage, which allows rapid mesial movement of the entire maxillary unit.^[7-8] Forward displacement of maxilla during its growth is aided primarily by the forward growth of the cranial base, which is completed by 7 years of age. Further forward displacement of maxilla after cranial base growth is primarily contributed by sutural growth at the circum-maxillary suture. Traction force of 300-400 grams per side applied by facemask takes advantage of sutural growth before completion of ossification, by causing anterior rotation and displacement of the maxillary complex and mesial movement of maxillary basal and alveolar region. Facemask when used in the last part of the active growth period does not bring about significant maxillary protraction by displacement of maxillary bone, instead forward displacement of the maxillary anterior teeth mostly makes up for the correction of reverse over jet. Thus face mask can also be used in cases of minimum reverse over jet

or with the anterior edge to edge bite and bring about optimum esthetic results by camouflaging the skeletal discrepancy even during near completion of growth or after growth cessation of the maxillary jaw base.

The direction of orthopedic force when applied carefully by keeping it parallel to occlusal plane as

in this case of high FMA helped in preventing further increase in FMA although some increase of which is inevitable.

Thus, facemask when used decisively definitely proves itself an indispensable tool for correction of orthopedic class III disharmony.

Table 1: Cephalometric Changes

Parameters	Pretreatment	Post-treatment
SNA	80	82
SNB	79	80
FMA	33	34
WITS	2 mm	+1 mm
Maxillary base length	81 mm	85 mm
Mandibular base length	108 mm	110 mm

CONCLUSION

Orthopaedic malrelation, which occurs due to deficient maxilla, while the patient is in mixed dentition stage are the best candidates for the use of facemask therapy.

How to cite this article: Fatima J, Saha S, Patra TK, Arora K. Facemask- an Indispensable Tool for Class III Orthopedic Disharmony. *Ann. Int. Med. Den. Res.* 2016;2(2):20-2.

Source of Support: Nil, **Conflict of Interest:** None declared

REFERENCES

1. Baccetti, T, McGill JS, Franchi L, McNamara JA, Tollaro, I. Skeletal Effects of Early Treatment of Class III Malocclusion with Maxillary Expansion and Face-Mask Therapy. *Am J Ortho DentofacOrthop* 1998;113:333-343.
2. Cahng, HF, Chen KC, Nanda R. Two-Stage Treatment of a Sever Skeletal Class III, Deep Bite Malocclusion. *Am J Ortho DentofacOrthop* 1997; 111: 481-486.
3. Proffit, W.R. Contemporary Orthodontics. CV Mosby Company, St Louis, Toronto, London. 1986.
4. Silva OG, Magro AC, Capelozza L. Early Treatment of Class III Malocclusion with Rapid Maxillary Expansion and Maxillary Protraction. *Am J Ortho DentofacOrthop* 1998;113:196-203.
5. K. Cephalometric Changes after the Correction of Class III Malocclusion with Maxillary Expansion/Face Mask Therapy. *Am JOrthodontDentofacOrthoped* 1999; 116: 13-24.
6. Abdel-Ghany AH. The Effect of Protraction Face Mask on the Treatment of Maxillary Deficiency in Two Age Groups. Doctor Degree Thesis, Cairo University, Cairo. 1995.
7. Fränkel R. Maxillary Retrusion in Class III Malocclusion with the Function Corrector III. *Trans EurOrthod.Soc.*1970;46: 249-259.
8. Shanker S. Cephalometric A Point Changes during and after Maxillary Protraction and Expansion. *Am JOrthodontDentofacOrthoped*1996;110:423-430.
9. Children and Orthodontics: Types of Braces, Retainers, Headgear and Facemasks. www.webmd.com/oral-health/guide/children-and-orthodontics WebMD describes common types of orthodontics for children, including braces headgear, and retainers
10. Delaire J. Maxillary development revisited: relevance to the orthopaedic treatment of Class III malocclusions. *Eur J Orthod*1991; 19:289-311.