Quest Journals
Journal of Medical and Dental Science Research
Volume 2~ Issue 5 (2015) pp:04-10
ISSN(Online) : 2394-076X ISSN (Print):2394-0751
www.questjournals.org

Research Paper

CHIN CUP: STILL A HAND TO HELP

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Received 14May, 2015; **A**ccepted 22May, 2015 © The author(s) 2015. Published with open access at**www.questjournals.org**

I. INTRODUCTION

Malocclusion is defined as irregularity of tooth/teeth beyond the normal acceptable range. It is determined mainly by hereditary and environmental factors. Any of these factors alone or in combination can effect the frequency or type of malocclusion. Many of the malocclusions should and can be corrected easily if diagnosed early. Angle has divided malocclusion into three types depending on the relationship of mesiobuccal cusp of maxillary first permanent molar with the mesiobuccal groove of mandibular first permanent molar. Class 3 malocclusion is one of the most difficult and complex malocclusions to treat especially in mixed and late deciduous dentition.[1] Class 3 malocclusion is most commonly manifested as anterior crossbite or upper and lower incisors in an edge to edge relationship. Many studies have reported that early correction of this anterior crossbite is of great significance by preventing the detoriation of horizontal jaw relationship.[2] The timing of orthodontic treatment especially for developing class 3 malocclusion is always controversial as the interaction between environmental and innate factors have not been understood completely. Both anteroposterior and vertical maxillary deficiency can contribute to the cause of class 3 malocclusion.
This case report attempts to show the use of chin cup in treatment of patients with class 3 malocclsion.

CASE REPORT-1

A male patient 9 yearsold reported to our department of pedodontics and preventive dentistry of Dr. R. Ahmed dental college and hospital, Kolkata, west Bengal with the chief complaint of forwardly placed lower front teeth. On examination, he was found to be mesofacial with a concave profile and protruding lower lip and shallow mentolabialsulcus(Fig-1). On intraoral examination, he was found to have class 3 molar relation with 1.5 mm open bite and 1mm reverse overjet(Fig-2).
Cephalometric analysis showed class 3 skeletal tendency with average growth pattern and proclined lower anterior teeth (Fig-3).

The patient was treated with chin cup to restrict the growth of mandible and Z springs were used to procline the maxillary incisors to correct the reverse overjet(fig-4 & 5) After 10 months of treatment, patient had normal interach relation with 2mm overbite and overjet(Fig-6 & 7). We have a followup of almost 1.5 years and currently the patient is wearing chin cup only at night for the purpose of retention.(Table-1)

CASE REPORT-2

A 11 years old female patient to or department of pedodontics and preventive dentistry of Dr. R. Ahmed Dental college and hospital with the chief complaint of lower anterior teeth ahead of upper anterior teeth. On examination she was found brachyfacial with concave facial profile and lower lip protruding ahead of upper lip(Fig-8). On intraoral examination she was found to be having class 3 molar relation with posterior unilateral crossbite on left side(Fig-9). Cephalometric analysis revealed skeletal class 3 relationship with horizontal growth pattern (Fig-10).

The patient was treated using chin cup to limit the progressive mandibular growth and expansion screw with Z spring to correct posterior unilateral crossbite and anterior crossbite respectively.(Fig-11& 12)
After 14 months of treatment, normal interarch relationship was obtained with increased lower facial height(Fig-13 & 14). We have a follow up of 1 year with the patient still wearing the chin cup as night time wear(Table-2).

II. DISCUSSION

The question concerning the ability of chin cup in altering the mandibular growth pattern is controversial and should be considered in light of all variables that may influence mandibular growth. Various previous studies have been conducted on the effects of chin cup force on the growing mandible and have

presented variable results.[3-6] One of the substantive concern in treatment of mandibular prognathism is whether the growth of mandible can be retarded during and also post treatment. Whether the ultimate length of the mandible can be influenced by the use of chin cup therapystill remains unclear.

III. CONCLUSION

Although indivisual reactions to chin cup force therapy are different in the effects of each growth parameter, the possibility of controlling them is not essentially the same. Though favourable results are obtained in many cases, yet the effects of chin cup in treatment of class 3 malocclusion should not be overestimated. It should be applied within limitations on the basis of proper diagnosis and treatment objectives.

FIGURE-1 (Pretreatment extraoral)

FIGURE-2 (Pretreatment intraoral)

FIGURE-3 (Pretreatment cephalogram)

FIGURE-4 (Intraoral with appliance)

FIGURE-5 (Extraoral with chin cup)

FIGURE-6 (Intraoral posttreatment)

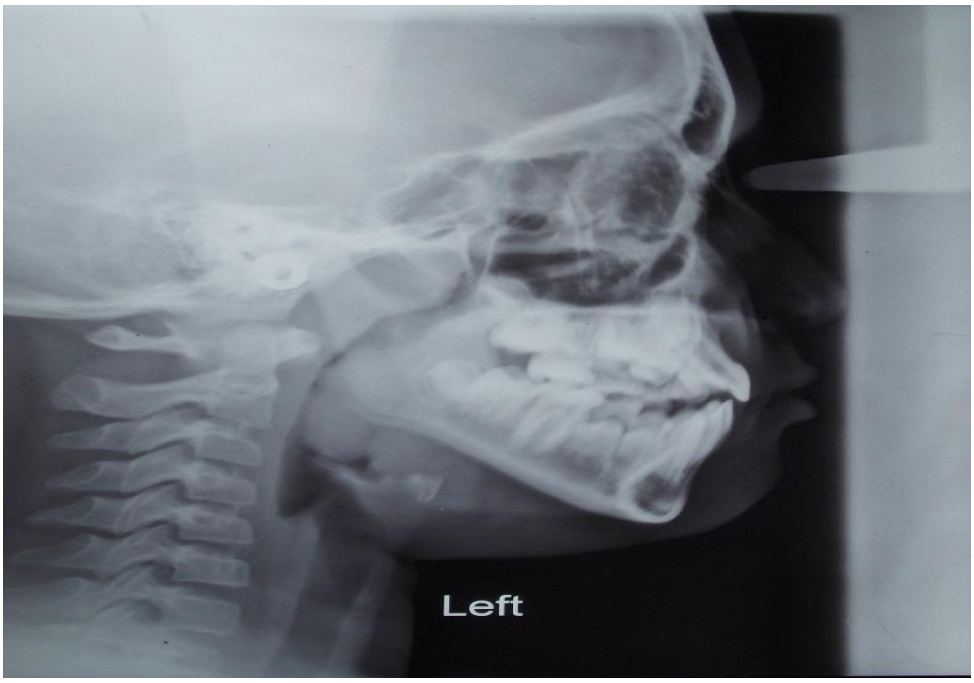

FIGURE-7 (Posttreatmentcephalogram)

TABLE 1:Cephalometric changes in a 9 year male patient treated with chin cup appliance

PARAMETRES	**PRETREATMENT**	**POSTTREATMENT**
1)Maxillary skeletal		
a)SNA	76^0	81^0
b)Maxillary length	80.1mm	87.4mm
2)Mandibular skeletal		
a)SNB	88.9^0	88.7^0
b)Mandibular length	107.4mm	108.8mm

FIGURE-8 (Extraoral pretreatment)

FIGURE-9 (Intraoral pretreatment)

FIGURE-10 (Pretreatment cephalogram)

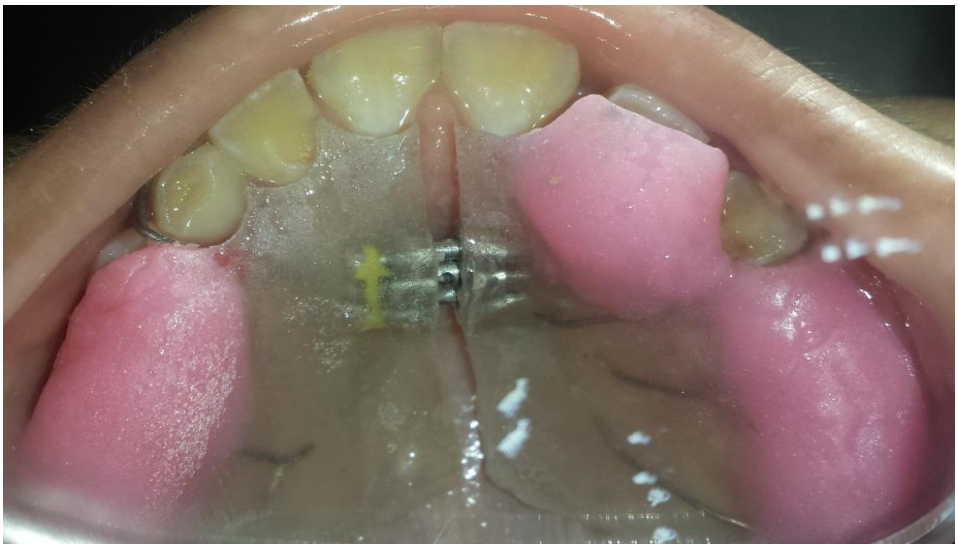

FIGURE-11 (Intraoral with appliance)

FIGURE-12 (Extraoral with chin cup))

FIGURE-13 (Intraoral posttreatment)

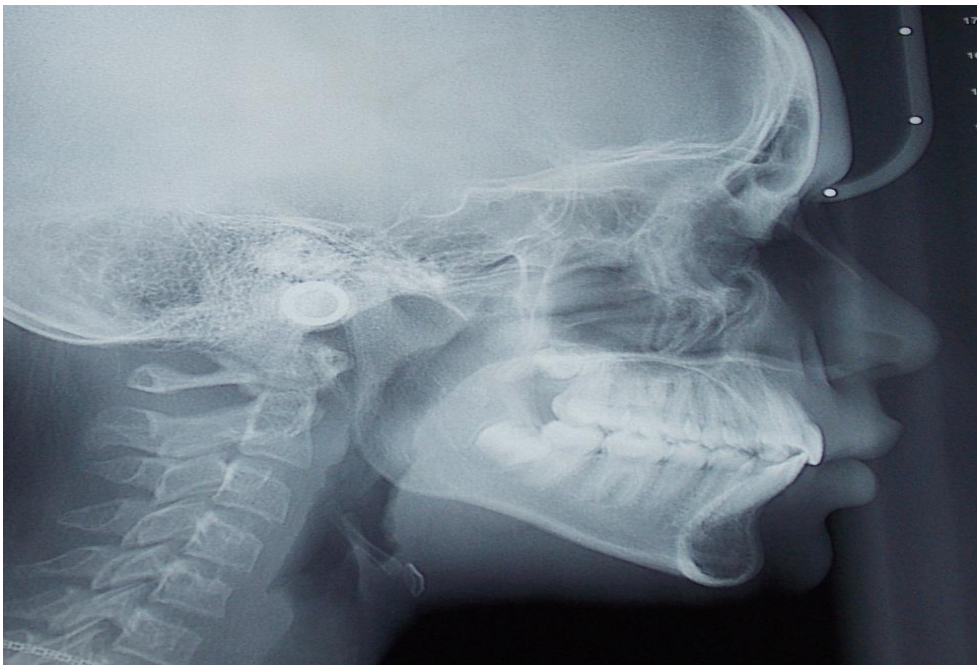

FIGURE-14 (Posttreatmentcephalogram)

TABLE 2:Cephalometric changes in 11 year old female patient using chin cup

Parameters	Pretreatment	Posttreatment
1)Maxillary skeletal		
a) SNA	73^0	82^0
b) Maxillary length	84.3mm	91.2mm
2)Mandibular skeletal		
a) SNB	89.1^0	88.6^0
b) Mandibular length	108.9mm	109.3mm