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### RESEARCH ARTICLE

## RECTIFICATION OF ANTERIOR SEGMENTAL CROSS BITE WITH CHIN- CUP THERAPY AND MODIFIED JACK SCREW APPLIANCE IN TEN YEARS OLD PATIENT: A CASE REPUTATION.

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### Abstract

The dental arch perimeter and transpalatal width are the most substantial arch dimensions in the germinate individuals. Its direction during the primary, mixed and early permanent dentition are greatly imperative for the convention development of the dental arches and significantly amend the occlusion in adulthood. Severe anterior cross bite and narrow maxillary arches adversely affect the smile, facial profile and consequently patient becomes handicapped socially as well as psychologically.

**Background:** The discussion of Class III malocclusion has been ambitious for orthodontists. Among a overplus of treatment mode, the chin-cup is regard traditional appliance for early orthopedic intervention.

**Objective:** The demonstrate cogitation intent to enquire the stream scientific evidence attention the potency of chin-cup therapy in Class III malocclusion of prognathic growing patients.

**Treatment:** The discussion approach adopted will depend on the growth status of the patient. Treatments that have the ability to alter a patient's facial growth exert their effect, either accelerating or limiting, on the skeletal structures of the craniofacial region.

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### Introduction:-

Emaciated Class III malocclusion is clinically acquaint as a termination of maxillary retrusion, mandibular protrusion or a compounding of the two. It is often times comrade with complex dento-alveolar problems, which admit an anterior edge-to-edge relation or anterior and/or posterior crossbite. Patients with Class III malocclusion display potency esthetic problems exhibit a concave profile, and a vertical subprogram shape, which bound their purpose to vertical movements.<sup>9</sup>

The preponderance of Class III malocclusion submit a wide assortment among and within populations, as stated by a high 24% rate in Asian populations demarcation to a smaller 8% rate in Caucasians.<sup>1</sup>

Handling of Class III malocclusion has been a dispute for orthodontists. Among diverse treatment mode, the chin-cup is reckon a traditional appliance for the early orthopedic management of prognathic growing patients.

Its clinical effectualness has been inquire over the years with former hypothesis collateral a cosmopolitan betterment of Class III malocclusion through rearward and downward mandibular rotation, retardation of mandibular growth,

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remodeling of the mandible and the temporomandibular joint, retroclination of mandibular incisors and closing of the gonial angle.<sup>4</sup>

Contempt the superfluity of the useable demonstrate, clinical outcome accomplish with the chin-cup constitute a controversial number among investigator. Owing to the absence of a criterion protocol vexation the chin-cup's capture essential and the contradicting outcomes of the theme results and outcomes measures, a clear interpretation of information is not imaginable.<sup>2</sup>

However, enormous number of hypothesis pore on the skeletal and dento-alveolar modification, the events of chin-cup therapy on facial soft tissues stay unknown. Moreover, the immense majority of hypothesis report outcomes of the chin-cup essential obtained over a short-term period, while there is a deficiency of studies examining the hanker term effectiveness of chin-cup therapy.<sup>5</sup>

The objective of the present systematic reappraisal is the investigation of the short- and long-term effects on both the hard and soft tissues induced by chin-cup therapy in the Class III malocclusion of growing patients.

### Factors Of Class III Malocclusion

1. Mandibular bony protrusion (prognathism), ordinarily mention as a major skeletal deviance in individuals with Class III malocclusion.
2. Upper jaw skeletal retrusion.
3. A compounding of maxillary skeletal retrusion and mandibular skeletal protrusion.

Former region within the faces of Class III individuals showing consistently substantial dispute from a equivalence Class I cases, including huge mandibular plane angles, larger gonial angles, longer mandibles, and compensations of the dentition, including maxillary dentoalveolar protrusion and mandibular dentoalveolar retrusion.

Whereas Class III expression incline to turn extent prognathic, and reason oppose muscle and tooth adjustments, it is nice interceptive dento-facial orthopedics to apply appliances former where there is Class III malocclusion. Therapy should eradicate the dolorous in any place. Many pseudo Class III cases have a inclination to suit brimful blown Class III later on during the growth period unless treated.<sup>2,3,5,10</sup>

Indeed chin cup therapy does manage is lingual tipping of the lower incisors as a outcomes of the compulsion of the appliance on the lower lip and dentition and a coins in the supervision of mandibular growth, wheel the chin down and back. Children who have enlarged lower anterior face height and are treated with chin cups may end up with bony open bites after treatment.

Chin cups are divided into two types:

1. The occipital-pull chin cup.
2. Vertical-pull chin cup .

The so-called backward rotator patient with openbite. The program period of chin cup erode conditional on the age when the appliance is situated and the immensity of the malocclusion as well as the volume and administration of growth at the count.<sup>6,3,1</sup>

### Case Theme

A female patient aged ten years reported to the Department of pedodontics and preventive dentistry with a chief complaint of anterior segmental cross bite. On examination, she was brachyfacial, had a concave profile, a competent lower lip.

Clinically, there was anterior segmental cross bite extending from canine to canine with an overbite of 1mm. Cephalometric tracing showed a Class III skeletal tendency, a horizontal growth pattern, a decline lower anterior facial height.

The patient was treated with a chin-cup therapy and a modified jack screw appliance to correct anterior crossbite. After six months of treatment, forward growth of maxilla was observed with restricted growth of mandible and a normal interarch relationship with increased lower anterior facial height.

Patient was advised to wear the appliance for night and whenever at home during day time. She was also asked to activate the jack screw twice daily by 90° turn.

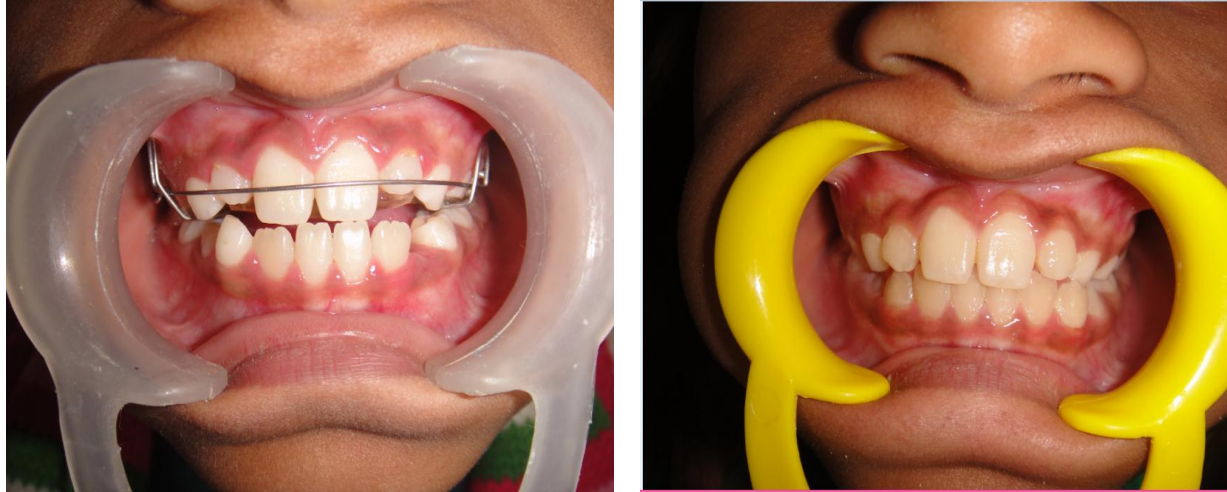
We have a follow-up of almost one years post-treatment. Currently, the patient is endure chin cup only at night period for retention. Fixed mechnotherapy will be pioneer after eruption of all permanent teeth, if mandatory.



**Figure 1 and 2:-**shows application of chin-cup therapy in 10 years old patient.



**Figure 3 and 4:-**shows application of modified jack screw appliance in ten years old patient.



**Figure 5 and 6:-**shows desired outcomes in 10 years old patient.



**Figure 7:-**shows facial profile of the patient.

### **Discussion:-**

The interrogation pertain the power to modify the mandibular growth shape with a chin-cup should be paying in the level of all the capable that may influence growth. Former hypothesis on the impression of the chin cup personnel on maturation human mandibles have described former outcomes. There have been a figure of clinical hypothesis that have assess the treatment effectuate created by chin cup therapy.<sup>2</sup>

One of the essential pertain, specially in the discourse of the patient with mandibular prognathism, is whether the emergence of the mandible can be delay during treatment.

Wendell et al (1985) have noted reduction in mandibular growth during treatment. Wendell et al when examining a group of Class III patients treated in the mixed dentition noted that mandibular length increased for the treated group were only 60 to 68% of the control group.<sup>7</sup>

Mitani and Fukazawa (1976) noted no differences in mandibular length in Class III patients who began treatment during the adolescent growth period.<sup>8</sup>

These findings support the observations of Sakamoto (1981) and Sugawara et al (1990) who advocate the use of the occipital pull chin cup as early as is practical. Whether the ultimate length of the mandible can be influenced by chin cup therapy still remains unclear.

1. The intellect to prefer chin cup therapy for the case was that, she was growing individual:
2. Having mixed dentition
3. Having anterior crossbite with the ability to bring their incisors edge-to-edge
4. Having short vertical facial height.

It was there in dorsum of our mind that chin cup therapy does execute the lingual tipping of the mandibular incisors and airt the mandibular growth by splay the chin downward and backward, and we got the previse outcomes clinically with sustained cephalometric determination.<sup>4,5,6</sup>

### Conclusion:-

The skeletal profile is meliorate, as it is sustain by imperative modification in deliberate variables, which argue a downward and backward rotation of the mandible. Favorable dento-alveolar alteration, such as a essential increase in overjet are also observed. The soft tissues show a general betterment in the facial profile, following the attendant skeletal and dento-alveolar changes, but with unsealed long-term stability. A chin cup should be employ within limitations on the basis of suitable diagnosis and treatment objectives. It is authorise that encourage investigation is requisite to achieve more practical counsel for chin cup utilization in growing Class III malocclusions, peculiarly in the permanent dentition.

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