

Treatment of Mandibular Prognathism



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Diagnosis

- Maxillary deficiency was judged to be the primary problem in 40%, Mandibular excess in 42% and both jaws were severely affected in 18%.



Maxillary deficiency



Mandibular excess

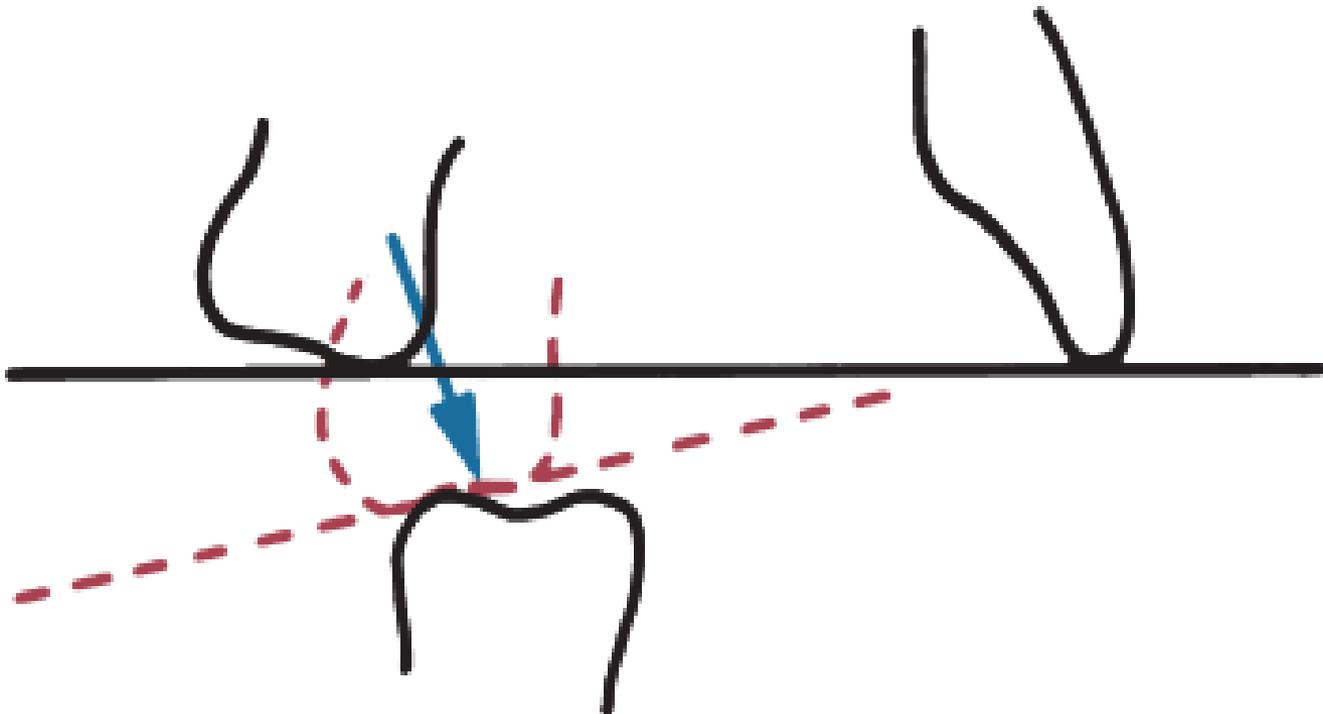
Mandibular Excess

- Children who have **Cl III malocclusion** because of excessive growth of the mandible are **extremely difficult to treat**. There are three possible treatment approaches:
 - 1) Class III functional appliances
 - 2) Chin Cup
 - 3) Class III elastics to skeletal anchorages

Functional Appliances in Treatment of Excessive Mandibular Growth

- Functional appliances for patients with excessive mandibular growth make **no pretense of restraining mandibular growth**. They are designed **to rotate the mandible down and back** and guide the eruption of the teeth so that **the upper posterior teeth erupt down and forward** while **eruption of lower teeth is restrained**.





- The production of **working bite**:

The mandible is rotated **open** on its hinge axis but is not advanced. This type of bite is easy to obtain because light force can be placed on each side of the mandible to guide the mandible and retrude it.

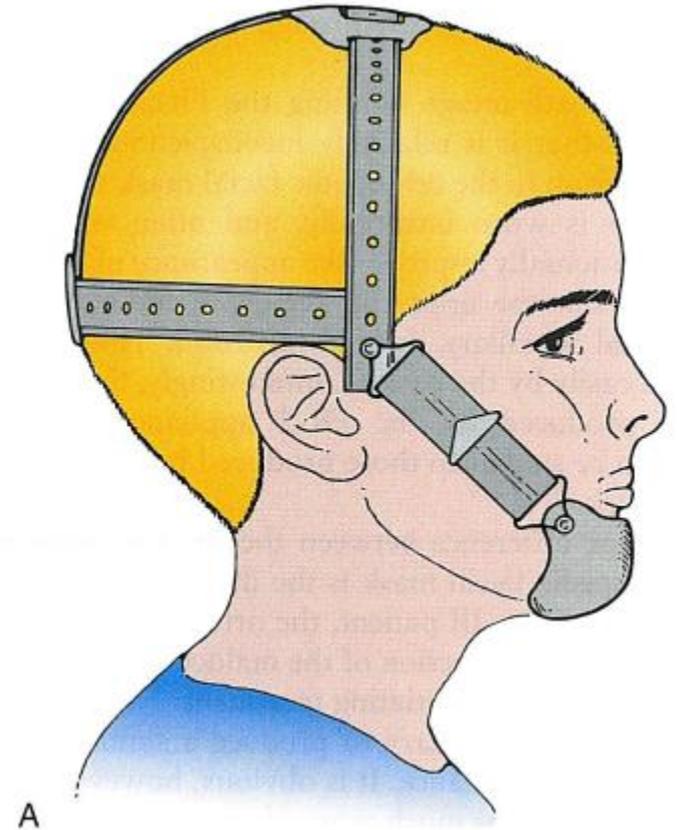
- The general guideline is that the mandible should be rotated **at least 3 and not more than 5 to 6 mm beyond its postural rest position**. If this is not enough or would produce excessive anterior face height, the problem is too severe for functional appliance treatment.

- Class III functional appliance treatment is applicable only to patients in whom a large and prominent mandible is combined with vertical maxillary deficiency, so that they have both **mandibular excess** and **short anterior face height**.

- Mandibular functional appliances offer **no possibility of inhibiting the excessive growth**. They are capable only of **downward– backward rotation of the mandible**, which risks creating a long-face problem.

Chin-Cup Appliances: Restraint of Mandibular Growth?

- In theory, extraoral force directed against the mandibular condyle would restrain growth at that location, but there is little evidence that this occurs in humans.

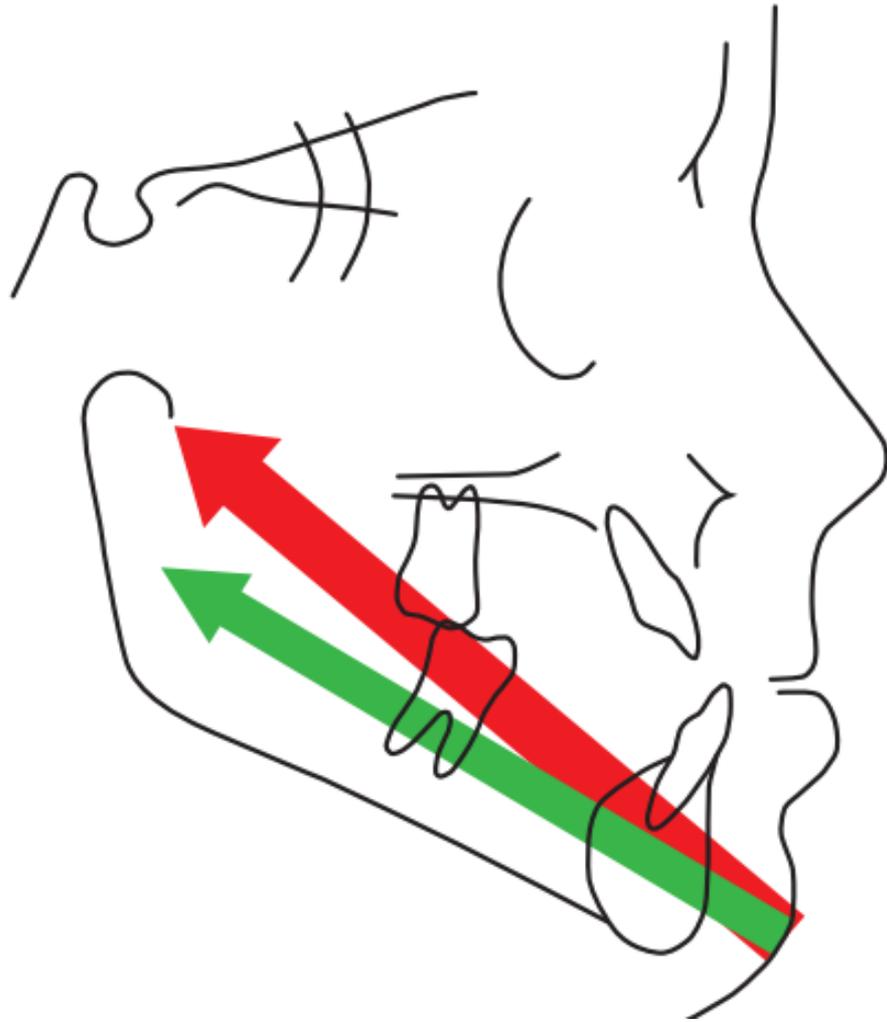


- What chin-cup therapy does accomplish is **a change in the direction of mandibular growth**, rotating the chin down and back, which makes it less prominent but increases anterior face height.

- In essence, the treatment becomes **a trade-off between decreasing the anteroposterior prominence of the chin and increasing face height.** In addition, **lingual tipping of the lower incisors** often occurs because the appliance presses on the lower lip and dentition, which often is undesirable.

- For chin-cup treatment, a hard plastic cup fitted to a cast of the patient's chin or a soft cup made from an athletic helmet chinstrap can be used.
- Soft cups produce more incisor uprighting than hard ones.

- The headcap that includes the spring mechanism can be the same one used for high-pull headgear. It is adjusted in the same manner as the headgear. A persistent recommendation through the years has been a force of **approximately 16 ounces per side** aimed directly at the head of the condyle, on the theory that this would reduce growth.



- One concern about chin cup treatment always has been the possibility that it could create **temporomandibular dysfunction** problems. A recent systematic review of the literature indicates that this is not a problem, especially if very heavy force is avoided.



- In essence, chin cup therapy does the same thing as a Class III functional appliance, but offers at least a slim chance of some growth inhibition. **For children with a large mandible, chin-cup treatment is essentially transient camouflage.** For that reason, it has limited application.

- Why is this so ineffective? Probably because successful growth modification requires light force with a long duration, and chin cups deliver heavy force for short durations.

Class III Elastics to Skeletal Anchors



- it remains true that the most likely and largest change in treatment was **stimulation of forward growth of the maxilla**, and that would not be desired in treatment of true mandibular prognathism.

- Class III elastics from miniplates at the base of the zygoma to the anterior surface of the mandible now have been shown to **significantly change the pattern of mandibular growth.**

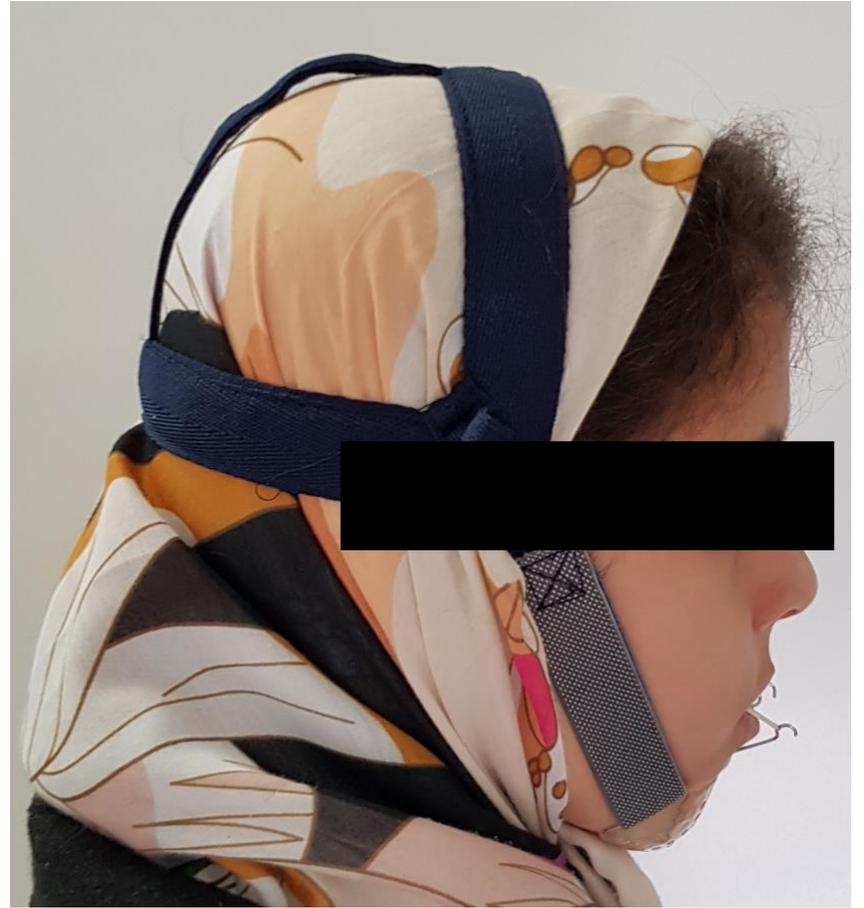
- This includes **a lack of forward growth, the possibility of backward movement of the chin,** and **a reshaping of the mandible** with a decrease in the gonial angle—that is, an uprighting of the ramus relative to the body of the mandible. Because most skeletal Class III patients have a component of both maxillary deficiency and mandibular excess, the effect on both jaws is an improvement over changing the growth of just one.

- For patients whose problem is primarily excessive mandibular growth, there are two potential problems in using this method: effects on the maxilla that may go beyond what is desired, and no data for the extent to which further growth after treatment will lead to a recurrence of the problem.











Thank You