



# TREATMENT OF CLASS II AND CLASS III MALOCCLUSION BY USING CHURRO JUMPER: AN EFFICIENT, INEXPENSIVE AND UNCOMPLICATED FIXED FLEXIBLE FUNCTIONAL TECHNIQUE

Shubhangi Amit Mani<sup>1</sup>, Nilesh Mote<sup>1</sup>, Kunal Dilip Pawar<sup>1</sup>, Prashantkumar Mishra<sup>1</sup>, Richa Anil Mishra<sup>1</sup>,  
Rajlaxmi Rajaram Rai<sup>1</sup>

<sup>1</sup> Department of Orthodontics, Rural Dental College, Pravara Institute of Medical Sciences, Loni, Maharashtra, India

CORRESPONDING AUTHOR: kushaagramani02@gmail.com

## ABSTRACT

Functional orthopedic treatment seeks to improve skeletal and dental relationship of the jaws. The challenging task is to correctly position jaws antero-posteriorly and vertically with correct overbite, overjet and Centric relation. The Churro Jumper is an efficient, inexpensive and uncomplicated fixed flexible functional appliance. It is used to evaluate the efficacy of the Churro Jumper appliance in treatment of skeletal Class II malocclusion with retrognathic mandible. Churro Jumper contributes in correction of Class II molar relationship by dento-alveolar effects on both jaws. There was up-righting of maxillary incisors and proclination of mandibular incisors. Churro Jumper is clinically efficient as well as effective appliance to correct skeletal class II malocclusion. The only problem with this appliance is its frequent breakage and oral hygiene maintenance causing inconvenience to both patient as well as operator.

**KEYWORDS:** malocclusion, jaws position, churro jumper

## INTRODUCTION

Class III malocclusion is one of the most frequent problem encountered in orthodontic practice where mandibular retropositioning and/or retrognathism being its commonest cause. And in case of class II malocclusion maxillary prognathism is the main cause<sup>1</sup>.

For treatment of this malocclusion, a large number of appliances were introduced and one of the groups of appliance is Mandibular protraction appliance.

## LITERATURE REVIEW

### 1. Mandibular protraction appliances:

Functional orthopedic treatment seeks to improve skeletal and dental relationship of the jaws. The challenging task is to correctly position jaws anteroposteriorly and vertically with correct overbite, overjet and centric relation. This can be done using myofunctional appliances, which require favorable growth, proper treatment planning and good patient co-operation. A number of fixed functional appliances have gained popularity in recent years to

help achieve better results in noncompliance patients<sup>2</sup>.

Types of mandibular protraction appliance: (1) MPA 1, MPA 2, MPA 3, MP 4, (2) adjustable bite corrector, (3) the Churro Jumper, (4) the universal bite jumper, (5) the saif spring, (6) ritto appliance, (7) the magnetic telescopic device.

There are various problems with Mandibular Protraction Appliances like.

Some disadvantages are (1) restriction of mouth opening to 30 to 40 mm, (2) arch wire breakage is common, (3) poor oral hygiene, (4) patient with low

tolerance for discomfort will often break the appliance, (5) patient who incessantly move their mouth while chewing and talking.

Correction of these disadvantages lead to introduction of flexible fixed functional appliance that is the Churro Jumper by Ricardo Castanon and Larry White in 1998<sup>6</sup>.

This is an inexpensive alternative force system for the anteroposterior correction of Class II and Class III malocclusions. The mesial and distal ends of the jumper are circles. The distal circle is attached to the maxillary molars by a pin and the mesial end is placed over the mandibular arch wire against the canine bracket<sup>6</sup>. So far, this is the only flexible functional appliance which can be made up by the orthodontist in his lab. The costs are reduced and the time spent is minimal (Figure 1).

Figure 1. Flexible functional appliance.



## 2. Various skeletal and dental changes due to the use of Churro Jumper:

The Churro Jumper is an efficient, inexpensive and uncomplicated fixed flexible functional appliance. It is used to evaluate the efficacy of the Churro Jumper appliance in treatment of skeletal Class II malocclusion with retrognathic mandible. Churro Jumper contributes in correction of Class II molar relationship by dentoalveolar effects on both jaws. There was uprighting of maxillary incisors and proclination of mandibular incisors.

Churro Jumper is clinically

effective as well as efficient appliance in skeletal Class II malocclusion<sup>7</sup> (Figure 2). Study by Cope et al. show the restraining effect on maxilla<sup>8</sup>.

The Churro Jumper appliance therapy resulted in redirection of maxillary growth, mesial tooth movement in mandible and distal tooth movement in maxilla. It has been claimed that, with this appliance, orthopedic effect could be achieved<sup>8</sup>. This appliance demonstrated both dentoalveolar movement and skeletal movement accomplish the class II correction<sup>9</sup>.

Figure 2. Churro Jumper in function.



Study from Cope et al.<sup>8</sup> and Nazan et al.<sup>10</sup> states that use of Churro Jumper brings about decrease in SNA angle and the backward relocation of a point A indicated that the appliance also had a skeletal effect on the maxilla. Furthermore, the uprighting on the upper incisor led to a forward relocation of point A, because of appositional changes at alveolar area. This may camouflage the restrictive effects on the maxilla.

Ulgen et al.<sup>11</sup> stated that on use of Churro Jumper there is reduced anterior facial height, due to extrusion of lower molar and remodeling changes in Glenoid fossa that may have reduced the mandibular plane angle.

Herbst<sup>12</sup> states that the mean position of upper incisors and upper molars were significantly reduced with respect to SN plane and reference plane.

The line of force application of the appliance which is below and behind the unit's center of resistance. This could have resulted in controlled posterior tipping of incisors and molars around their apices<sup>7</sup>.

According to the findings reported by Weiland<sup>9</sup>, Cope et al.<sup>8</sup>, Heining and Goz<sup>13</sup>. The skeletal and dental contribution together positioned mandibular incisors mesially by a highly significant margin after treatment.

Cope et al.<sup>8</sup> and Heining and Goz<sup>13</sup> indicates that despite of precautions taken to provide stable anchorage of the dental arches, dentoalveolar changes occurred during the Churro Jumper period, which can be considered as anchorage loss, functional appliances produce dental effect that may mask and inhibit the desired skeletal changes<sup>14</sup>.

Cope et al.<sup>8</sup> and Nazan et al.<sup>10</sup> stated that Churro Jumper appliance promotes horizontal growth at the pogonion area and the overlying soft tissue reflects that change.

The Churro Jumper appliance stimulates overall amount of mandibular growth in appropriate direction and restrict unfavourable maxillary growth. This treatment modality with the concept of pushing mechanics is to deliver positive vector of force to stimulate mandibular growth. The Churro Jumper furnishes orthodontist with an effective and alternative force system for anteroposterior correction of class II class III malocclusions. Although Churro Jumper was conceived as improvement to MPA it functions more like jasper jumper<sup>6</sup>.

In class II, each jumper attaches to maxillary molars by pin that passes first through circle on distal end of the jumper and mesial end of Churro Jumper

is an open circle that is placed over the mandibular arch wires against the canine bracket. Churro Jumper exerts distal and intrusive force against maxillary molars and a forward and intrusive force against mandibular incisors as an attempt to straighten.

#### 2.1 Construction of Churro Jumper:

The Churro Jumper can be fabricated in a number of ways, as long as a series of 15-20 symmetrical and closely placed circles are formed in the wire. The wire size should be 0.028" to 0.032". The coil can be formed free hand with a bird beak plier, but this is slow and laborious task that often results in asymmetrical circle. A turret can be made from wooden handle, a headed nail and a headless nail that approximates a thickness of 0.040 or 0.045 wire acts as a spindle around which circles can be formed. Another effective way to form symmetrical coil to hold the 0.040 or 0.045 spindle in a table top wise wind the wire around it<sup>3</sup>.

#### 2.2 Churro Jumper as class II force:

Since Churro Jumper requires reciprocal anchorage, an appropriate mandibular arch wire will usually be 0.018 X 0.025. Churro needs space to slide on the mandibular arch wire; at least first premolar bracket should be omitted. The length of jumper is determined by distance from distal end of mandibular canine bracket to mesial end of headgear tube on maxillary molar band plus 10-12 mm a pin of annealed 0.036" is used to secure maxillary circle through the distal end of headgear tube.

The maxillary pin is pulled mesially through the headgear tube until jumper has a slight buccal bow in it and is then turned down<sup>15</sup>.

It is more comfortable and easier for patient to adapt to a unilaterally applied than a bilaterally applied force. Bilateral class II jumper is most suitable for patient who needs mandibular incisor advancement. Anchorage is enhanced by Churro Jumper through its primary force vectors, which push against the mesial of the maxillary molar and distal of the mandibular canine<sup>16</sup>.

#### 2.3 Churro Jumper as class III force:

In the class III cases the terminal circles are placed against the mesial of the mandibular molars tube and the distal to the maxillary canine bracket. The Churro Jumper can improve the effectiveness of orthodontic therapy in class III patients who refuse to wear class III elastics. The Churro unlike other class II appliances can be adapted to provide a well- designed force for correction of class III malocclusion. Ordinarily the distance between the maxillary canine and first premolar brackets is enough to allow the Jumper to open adequately and is slide easily. If there is any restriction, however, the premolar bracket can be removed<sup>17</sup>.

#### 3. Clinical efficiency of Churro Jumper:

Pancherz<sup>18</sup> revealed that moderate pain in masticatory muscle after insertion of Churro Jumper in 30% of the patients. The forceful forward bringing of mandible resulted in disharmony of the position of condyle leading to hyperactivity of the jaw musculature resulting in increased frequency of muscle tenderness<sup>19</sup>.

Some advantages are (1) it provides constant, indefatigable force that cannot be removed from mouth, (2) it can be used either unilaterally or bilaterally, (3) it can be used to correct

class II or class III malocclusions, (4) the cost of construction for material and labor is less, (5) it helps to maintain anchorage, since it prevents maxillary molars and mandibular incisors from moving into extraction space.

## CONCLUSIONS

Churro Jumper is clinically efficient as well as effective appliance to correct skeletal class II malocclusion. The only problem with this appliance is its frequent breakage and oral hygiene maintenance causing inconvenience to both patient as well as operator.

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