

## Clinical Innovation

# A simple and effective appliance for correction of bilateral molar scissor bite: “The M-shaped palatal arch”

### ABSTRACT

Molar scissor-bite is a common finding in orthodontics. Many times, it is found as a sole malocclusion in a patient. Alignment of such buccally erupted molars is a challenging task. This article describes an innovative appliance, “the M-shaped palatal arch” for successful correction of bilateral molar scissor-bite.

**Keywords:** Bilateral molar scissor bite, bodily movement, M shaped palatal arch, reciprocal anchorage

### INTRODUCTION

Molar scissor-bite, especially the upper second permanent molars erupting buccally out of the arches is a common finding in orthodontic patients. Alignment of such molars and bringing them bodily into the arch is a tough task. Many times, a finished orthodontic case in retention phase shows upper second molars erupting in scissors bite. In such cases, it becomes mandatory that a conservative approach is used to correct their position. Literature shows many methods to correct this problem, like the use of cross elastics,<sup>[1]</sup> various palatal cantilever arches,<sup>[2]</sup> dragon helical spring,<sup>[3]</sup> and recently the use of micro-implants.<sup>[4]</sup>

Cross elastics have a disadvantage of extrusion of molars and also require patient compliance. Many palatal cantilever arches are designed which are activated with e-chains. These are difficult to manage clinically and require frequent activations due to e-chain’s faster force decay. Springs like dragon spring are complicated in design and difficult to manipulate. Pulling the upper molar palatally with elastic traction from a single palatal implant causes the crown of the tooth to tilt lingually, burying its lingual cusps into the mucosa, posing problems in banding the molar later on for uprighting.

This article reports of a successful correction of bilateral second molar scissor-bite using an innovative appliance, the “M-shaped palatal arch” [Figure 1]. The appliance works on reciprocal anchorage not taking support from any other tooth in the arch.

### Parts of the appliance

The M-shaped palatal arch is made up of 0.9 mm thick hard round SS wire framed into three loops; one center loop about 8-10 mms in width and two compensatory loops about 6–8 mms in width depending on the arch-width of the patient and the amount of tooth movement required. The framed appliance is soldered to the molar bands [Figure 1].

### Activation of the loops

The activation of loops is done chairside. First, the center loop is activated to close by about 4 mms using optical

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plier [Figure 2a], producing mesio-palatal moment on the molar. Then, the two compensatory loops are activated to close by 2 mm each side [Figure 2b] which produces distopalatal moment on the molar. The two moments nullify each other and the molars finally get pure palatal translation force of about 2 mms each side. If rotation or torque control of molar is required it can be done at the band-wire interface at the solder joint using Universal plier [Figure 2c].

Activation of loops shortens the length of the wire, thereby lifting the appliance away from the palate [Figure 3a and b], thus helping to prevent extrusion of molars as they are brought palatally. Reactivation is not required before 4–6 weeks when again the appliance is removed, reactivated and recemented. Intraoral activation should be avoided for better precision and unwanted movement of molars.

### CASE REPORT

A 24-year-female patient came with the chief complaint of cheek biting and food lodgment in the posterior region. On examination, she had mild crowding in upper and lower arches with second molars in scissor-bite bilaterally [Figure 4]. As crowding was not her priority the only correction of second molar scissor-bite was planned.

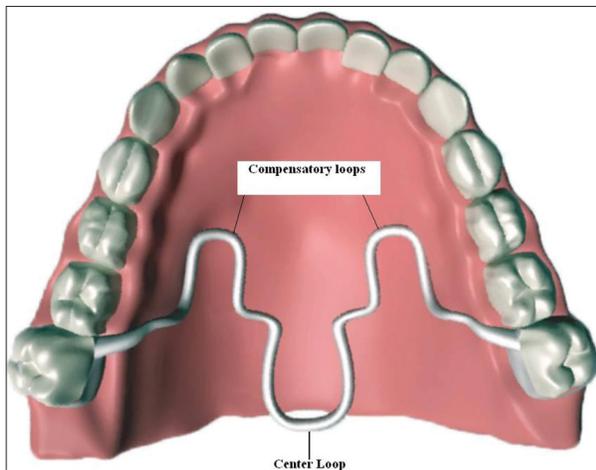


Figure 1: The M-shaped palatal arch and its components



Figure 3: M-shaped palatal arch (a) before activation, (b) after activation

All her third molars were extracted, and M-shaped palatal arch was cemented after activation as described earlier. After four activations, the second molars were completely brought into line of occlusion [Figure 5a-c]. The bends for rotation correction and torque control were also given as required during treatment.

### RESULTS

The active treatment was over in about 6 months without any extrusion of molars or disturbance in occlusion [Figure 6]. The second appliance may be needed at times if the molar is in severe buccal position. During treatment, mild to moderate pain is felt depending on the age of the patient.

#### The exceptional features of M-shaped palatal arch

- Simple in design and activation
- Works on Reciprocal anchorage
- Can be used as an independent appliance which does not require support from adjacent or opposing teeth

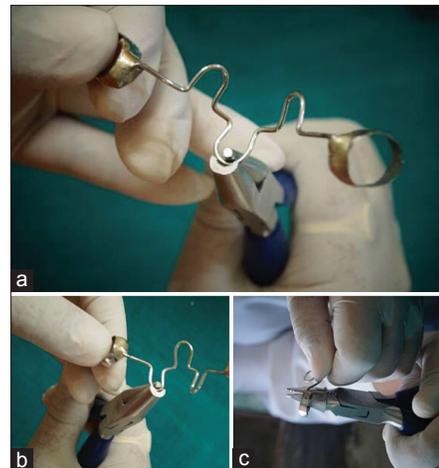


Figure 2: Activation steps. (a) Activation of the center loop, (b) activation of the compensatory loops, (c) bend for torque and rotation correction



Figure 4: Pretreatment photographs

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Figure 5: M-shaped palatal arch (a) on insertion, (b) mid-treatment, (c) on removal

- Does not require frequent activations, not before 4–6 weeks
- Does not allow extrusion of molars
- Allows torque control and molar rotation correction.

#### CONCLUSION

The M-shaped palatal arch is a simple, innovative appliance that can be used for bodily correction of bilateral molar scissor-bite without any extrusion and support from adjacent or opposing teeth.

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Nil.



Figure 6: Posttreatment photographs

#### Conflicts of interest

There are no conflicts of interest.

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