

Modified Transpalatal Arch (M-TPA) For Intrusion Of Maxillary 2nd Molars

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INTRODUCTION:

Intrusion of extruded maxillary second molars has always been a challenging situation in orthodontics. Extrusion of a second molar is commonly seen when an opposing tooth is missing. It leads to occlusal plane problems and, occasionally, the buccal tilting of second molars. Sometimes it is also seen in cases of a complete open bite, with occlusal contacts in the second molar region only.

An attempt to level the extruded maxillary second molars by using fixed orthodontic appliances involving the second molars with a continuous archwire leads to extrusion of teeth anterior to the second molars rather than intrusion of the second molars. It results in an opening of the mandibular plane angle, and downward and backward rotation of the mandible. It is detrimental, especially in cases of vertical growth pattern and skeletal class II cases. A modified removable appliance with hooks on the buccal and palatal sides to attach the elastics has also been used, but it requires patient cooperation.

Some clinicians tend to equilibrate the occlusal surface of an extruded maxillary second molar to level it. It may be a method of choice in mild extrusion cases, but in other cases, the tooth may require intentional endodontic therapy, reduction of crown height and then placing a crown, thus jeopardizing the longevity of the tooth.

To solve this problem, we have successfully used a modified form of the transpalatal arch (M-TPA) to apply isolated intrusive forces on the extruded maxillary second molars only. The anchorage is obtained by the M-TPA and involves the other teeth in a continuous archwire from the first permanent molar of one side to other side.

FABRICATION OF M-TPA:

A double buccal tube with a headgear tube is used on the maxillary first molar bands and the bands are then taken in an impression, and a working plaster cast is made. An M-TPA is made of 0.9 – 1.0 mm hard stainless steel round wire. Its distal ends are bent in the form of hooks adapted along the palatal curvature;

approximately 2 mm away from the palatal tissues, and extending around 6 – 8 mm from the free gingival margins. It is then soldered on the first molar bands taken in the impression, (FIGS.). Another hook of the same wire is made extending approximately 4 - 6 mm from the free gingival margin, avoiding the active vestibular depth on the buccal side, which is adapted in relation to the extruded maxillary second molar on the buccal side. It is inserted into the headgear tube from the distal opening and soldered there. It may be done for both sides if required. This assembly is now cemented in place on the maxillary first molars.

These two hooks on the M-TPA can now be used for engaging an elastic or E-chain, crossing over the occlusal surface of the extruded maxillary second molar, (FIGS.).





The forces are now concentrated on the extruded maxillary second molar only. The required force can be achieved by adjusting the length of the E-chain or strength of the elastic. A lingual button, a Begg bracket or other bracket can be bonded to the occlusal surface of the extruded maxillary second molar to avoid slippage of the E-chain, which otherwise might lead to gingival trauma if it gets slipped into the proximal side of the tooth. Elastics are to be changed every day, which requires patient cooperation, so the E-chain is a better option.

Adequate intrusion of extruded maxillary second molars can be achieved within 3 – 4 months. A palatally directed force from the E-chain may also lead to correction of a buccal inclination of a second molar. After intrusion, the second molars can now be incorporated into a continuous archwire with other teeth, by placing the buccal tube into proper position. It will help in the prevention of any relapse of the intrusion. However, a light intrusive force must be maintained for at least 3 -4 months on the corrected maxillary second molar, with the help of an E-chain, to avoid relapse

CONCLUSION:

An M-TPA is an inexpensive and effective appliance for the intrusion of extruded maxillary second molars. It helps to apply isolated forces on the extruded maxillary second molars, without disturbing anchorage teeth and causing any ill side effects on the dentition.