Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2021;13:4:1-6.

Hybrid Approach for Molar Uprighting- A Case Report

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ABSTRACT

Background: Self-ligating braces offer potentially reduced treatment time, more comfortable follow-up, less plaque accumulation and less chairside time. Passive braces are more preferred in self-ligating systems as they cause less friction. Damon system is also one of the most popular passive self-ligating braces, which provides expansion in dental arches. This is a case report of a patient with moderate crowding and mesially inclined mandibular second molars treated with a combined hybrid approach by using Damon brackets and molar up righting spring.

Keywords: Molar uprighting, Self-ligating braces, Uprighting spring.

INTRODUCTION

The Damon System, which uses passive self-ligating brackets along with Damon Copper NiTi archwires, is capable of increasing arch width while keeping the teeth perfectly aligned in the centre of the alveolar bone. This transverse development of the arches reduces the need for extractions or for expansion with rapid maxillary expanders or invasive surgically assisted expansion procedures.[1] Damon self-ligating brackets has several other advantages like decreased friction, quick and easy insertion and removal of the arch wire, ability to securely connect the arch wire and short treatment time. Damon system also claims faster treatment, less pain and fewer appointments.[2-5]

A tipped mandibular molar is a frequent situation among orthodontic patients. Impacted or tilted molar require uprighting as it can cause numerous problems. Several approaches were used earlier by which molar uprighting was accomplished, like cantilever spring, NiTi coil spring, uprighting spring, push spring appliance, forced eruption by elastics, traction from removable appliances, mini implant, surgical uprighting etc.[6,7]

The present case is a combined hybrid approach to treat a patient with moderate maxillary and mandibular anterior crowding and mesially tilted mandibular second molar with Damon brackets and molar uprighting spring.

CASE REPORT

The patient was a 20 years old female presented with the chief complaint of irregularly placed upper and lower front teeth. Extraoral examination revealed convex profile, mesocephalic head, mesoprosopic face and competent lips. Intraorally patient presented with upper and lower anterior crowding, class I molar relation on both the sides and lower midline shift to left by 2mm [Figure 1].

Cephalometrically, patient was found to have skeletal class I jaw bases with average growth pattern, normally inclined upper and lower incisors and normal nasolabial angle. OPG revealed mesially angulated mandibular second and third molars on both the sides, more inclination observed on right side.

Received: Jan. 3, 2022: **Accepted**: Mar. 2, 2022
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pISSN 2278-0076
eISSN 2321-9270

Treatment planning

Treatment objectives were to expand the maxillary and mandibular arches and obtain space for leveling and alignment of the upper and lower incisors, correct the midline shift, and upright mandibular second molars after extraction of mandibular third molars. One treatment option was to extract the four premolars to correct crowding, but this would worsen the patient's balanced profile. A second option involved the use conventional expansion appliances to orthopedically expand the premolar region, followed by fixed appliances. The third option was to perform minor interproximal stripping and use the Damon System to gain space for leveling and alignment of the upper and lower incisors along with molar uprighting spring for uprighting mesially tilted mandibular second molar. The patient chose the third option which is actually ideal for this case.

Standard-prescription .022" Damon self-ligating brackets were bonded in both arches and 0.013" Cu NiTi wires engaged. Levelling and alignment was done with sequential round and rectangular Cu NiTi and SS wires from 0.013" to 0.019 X 0.025" dimension wires. Minor interproximal stripping of incisors was performed to facilitate leveling and alignment.

After initial leveling and alignment, mandibular second molar uprighting was done. Extraction of the lower third molars was performed 6 months prior to orthodontic uprighting. Molar uprighting of tipped right second molar was carried out with a simple yet effective helical uprighting spring. It was fabricated with 17 x 25 ss wire with a loop added to reduce the force level. It was engaged to second molar posteriorly and hooked onto 19x25ss wire in between first and second premolar brackets anteriorly [Figure 2]. The spring was given a lingual bend before hooking it to the anchorage unit. A slight lingual bend was given in the uprighting spring to counteract the forces that tend to tip the anchor teeth buccally and the molar lingually. Complete correction of inclination was obtained after 4months. Inclination of left second molar was less when compared to right and it was corrected by engaging the main archwire without the need for uprighting spring.

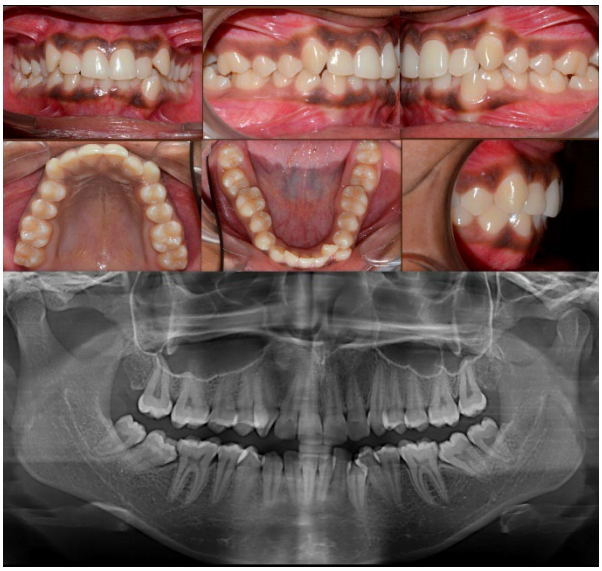


Figure 1: Pre-treatment.

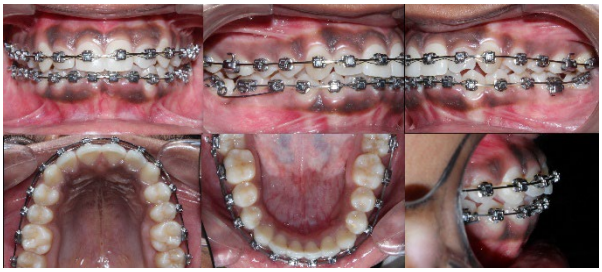


Figure 2: Molar uprighting with helical uprighting spring.

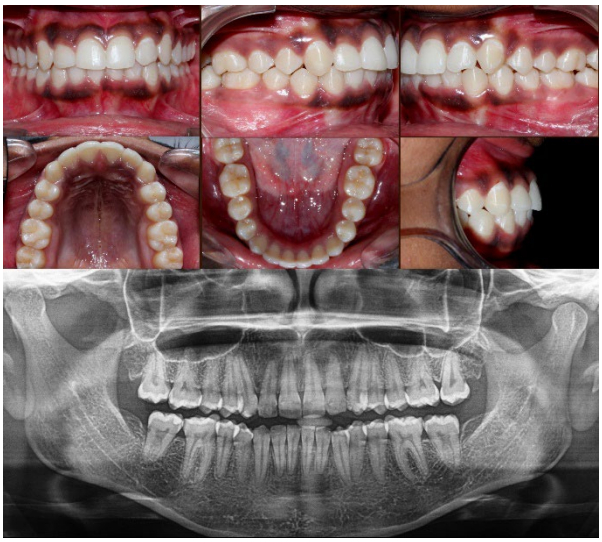


Figure 3: Post-treatment

Total treatment time was 18 months. The balanced profile and Class I molar relationships were successfully maintained, and the patient was highly satisfied with his teeth and profile. The maxillary and mandibular incisors were well aligned, with the

proper torque and midlines were coinciding. Mesially tipped mandibular molars were successfully uprighted and in perfect occlusion [Figure 3].

DISCUSSION

The self-ligating Damon System reduces frictional resistance between the bracket slot and the wire, improving the efficiency of sliding mechanics and reducing the force needed for tooth movement. With light and continuous forces, leveling and alignment occurs more easily and with minimal deleterious effects on the roots, bone, or periodontal tissues. When thermally activated Copper NiTi wires are used, the leveling occurs by moving teeth to the areas of least resistance, thus enhancing posterior expansion without significantly altering the anteroposterior position of the incisors.[1]

In the present case report, expansion of the posterior segments in both arches allowed the teeth to be leveled and aligned with only minor interproximal stripping. The main advantage of using self-ligating Damon appliances was that extractions could be avoided and the patient's balanced profile could be maintained.

There are different treatment options for correction of mesially tipped lower second molars. Molar uprighting usually presents difficulty in managing the unwanted reactionary force vectors associated, which if not taken care can produce deleterious effects on areas of dentition used for anchorage.[8]

This case report describes use of uprighting spring with advantages such as simple design, easy chairside fabrication, less time consumption and effective in changing inclination of tilted molar. Helical uprighting spring was an invention of good old times and self-ligation Damon system is a recent innovation. This case report is a hybrid approach where old mechanics are utilized in recent system for non- extraction treatment of moderate crowding and mesially tipped molar uprighting.

CONCLUSION

Combining modern ways with traditional ways to get the best results is the need of the hour. Self-ligating bracket system is a novel option in orthodontics. Uprighting spring was an integral part of Begg light wire differential force technique. Both the mechanics are combined in the present case report to obtain ideal occlusion and balanced profile.

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