

Tip-Edge Orthodontics: Case Report

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ABSTRACT

Background: The management of severe bimaxillary protrusion malocclusion presents a great challenge. In this article a case which has been treated with Tip-edge appliance has been shown. In this light wire technique archwire slot, in effect, opens and closes as necessary during treatment. No headgear or implants needed for anchorage control. Extremely light forces - only 1 to 3 ounces required in early phase of treatment. Normally, only three upper and three lower archwires required. Decreased duration of treatment and better results are achieved. Automatic rotational control, unwanted torque reactions to adjacent teeth, preadjusted to capture 100% torque and tip - zero-tolerance finish are the other advantages of this appliance.

Keywords: Tip-edge, Torquing, Bimaxillary.

INTRODUCTION

The straight wire¹appliance gives supreme control and finishing potential, but there can be difficulties because of the continuous arch mechanics. The Begg²appliance is renowned for its superb ability regarding overbite and overjet reduction because it is able to provide the consistent low forces required for intrusion. It does, however, often have a prolonged stage 3 while the case is finished to a high standard.

Several appliances have been developed with the aim of enhancing vertical control without losing the finishing capabilities of the Edgewise mechanism. Two of the better-known appliances are the Beddtiot³ appliance and the Tip-Edge⁴appliance. In this article one bimaxillary protrusion case has been shown which is effectively finished with Tip-Edge appliance.

Clinical case

This 17-year-old patient presented with a Class I bimaxillary protrusion malocclusion with a significant anteroposterior skeletal discrepancy, and a high angle between the maxillary and mandibular planes. The patient requested treatment to improve his dental appearance. (Fig-1)

To achieve an ideal result, a treatment plan using Tip-Edge appliance was planned and a treatment based on orthodontic compensation and extraction of all upper and lower first premolars was implemented.

In the stage 1(Fig 2) both the arch was bonded and 0.016 stainless steel round wire with mild anchor bends and sectional 0.0175 braided wire from canine to canine was placed. Sectional wire helps in faster alignment and base arch wire maintains the

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arch form and vertical correction. Class 2 elastics were not used because of shallow bite and vertical control. Later wire was changed to 0.018 stainless steel round wires. All the stage 1 objective of alignment and leveling and rotation correction were achieved in 3 months.

Stages 2 were started with 0.020 stainless steel round wires and class 1 green colour elastics with 6 ounce force. (Fig 3) Space closure was completed in 5 months. (Fig 4)

In stage 3 pre- torqued 0.0215 x 0.028 rectangular stainless steel wires with 5 degrees of lingual crown torque in the maxillary and 8 degrees of lingual crown torque in the mandibular arch was placed. Custom made side winder made of 0.014 inch high tensile stainless steel was also placed on each tooth. (Fig 5) It generates mesio-distal root movement and, when used in conjunction with rectangular archwires, produces torque correction as well. It is so called because it carries its coils alongside the archwire, over the bracket face. Uprighting was continued for 9 months for overcorrection. Settling was done on 0.017x0.025 rectangular braided wire. It was continued for 6 weeks. (Fig 6) Post treatment results shows good improvement in profile and smile. (Fig 7)



Fig 1: Pre-treatment extraoral and intraoral photographs.



Fig 2: End of stage 1.



Fig 3: Stage 2.



Fig 4: End of stage 2.



Fig 5: Stage 3 with side-winders.



Fig 6: Finishing and detailing.



Fig 7: Post-treatment extraoral and intraoral photographs.

CASE SYNOPSIS

NAME	:	Vinod
AGE/SEX	:	17/M
CHIEF COMPLINT	:	complaints of gap between the upper and lower lip
CLINICAL EXAMINATION	:	
Extraoral Findings	:	Convex profile Incompetent lip, High F.M.A increased incisor exposure
Intraoral Findings	:	
MOLAR RELATION	:	Angles Class I molar Mal-alignment in upper and lower anterior region
CANINE RELATION	:	Class I
INCISOR RELATION	:	Class I
OVERJET	:	01 mm
OVERBITE	:	01 mm
MIDLINE ANY OTHER	:	Coinciding -
OPG FINDINGS	:	All third molars tooth buds are present
CEPHALOMETRIC FINDINGS	:	Moderate skeletal Class II with compensating soft tissue. Both maxilla and mandible were placed anteriorly Proclined upper and lower incisors.
DIAGNOSIS	:	Skeletal Class II with dental bimaxillary protrusion
TREATMENT PLAN	:	Extraction of all the first premolars
MECHANOTHERAPY	:	Tip-Edge appliance
RETENTION	:	Upper- Begg retainer Lower fixed lingual retainer

DISCUSSION

The very design of edgewise bracket imposes a treatment regimen of bodily movement. By complete contrast, a bracket designed for differential tooth movement will not impart root-angulating forces once archwire is engaged. Instead,

the crown will be able to in the direction of desired tooth movement, essentially leaving the root apex to trail behind. So simple free tipping requires far less force and anchorage than moving the same tooth bodily. However, it makes initial decrowding and reduction of big overjets dramatically easy, as well as rapid, together with the attainment of a Class I buccal segment occlusion earlier in the treatment. The rapid tooth movement, decreased patient discomfort and precise finishing in orthodontics is always what an orthodontist wants. It has been known that teeth move faster and easier with less patient discomfort using light forces. Tip-edge produces excellent results with minimal demands on the operator and patient. Free crown tipping followed by controlled root uprighting is possible through the advantages of differential tooth movement and mechanics to enhance anchorage in one part of the arch and encourage rapid tooth movement in another.

The unique design of the tip-edge bracket which allows free tipping in one direction without archwire deflection also permits the use of larger archwires without flexing or bending. This is possible because as the crowns tip, the archwire slot increases from .022 to greater than 0.028 yet closes to .022 during the finishing stage of treatment for precise control. The tip-edge operator routinely progresses directly from .016 to .020 round or even .0215 x .028 rectangular for final uprighting and torquing. This feature enhances patient comfort and reduces operator workload allowing most cases to be treated using only 4 to 6 archwires. The same brackets are used on Class II, Class III, non-extraction, and extraction cases with only minor adjustments. The manipulation of the tip-edge appliance has been simplified for the operator through advantages of preformed archwires and auxiliaries. There is little wire bending and usually only reshaping to customize the appropriate archwire to the patient. By eliminating the interlock cuspal interference, present in malocclusions during the first stage of treatment, the potential for mandibular growth and repositioning

CONCLUSION

As modern orthodontics strives increasingly towards perfect finishing, the orthodontist is

offered a bewildering plethora of different prescriptions to achieve that end. Without doubt, Andrews' straight-wire appliance, more than any other, has spawned the many variants of Angle's original and brilliant edgewise concept. We now have a pre-adjusted Edgewise bracket, with torque and tip prescriptions, that allows controlled tipping for rapid and efficient space closure, retraction, bite opening and precise finishing at the end of treatment on a flat wire with light forces. The appliance is "Tip-Edge," but can credibly be referred to as "The Kesling Slot".

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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