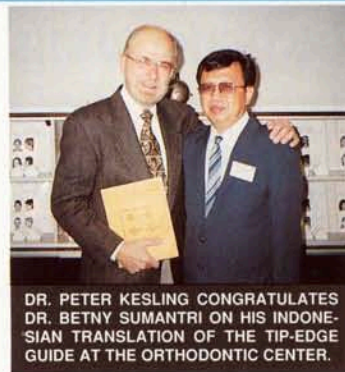


DRS. RALEIGH WILLIAMS OF TUCSON AND ANTONIO ORTEGA - GARCIA OF MEXICO CITY EXAMINE PATIENT DURING RECENT TIP-EDGE COURSE AT THE CENTER.



TIP-EDGE TODAYtm

Published Quarterly by TP Orthodontics • USA



DR. PETER KESLING CONGRATULATES DR. BETNY SUMANTRI ON HIS INDONESIAN TRANSLATION OF THE TIP-EDGE GUIDE AT THE ORTHODONTIC CENTER.

SPRING 1994

EDGELINES

SLANT-BACKS MAKE DIFFERENCE:

New molar tubes have more to offer than styling.



Page 3.

ON TRACK:

Riding the "rails" with E-Links[®] for aesthetics and comfort.



Page 3.

TIP-EDGE 101:

Over 25 lectures and courses planned for 1994. Page 4.



TIP-EDGE GRAPHIC



Academics need a hit on the head to see the action of the Tip-Edge bracket. Page 2.

Incorporating Tip-Edge[®] Brackets To Facilitate Leveling And Canine Retraction With Conventional Preadjusted Appliances Part II: Canine Retraction

Howard A. Fine, D.M.D., M.M.Sc, Diplomate, American Board of Orthodontics; Assistant Director, Orthodontic Postgraduate Program; Einstein College of Medicine/Montefiore Medical Center, Bronx, NY
Dr. Fine is a Consultant for TP Orthodontics, Inc.

In the previous issue of TIP-EDGE TODAY, the biomechanics of leveling and aligning the arches with a preadjusted or "straight wire" edgewise appliance were analyzed. The in/out and torque preadjustments create few side effects as long as tooth shape irregularities and skeletal disharmonies are recognized. It is the tip preadjustment that is responsible for more difficulties, stemming from expression of tip with the very first archwire placed, regardless of its size. With an upright or distally inclined canine, archwire engagement in the canine bracket causes the archwire to lie incisally, producing inadvertent bite closure (Figure 1). Similar side effects can be seen when using a standard edgewise system, but are not as exaggerated as when tip preadjustments are placed into the archwire slots.

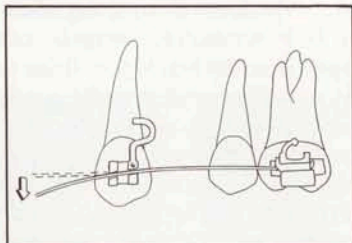


Figure 1. Initial archwire engagement of the maxillary canine results in an extrusive effect on the incisors, deepening the overbite.

Canine Retraction Increases Tendency For Bite Closure

Canine retraction compounds the bite closure caused by the initial leveling archwires in a preadjusted appliance. When force is placed on the canine to move it distally, further bite closure occurs as the crown tends to tip distally rather than move bodily (Figure 2). Again, the problem occurs because of the two-point contact between the archwire and the typical preadjusted slot.

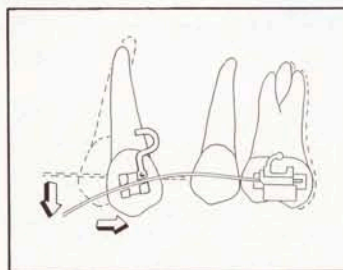


Figure 2. Canine retraction utilizing a preadjusted bracket with a two-point contact causes the archwire to lie incisally anterior to the canine, thereby causing overbite deepening.

Compensatory Actions Are Required

Compensations or treatment alternatives are therefore necessary to counteract these side effects of canine slot preangulation. The brackets could be left off the incisors, or the archwire disen-

gaged, until the canine roots can be distalized as proposed by McLaughlin and Bennett.¹ One could also retract the canine segmentally or not fully engage the canine archwire slot during retraction and upright the root before full continuous archwire engagement.² Although these options are viable, they are impractical, no longer necessary (since Tip-Edge) and may prolong treatment.

The key to successful treatment lies in the ability to treat any case efficiently, rapidly and with few side effects. Clearly, "straight wire" systems have decreased the amount of archwire bending necessary. However, if inadvertent bite closure is the cost of preangulation, then one must examine the system and search for alternatives.

Tip-Edge Offers Simple Solution

The problem of inadvertent bite closure results from the two-point contact between the archwire and the slots in the canine brackets. A simple solution, therefore, rests with the use of a one-point contact bracket during retraction, with two-point contact eventually created to express the prescription of the preadjusted system. This describes the Tip-Edge archwire slot. Regardless

Cont. on Pg. 2

Incorporating.

Cont. from Pg. 1

of archwire size and pretreatment canine position or retraction, the archwire anterior to the canine is never forced incisally, which eliminates the iatrogenic bite closure (Figure 3).

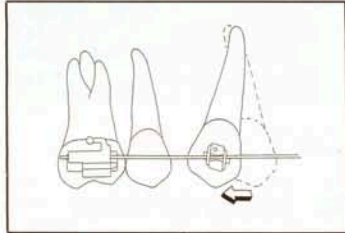
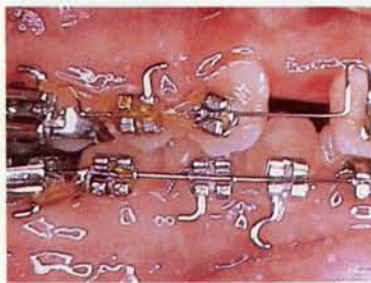


Figure 3. Canine retraction with the Tip-Edge bracket does not cause the archwire anterior to the canine to move incisally, avoiding inadvertent bite closure. (Courtesy Two-Swan Advertising)

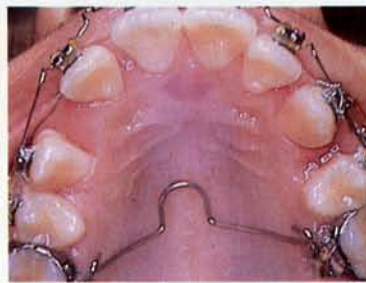
Moreover, since the Tip-Edge bracket is a modified preadjusted bracket, it is compatible with all preadjusted systems. Final canine position is achieved with a simple uprighting spring, a small price to pay for the significant increase in mechanical efficiency.

Tip-Edge Offers Treatment Rapidity

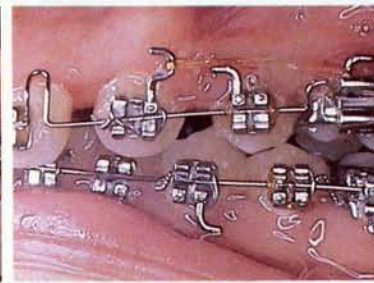
Incorporating Tip-Edge brackets into conventional preadjusted appliances could also decrease treatment time significantly.



A.



B.



C.

Figure 4A-C. A) Canine retracted in 6 months when using a Tip-Edge bracket. B) Occlusal view showing relative rates of canine retraction—Tip-Edge on right vs. bodily translation on the left. C) Left canine after 6 months. The fact that the extraction space remains open longer and the force required for bodily movement is greater, results in more anchorage strain as compared to right side with Tip-Edge bracket.

antly. Consider the mechanics involved in a typical extraction case. It is common for the case to be initially leveled, followed by canine retraction. Incisor retraction is then completed. By eliminating inadvertent bite closure, leveling can rapidly be achieved.

Canine retraction then becomes the next time-consuming step. If this can be hastened, then incisor retraction can be initiated earlier, with an overall decrease in total treatment time. The canine can often be retracted twice as fast with a typical preadjusted bracket (Figure 4A-C).

Uprighting of the root can then occur *as the incisors are retracted*, resulting in a significant decrease in treatment time (Figure 5).

One must keep in mind, however, that incisor retraction pro-

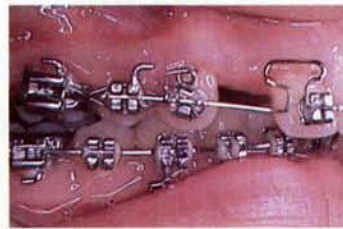


Figure 5. Canine root can be uprighted simultaneously with incisor retraction thereby reducing overall treatment time.

duces a strain on the anchorage, especially if closing loop mechanics are employed. Uprighting the root of the canine also taxes the anchorage as well. Therefore, whatever is used to back up the anchorage during incisor retraction (Class II elastics, headgear, transpalatal arch, etc.) will also assist in anchorage control during canine root uprighting.

Versatility is the key to an efficient "straight wire" system. Incorporating Tip-Edge brackets into the preadjusted appliance simplifies the needs of the practitioner by eliminating side effects such as inadvertent bite closure that result from typical edgewise two-point contact mechanics. In addition, by decreasing the time involved in rate limiting steps such as canine retraction, overall treatment time can be significantly shortened. ✚

References

¹ McLaughlin RP, Bennett JC: Anchorage control during leveling and aligning with a preadjusted appliance system. *J Clin Orthod* 1991;25:687-696.

² Burstone C. Rationale of segmented arch. *Am J Orthod* 1962;48:805-822.

³ Kesling PC. Dynamics of the Tip-Edge bracket. *Am J Orthod Dentofac Orthop* 1989;96:16-25.

Q's and A's

Q. Please outline the management of Class I malocclusions - type III with anterior crossbite.

MANILA, PHILIPPINES

A. Treatment of pseudo Class III's with differential tooth movement via Tip-Edge brackets is not complicated. A proper diagnosis including a Wits analysis of skeletal discrepancy and the Williams analysis for extraction, would be essential before commencing treatment. The three stages should be followed as usual—except a positive anterior overbite would be achieved and maintained rather than an edge-to-edge relationship. The final torque angles of the maxillary and mandibular incisors may need to be modified to help mask any slight Class III skeletal discrepancy that remains in spite of orthodontic treatment.

Q. Teeth do not seem to upright mesiodistally as fast in my practice as I see reported in the literature. We have been using steel ligature ties instead of elastomeric rings—could this be the problem?

ENFIELD, CONNECTICUT

A. Yes—tight steel ligature ties can retard uprighting due to the "Hammock Effect," which tends to lock the angular relationship between the archwire and the Tip-Edge archwire slot. This effect is even more detrimental in the presence of rectangular archwires with their square corners. However, elastomeric ties readily flex and flow vertically across the face of the archwire permitting rapid mesiodistal uprighting.

Q. If he (Dr. Kesling) does not gain his (torque) force from distortion of the (arch) wire, where does the force come from?

This question was asked by the authors of an article on incisor torque control during a recent exchange with Dr. Peter C. Kesling in the "Letters To The Editor" section of the December 1993 issue of the AMERICAN JOURNAL OF ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS.

A. The force for torquing when using Tip-Edge brackets and a .022" x .028" rectangular archwire comes from the activated Side-Winder springs on the brackets of those teeth that require torque. The archwire is so stiff in relation to the gentle forces delivered by the springs that there is no clinically significant second or third order distortion of the archwire. This in turn negates most of the problems outlined in their article, i.e. undesirable—opposite torque of adjacent teeth, incisor extrusion, molar intrusion and/or undesired molar torque. All are associated with third order twisting and/or vertical flexing of the archwires when using conventional, static edgewise archwire slots.

In their letter to the editor the authors suggest that the intended advantages of Kesling's bracket design could not satisfy fundamental physical science laws. It is amazing that such experts on biomechanics can not understand the dynamics of the Tip-Edge archwire slot. Perhaps they can't see the torque for the "moments and couples."

Slant-Back Molar Tubes Designed To Make A Difference

The new slant-back Tip-Edge molar tubes are different by design and it does make a difference.

The unique slanted distal surface places the distal ends of both the occlusal .022" x .028" tube and the .036" I.D. gingival tube in the same plane. This eliminates the mesiodistal offset between the ends of the tubes (Figure 1A) which can interfere with bending or straightening the ends of the archwire, yet leaves the effective length of the gingival tube unchanged — and lengthens the occlusal one. (Figure 1B).

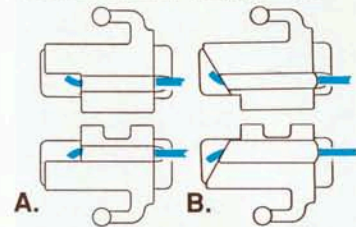


Figure 1 A & B. A) Original Tip-Edge molar tubes with offset ends. B) Slant-back tubes facilitate bending ends of archwires.

Removing Archwires From Molar Tubes

The ends of all archwires should be annealed prior to placing to facilitate bending them away from soft tissues and, of course, to aid in removal. Re-annealing before replacing is also recommended to reduce the effects of work-hardening and subsequent chances for fracture.

Usually it is not possible to completely straighten the end of an archwire before pulling it out of a molar tube. When withdrawing from the larger (.036" I.D.) tubes, slight residual bends cause little problems.

However, it is often difficult to remove a round or rectangular archwire from the closer-fitting .022" x .028" rectangular tubes. This can be extremely uncomfortable for the patient and make the orthodontist appear inept or at best uncaring.

Using the plier beaks as a lever against the mesial of the anchor molar can solve this problem. (Figure 2).

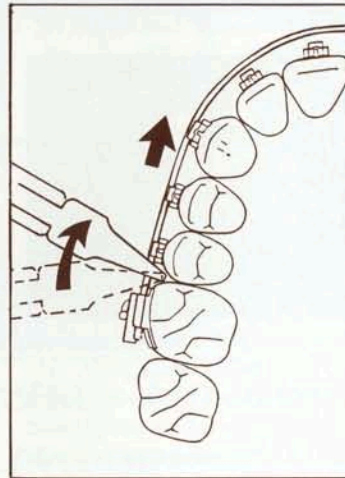


Figure 2. Mesial of molar can be used as fulcrum to "lever" stubborn archwires out of tubes. Procedure is "patient friendly" as no undue pressure is applied to periodontium. *Caution: Be sure all ligature ties have been removed, especially from anterior teeth.*

Even though the force applied to the archwire is greatly increased, the patient feels little as the reciprocal force is applied to the molar with minimal force to the periodontium.

Getting E-Links On Track

A space closing elastomeric (E-Link) can often impinge on the gingiva and/or become a food trap when stretched from the canine circle to the molar hook. This problem can be avoided and the E-Link made "invisible" by engaging it around the distal end of the archwire rather than the hook.



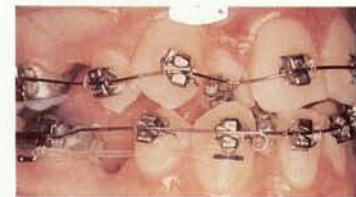
The E-Link then lies on top of the main archwire as illustrated in the maxillary first molar extraction case above.

The stretched elastomeric strand is then ligated along with the archwire in the canine and premolar brackets.



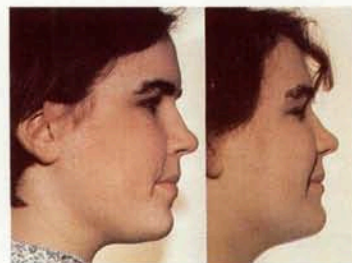
CASE REPORT

A 17-year-old female exhibited a Class I malocclusion. She had a mandibular arch length discrepancy of -9mm. Due to profile consideration, small maxillary premolars and the degree of crowding, four second premolars were extracted.

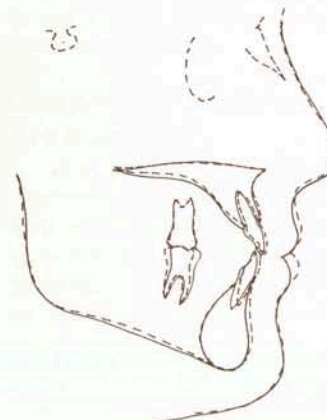


Place appliance appointment. Maxillary .016" nickel titanium, mandibular .016" A. J. Wilcock archwires. Steel ligature ties reduce friction. An E-5 E-Link retracts the canine and premolar to create space for the lateral incisor which has been tied lightly with Zing® String.

Spaces are closed using .022" archwires and E-4 E-Links. Braking springs prevent distal tipping of mandibular teeth mesial to extraction space, thus, aiding space closure by mesial movement of molars.



Final torquing and uprighting of all teeth using .0215" x .028" archwires and Side-Winder springs. Archwires usually need no activation and ordinarily are not removed until the end of treatment.



KS. Female, 17 Years
 Class I
 Extractions U55, L55
 Archwires Used 7 (4U, 3L)
 Adjustments 17, Time: 23 Months
 Retention Maxillary Retainer, Mandibular 3-to-3

Cephalometric Changes:

	Start - Dotted	Finish-Solid
1-APo	+2.0 mm	+1.0 mm
Wits	-.5 mm	-.5 mm
SN-MP	26.0°	25.5°
ANB	82.0°	82.5°
SNA	82.5°	82.0°
SNB	-.5°	.5°
1-SN	107.0°	105.5°

Tip-Edge In Belfast

By Sam Parker, General
Manager TP Orthodontics UK



Richard Parkhouse brought his critical mass and lecturing skills to Belfast for his course on the Tip-Edge technique in October of 1993. He was well supported by John Lancaster of TP Orthodontics UK who looked after the typodonts and hardware. The course attracted an enthusiastic group of 30 participants who were squeezed into the sumptuous Canada Room of the Queens University. Tip-Edge (and Richard) are very popular in Northern Ireland. The technique has been taught in the Belfast academic department since 1988.

NASSO Honors Dr. Robert A. Rocke

The North American Society for the Study of Orthodontics honored Dr. Robert A. Rocke for his over 50 years in orthodontics. Joining Dr. H. D. Kesling in 1934, Bob Rocke helped introduce Tooth Positioners, Indirect Banding and the Begg Technique to the profession. He and his wife Dorothy have two sons, Tom and Paul who are orthodontists and a daughter, Susan who is a speech therapist.



Dr. Peter Kesling standing, and his wife Charlene, Dorothy Rocke and Robert Rocke during NASSO meeting.

Courses & Lectures Planned in 1994

The following Tip-Edge courses, or lectures will be given by the Kesling & Rocke Group, Dr. R. Parkhouse, Prof. A. Richardson, Prof. H. Pancherz and/or Drs. G. & R. Caponi. L=Lecture C=Course

Feb. 3-5	Mexico City	L	June 17-18	Italy	C
Feb. 14	St. Louis, Mo.	L	Date Open	Tel Aviv, Israel	L
Feb. 25	York, Eng.	L	Sept. 9-11	Jakarta, Indonesia	C
March 18	Bergen, Norway	L	Sept. 17 & 18	Singapore	C
March 19-21	Tokyo, Japan	C	Sept. 23-24	Dallas, Texas	L
March 21	Oslo, Norway	L	Sept.	France	C
March 23-25	Osaka, Japan	C	Sept. 30- Oct. 2	Harrogate, Eng.	C
March 27-28	Hong Kong	C	Oct. 7-8	Giessen, Germany	C
April 6	Essex, Eng.	L	Oct.	Sydney, Australia	C
April 28-29	Pittsburgh, Penn.	C	Oct.	Rio de Janeiro	C
April	Rio de Janeiro	C	Nov. 25-26	Belgium	C
May 3	Orlando, Fla.		Nov.	ORTHODONTIC CENTER	C
	AAO Meeting	L			
May 5-7	ORTHODONTIC CENTER	C	Nov. 11-13	Tokyo, Japan	C
			Nov. 16-18	Sapporo, Japan	C
			Nov. 20	Osaka, Japan	L

Brazil Nuts About Tip-Edge

Drs. Giuseppe and Regina Caponi report growing interest in Tip-Edge in Brazil. Their last course given in Rio de Janeiro was the best to date. All class members were enthusiastic about the technique, did the typodont exercises diligently and read their Portuguese TIP-EDGE GUIDES from beginning to end.

As a result of the Caponi's efforts, the Tip-Edge technique is now practiced in ten different Brazilian States.



Drs. Giuseppe and Regina Caponi (front left and center) and members of the July 1993 Tip-Edge Course.

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