BIRTHPLACE OF THE TOOTH POSITIONER AND THE BEGG TECHNIQUE IN THE U.S. IS SAVED FROM WRECKING BALL. BUILT IN 1933 BY DR. H.D. KESLING – THE OFFICE WILL BE REMODELED INTO A RESIDENCE.

TIP-EDGE TODAY®

Published Quarterly In The USA

DR. CHRIS KESLING CHECKS THE AMOUNT OF ANCHORAGE BEND DURING RECENT COURSE IN JAPAN (PAGE 4).

SUMMER 1997

EDGELINES

TIP AND TORQUE — YOU CAN'T HAVE ONE WITHOUT THE OTHER

Anterior teeth need room to tip or there will be no torque from Side-Winder forces, Cover Story.

FACTOID: All edgewise brackets ***except Tip-Edge*** turn every tooth into an anchor tooth.

FLYING IN THE FACE OF CONVENTIONAL "STRAIGHT-WIRE":

Cutting the corners lets Tippy show off. Q's & A's, Page 2.

TIP-EDGE GRAPHIC

A LOOK INTO THE FUTURE:

Dentis Erectus

Orthodontic bracket with horizontal archwire slot. Invented by Dr. E.H. Angle in 1925. Slot design inhibited bite opening, space closure and anteroposterior interarch corrections. Complications lead to segmented archwires, need for extraoral anchorage control and in many cases avoidable surgery. Relegated to nonextraction treatment of Class I malocclusions in the early 2000's.

COVER STORY

Side-Winder Springs Need Elbow Room

By Peter C. Kesling, D.D.S., Sc.D.

More and more orthodontists are electing to finish their Differential Straight-Arch® cases utilizing Side-Winder springs in conjunction with passive, .0215" x .028" rectangular archwires.

Side-Winder springs are now available in both the original and new invisible styles (Figure 1). Initially designed as an efficient power source for mesio-distal uprighting, their ability to also torque teeth has been demonstrated and popularized by Dr. R.C. Parkhouse of Wales.[1-2]

The second order power from the springs can be converted into third order forces to achieve labial or lingual root torque (Figure 2 A&B).

However, in order for Side-Winder springs to upright and torque anterior teeth, it is necessary that there be space available. If all contacts are tight from molar to molar, the central and lateral incisors are tipped distally and the ends of the archwire locked; Side-Winder springs will not be able to upright the central and lateral incisors. In the presence of a rectangular archwire, this means no torque as well. In extraction cases this problem can also be caused or compounded by the overclosure of extraction sites.

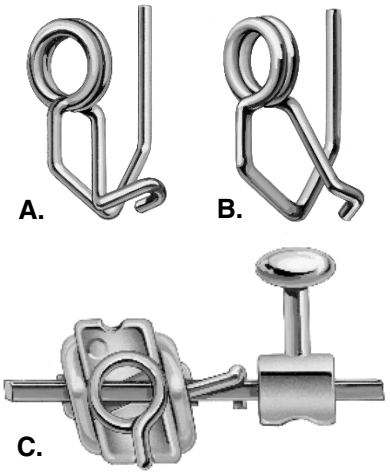


Figure 1 A-C. A) Original counterclockwise Side-Winder spring. B) Invisible counterclockwise Side-Winder. C) Side-Winder (invisible) providing both tip and torque control to maxillary right canine. Note the elastomeric ring is placed last to retain both the archwire and the spring.

Figure 2A&B. A) Beginning of stage three with passive maxillary and mandibular archwires. B) After 10 months with no reactivation, Side-Winder springs have provided all the power to create both crown uprighting and root torque.

Avoid Overclosing Of Extraction Spaces

When using Tip-Edge brackets, it is very easy to close extraction sites because the teeth are free to tip. Tipping requires far less force than bodily movement. Also the archwire slots, in effect, become larger (as opposed to conventional edgewise slots that become smaller and bind on the archwire) and therefore, friction usually associated with space closure is eliminated.

Because of this and the fact that appointments with the Differential Straight-Arch Technique are usually at 6 to 8 week intervals, there is a possibility of an extraction space becoming "overclosed."

Overclosure can occur because the premolars are not attached to the archwire. In such cases they can become crowded buccally, lingually or submerged. Even though all teeth are engaged, problems can still exist because of abnormal crown anatomy or improper bracket heights. In such cases the second premolar may ride up over the distal line angle of the canine (Figure 3).

Figure 3. Incorrect bonding heights can result in extraction site overclosure – even with all teeth engaged on the archwire.

Please see COVER STORY next page

COVER STORY - Side-Winder Springs…

The removal of the horizontal elastomeric or elastic from a quadrant as soon as the space has closed can prevent overclosure. Once overclosure has occurred, no special steps need to be taken except to leave space between the distal surface of the molar tube and the bend in the end of the archwire at the beginning of stage three (Figure 4). The forces of the Side-Winder springs acting to upright the canine and second premolar will separate their crowns to create the necessary arch length and allow proper uprighting.

Figure 4. Overclosure of extraction spaces can be corrected by Side-Winder spring forces during the beginning of stage three. Note end of archwire must be bent appropriate distance from the buccal tube to allow necessary reopening – but not too much.

Overclosure In Nonextraction Cases

The differential intrusion of anterior teeth often causes their root apices to move mesially. This occurs in both extraction and nonextraction cases. The result is distal crown tipping of both central and lateral incisors. Because of the shapes of the crowns, these teeth – in effect, become narrower and take up less space along the archwire when they are tipped than they require when uprighted (Figure 5).

Figure 5. The length consumed along the archwire by the maxillary six anterior teeth when tipped (top) can be 2-4 millimeters less than when in their final tip angulations (bottom).

Thus it is possible to "overclose" the teeth themselves in nonextraction cases.

Therefore, if all contact points throughout the arch, from molar to molar, are tight, the maxillary incisors are tipped distally and the ends of the archwire are bent tightly against the distal ends of the molar tubes—***no root uprighting or torque can occur.***

Clinical Evidence Shows No Tip = No Torque

Figure 6 A&B show the anterior tooth relationships at the beginning of stage three. The four second premolars were extracted at the beginning of treatment. The maxillary lateral incisors are tipped slightly distally and the contact points are tight.

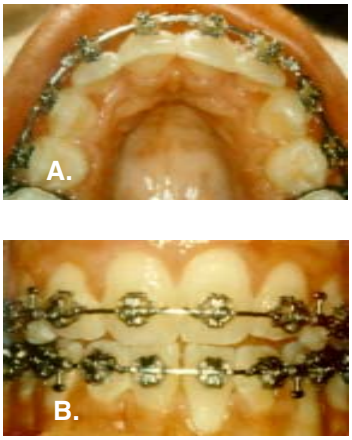


Figure 6 A&B. A) Maxillary lateral incisors rotated at beginning of stage three due to overclosure. B) Lateral incisors tipped slightly distally – crowns need room along the archwire to upright.

The slight space between the mandibular central incisors is actually advantageous. It will permit further spreading of the lateral incisor roots. The maxillary occlusal view points out not only a lack of space but a presence of crowding evidenced by rotation of the lateral incisors.

Lateral head X-rays (Figure 7 A&B) reveal that little or no torque was achieved over a 7 month period. Normally the rate of torque from Side-Winder springs is approximately 2 degrees per month. When using full size (.0215" x .028") rectangular archwires in Tip-Edge Rx I brackets, it only takes 1 degree of distal root positioning to achieve 6 degrees of palatal torque. However, as the final lyric of the song Love and Marriage goes, "...You can't have one without the other!"

Slight Space Advantageous During Stage Three

From the previous example of the lack of progress due to no space, it is logical to assume that ***some*** space is necessary to assure both maximum rate and range of crown tip and root torque.

At the beginning of stage three this space can be in the extraction sites and/or between some anterior teeth and actually is to the patient's advantage. Of course, if the space exists in the extraction sites, it is necessary to let the canine crowns slide distally to give the lateral incisors the "elbow room" needed to upright. Cuspid ties (steel or elastomeric), anterior elastics or elastomerics and steel figure 8's between anterior teeth are definitely ***contraindicated***.

Continued on page 3

Q's and A's

Q. *Your case report series occasionally show Class II Division 1 malocclusion cases with over a half unit Class II buccal segments being treated on a nonextraction basis without headgear. This flies in the face of conventional "straight wire" treatment, where elastics alone cannot be relied upon to effect such a major change. Are you just showing "one off" favourable growers, or can such changes be reliably achieved?*
Middlesex, ENGLAND

A. Usually such malocclusions have mandibular incisors that are 3 to 4 millimeters behind the AP-o line. Moving these teeth toward or slightly ahead of the AP-o line helps achieve Class I corrections in the buccal segments. Of course, favorable growth can also help the outcome of treatment. However, of the cases you referred to one was twenty-four years old, another eighteen and two other (females) age fifteen. Therefore, growth is not necessary.

Tip-Edge brackets are designed to let the maxillary teeth tip distally under light (2 ounce) intermaxillary forces. Conventional "straight wire" brackets tend to move the maxillary teeth ***mesially*** and they must be moved distally bodily under relatively heavy forces. That's why when treating with such brackets one needs headgear and with Tip-Edge one does not. It's a whole new ball game and yes, we love to "show off."

Q, *I am using a .016" round wire for bite opening in the rectangular slot rather than the round slot. Is this a problem?*
Lancaster, CALIFORNIA

A. There are several problems that can occur by inserting the .016" round wire in the rectangular slot which is occlusal to the round tube. The most significant is the increased danger of the archwire being deformed by occlusal forces. This, of course, can eliminate the intrusive forces on the anterior teeth and permit the anchor molars to tip mesially.

Also the amount of bite opening force from any degree of anchor bend is reduced due to the shorter length of the occlusal tube. And finally, because of the tube's shortness and smaller inside dimensions, there is an increase in friction as the archwire enters the tube. This could reduce the rate of space closure in the buccal segments during stage one and/or cause the crowns of crowded anterior teeth to move labially as they align.

Side-Winder Springs…

continued from page 2

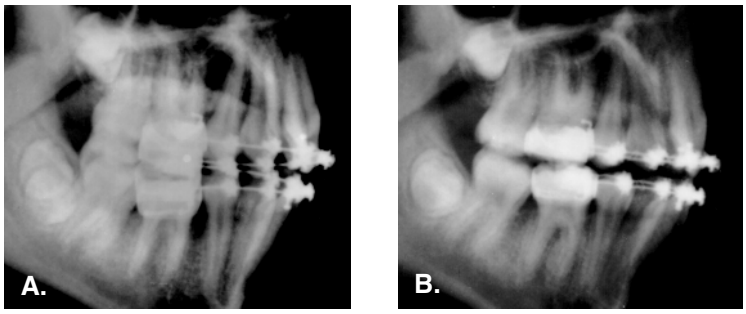


Figure 7 A&B. A) Lateral head X-ray taken at the start of stage three. Rectangular wires, .0215" x .028", in both arches and Side-Winder springs in place to provide both crown tip and torque forces. B) Lateral head film taken seven months later. Note little, if any, change in the labiolingual inclination of maxillary anterior teeth yet the first premolars have uprighted.

Rather than taking steps to close such spaces with steel or elastomeric ties, it is better to educate the patient concerning their value and usefulness. It must be verified, however, that the ends of the archwires are locked and that the space(s) will not get any larger during future uprighting and torque.

Once the roots have been moved to their final angulations or beyond, it is a simple matter to close such small spaces with a retainer or some other removable appliance.

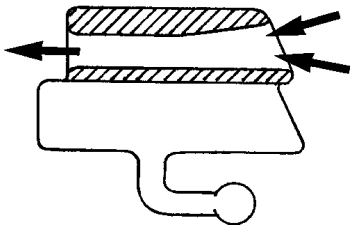
References

1. Parkhouse RC. Out torquing conventional edgewise mechanics. 1993;Spring, Tip-Edge Today.
2. Parkhouse RC. "Pretorqued" rectangular archwires. 1996;Spring, Tip-Edge Today.

Low Profile Mandibular Tube Facilitates Wire Removal

The rectangular tubes of the new, low profile, nonconvertible, combination tubes have a unique interior configuration. The distal portion of the occlusal wall is chamfered to reduce friction and facilitate straightening of a bent archwire as it is removed – see figure.

Friction is reduced because the close, inside dimension tolerances required for torque control with a rectangular archwire are limited only to the mesial portion of the tube. Straightening of a partially unbent wire is aided by the inclined interior surface and the associated larger rear opening of the tube.



Occlusal chamfer aids in straightening distal end of archwire as it is drawn mesially through tube.

These tubes still provide maximum anchorage and rotational control because the enlargement of the inside of the tube occurs only in the occlusal direction.

Torque control is also unaffected because a close fit between a rectangular archwire and the inside of the tube still exists at the mesial end. The length of a tube (or bracket) is not related to its effectiveness in third order tooth control.

Presently only these new mandibular nonconvertible tubes have what is termed the "Easyout"™ feature.*

*Patent Pending

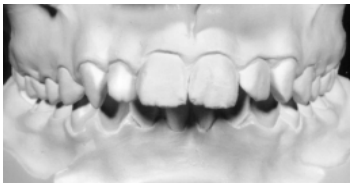
CASE REPORT

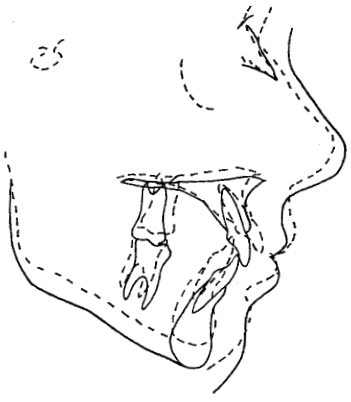
This 12-year-old female patient exhibited a severe dental and skeletal Class II relationship. Due to the severity of the malocclusion and the poor condition of the maxillary first molars, it was decided to extract these teeth prior to starting treatment. At appliance removal, bands were placed on the mandibular first molars with attached wires extending lingually and over occlusal of mandibular second molars to prevent their supererruption until maxillary third molars erupt.

Start of treatment. Maxillary and mandibular .016" Australian archwires with appropriate bite opening bends mesial to anchor molars. Zing® string is tied from maxillary intermaxillary circles to molar hooks on maxillary second molars.

Stage II – .022" Australian archwire in the maxillary arch to provide maximum molar control during space closure using E-links®. Mandibular premolars bracketed and engaged to .016" Australian archwire. Note overcorrection of Class II canine relationship.

Stage III – Maxillary .0215" x .028" rectangular archwire in maxillary arch used in conjunction with Side-Winder uprighting springs to torque and upright the teeth to their final axial inclinations.





H.T. ..... Female, 12 Years
Class II, Division 1
Extractions U66
Archwires Used 6 (4U, 2L)
Adjustments ..... 10, **Time**: 20 Months
Retention ..... Upper & Lower Retainers

Cephalometric Changes:

	Start-Dotted	Finish-Solid
1 A-Po	0	+1.0 mm
Wits	+6.0 mm	+2.0 mm
SN-MP	37.5°	38.0°
SNA	79.0°	81.0°
SNB	73.0°	74.0°
ANB	6.0°	7.0°
1-SN	111.0°	95.0°

Aussies Present Tip-Edge Course in Thailand

In June of 1996 a three-day Tip-Edge course was held in Khon Kaen, Thailand. It was given by Drs. Sampson, Dreyer and Jenner of the University of Adelaide, South Australia under the auspices of Khon Kaen University. The course was well attended by 32 practitioners and postgraduate students. (Notice delayed waiting for photograph)

Staff and students of Tip-Edge course at Sofitel Hotel Khon Kaen, Thailand.

Italian Introductory Tip-Edge Course

An introductory Tip-Edge course was held for 85 participants the 17th and 18th of January in Milan, Italy. It was organized for the members of SIDO (Societá Italiana di Ortodonzia) by the newly formed, Italian Tip-Edge Study Group.

Speakers from the group were Drs. Farina, Cussotto, Montagna, Santamaria and Zingaro. Lectures covered the evolution from edge-wise to Tip-Edge, differential tooth movement, cephalometrics and stages of treatment.

Japan Tip-Edge Society Holds Meeting – Presents Course

Members of the Japanese Tip-Edge Society at meeting in Osaka Japan. Drs. K. Miyajima and Chris Kesling and officers of the society in the front row.

The Japanese Tip-Edge Society recently held its meeting in Osaka, Japan. Dr. Chris Kesling lectured on the evolution and present state of the Tip-Edge art. A three day basic Tip-Edge course was also given by Dr. Kesling. Dr. Kuniaki Miyajima of Nagoya University provided translation for both the lecture and the course. The course included hands-on sessions working with wax typodonts.

Advanced Tip-Edge Course in Manila

Dr. Chris Kesling presented an advanced Tip-Edge course in Manila, Philippines this February. Over forty doctors participated in the two-day course which was organized by Fildent Trading Company.

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