BASIC ORTHODONTICS

And why we believe in

THE TIP-EDGE TECHNIQUE

(Differential Straight-Arch)
MOVING TEETH

• *Light force* + *Time* = *Tooth Movement*

• Any technique of moving teeth involves light force and time.

• If you took your finger and lightly pushed on a tooth over a long period of time, the tooth would move.
TOOLS OF TOOTH MOVEMENT

• ANCHORAGE
  – Extraoral - headgear
  – Intraoral
    • Bands - primarily for molars
    • Brackets
    • Mini-Implants

• FORCE
  – Implements of Force:
    • Wires
    • Springs: rotating, open coil, sidewinders
    • Elastics- rubber bands, elastomeric ties (o-rings or doughnuts), e-links, power chains, z-string (not to be confused with g-string).
EARLY ORTHODONTICS

• Place a bracket on the tooth. Brackets were non-specific.
  – Edgewise and Begg brackets
• Bend wires where you want teeth to move
• Move teeth on along the wire
• Use elastics and springs to pull teeth to wire or move teeth back or forward on wire.
HOW WE MOVE TEETH TODAY

Modern Orthodontics evolved with the development of the STRAIGHT WIRE BRACKET:
• Place tooth specific bracket on each tooth

Use arch wires formed to a perfect arch shape.

• Start with small flexible round wire
  – (round wire allows tooth to move more freely)
• Switch to larger round wire as teeth straighten.
• Use rectangular wire if needed to torque teeth buccally or lingually
• Use elastics and auxiliaries to enhance movement
BRACKET PLACEMENT
WIRE PLACEMENT
ELASTICS
Two years later:
SOME TERMINOLOGY

• TIP - Moving the *crown* of a tooth mesially or distally

• TORQUE - Moving the *root* of a tooth facially or lingually

• UPRIGHTING A TOOTH - Tipping the *root* mesially or distally

• BODILY MOVEMENT - Moving the entire tooth in any direction
TIPPING (A)
TORQUE (B)
UPRIGHTING

ROOTS TIP
MESIALLY OR
DISTALLY INTO
CORRECT
ALIGNMENT
Bodily Tooth Movement
TECHNIQUES OF ORTHODONTICS

• Begg

• Straight wire

• Tip-edge
• Bracket designed to let tooth tip freely which promotes fast tooth movement
• Wire fits in slot in top of bracket and pin holds wire in place.
• Auxiliary springs and wires used to tip and torque teeth.
• Problem is that tooth moves so freely, hard to control movement
Begg Technique
STRAIGHT WIRE BRACKET

- Wire lies in straight slot in bracket for more control of tooth movement
- Teeth have a bodily movement
Straight Wire Technique

- Tooth tries to move bodily resulting in archwire deflection and increased friction.
- Requires increased force and anchorage to pull the tooth along the wire.
- Often need to band Second Molar for anchorage.
- Must start with very small wire and incrementally move to larger wires as teeth move.
TIP EDGE

• Dr. Peter Kesling (the inventor of tip-edge), combined the tipping ability of the Begg technique with the control of Straight wire.
• Began with a straight edge bracket and removed two wedges in the slot, which allows the tooth to tip up to 25 degrees.
• The bracket retains a straight component so the tip is controlled.
• Kesling also added a vertical and later a horizontal tunnel in the bracket so that auxiliaries could easily be used with the bracket.
Tip-edge Plus Bracket
TIP-EDGE VS. STRAIGHT WIRE

**TIP-EDGE**
- Notch in bracket which allows crown of tooth to tip up to 25 degrees (depending on which tooth)
- To move the body of the tooth, we first move the crown of the tooth, then upright the root.

**STRAIGHT WIRE**
- Slot in bracket is straight, so the whole body of the tooth moves at once.
TOOTH MOVEMENT WITH TIP-EDGE
ADVANTAGES OF TIP-EDGE OVER STRAIGHT WIRE

- Easier and faster to move a tooth by tipping first, then uprighting the root, rather than moving the tooth bodily.
- Less force is needed to move teeth
  - About 2 ounces with tip-edge
  - About 8 ounces with straight wire
- Less problem with anchorage, so virtually eliminates the need for external anchorage such as head-gear (although can be used with head gear).
- Normally do not have to band or bracket second molar
- Easier to correct overbites
- Less wire bending
- Fewer wires
- FEWER APPOINTMENTS, Therefore more profitable.
DISADVANTAGES OF TIP-EDGE VS. STRAIGHT WIRE

• Once crown of tooth is where you want it, the tooth must be uprighted. (Not as difficult with the new Plus bracket.)

• Not as common as straight wire, so more difficult to find a tip-edge dentist to transfer to. (I’ve only transferred about 2 cases in the last 10 years.

• Since tip-edge has only been around since 1986, less articles and research about it.

• Only 2 companies make tip-edge bracket. Several companies make straight wire brackets.
WIRE PLACEMENT
(Tip-edge vs. Straight-wire)

• Because of straight slot in straight-wire bracket, harder to place wire.
• Triangular slots in tip-edge bracket allows easier bracket placement with less unwanted forces.
Relative Slot Sizes

A.

B.

C.
Ready, Set, Straighten!