Bonding in Orthodontics

Rational: Accurate placement of pre-adjusted appliances decreases the need for finishing bends and reduces unnecessary tooth movement. Good acid-etch bonding technique maximizes tooth-appliance bond strength.

Technique

1. Tooth surface
   • must be free of plaque, calculus, and debris
   • must have surface easily conditioned for bonding strength (enamel: best, dentin/cementum: poor, porcelain: moderate, gold/amalgam: poor)

2. Appliances
   • mesh pads used for maximum retention—must push adhesive into mesh!
   • pad of bracket must match contour of tooth (beware of oddly-shaped crowns)

3. Isolate
   • Use lip retractors or the Nola device. Cotton rolls may be used for single tooth bonding.
   • Avoid contaminating etched surface with blood, saliva or crevicular fluid (all decrease bond strength)

4. Etch
   • usually 37% phosphoric acid (can burn soft tissue!)
   • allow etch to sit on tooth for 15-30 seconds, avoid etching whole tooth and keep away from interproximal areas
   • rinse etch away from gingiva for 1-5 seconds, use only water to begin rinse and end with air/water blast to remove remnants.
   • remove any remaining water from field with compressed air directed toward gingiva. Etched surface should appear dull and frosty
   • suction patient to remove water and etch
5. Adhesive
   - light cure adhesive has 2 componants
   - unfilled primer—apply very thin layer after frosty etched surface obtained (this is an optional step)
   - adhesive—apply a small amount (~1 mm³) to back of bracket and press into mesh. Be sure to discard the first increment of adhesive out of the tube, as it may be light- and oxygen contaminated.

6. Position
   - center bracket on tooth, align with long axis
   - bracket should lie on height of contour (from occlusal aspect)
   - panoramic radiographs are useful in finding the long axis of the tooth
   - brackets are usually tooth-specific, with the dot going disto-gingival
   - press bracket to expel extra adhesive
   - clean adhesive flash, recheck position

7. Bond
   - remove operatory light from field (initializes cure early)
   - check to be sure bracket slot and tie wings are not blocked with adhesive
   - light cure appliances for 20-30 seconds/bracket with a calibrated curing light. Be sure to cover all angles.
   - once all brackets are cured, wires may be placed immediately. Full bond strength is not reached until 24 hours after initialization of cure, regardless of adhesive type (light- or chemical-cure).

8. Re-bonding
   - check bracket base and tooth surface. Where did failure occur?
   - remove remaining adhesive from tooth surface with a fine fluted finishing bur on a high-speed handpiece.
   - re-etch, prime and bond.
   - be aware that rebonding may reduce bond strength.