Bond Failures

by ***Andrea Cook***

Are bond failures a problem for your practice? Are additional repair appointments clogging your daily schedule? Successful bonding is a critical procedure for the orthodontist and clinical team to perfect.

The process varies greatly depending on whether you are using indirect bonding versus direct bonding, what adhesive you are using, how you isolate teeth, etc. Regardless though, a consistent bonding protocol is essential. In order to track the bond failures rate and get a good understanding of what is happening in a practice, clinical team members should not alter the basic bonding protocol. If there is confidence the protocol is being followed by everyone, there will be a greater opportunity to track bond failures and discover problem areas in the practice.

Preparation for the bonding process is a key. If any portion of the preparation is not followed 100% a compromised bond may occur and cause a bond failure either chairside or after the patient has left the office.

A basic bonding preparation should include:

- Preparation for bonding: Being fully prepared for any procedure is the first step in improving bonding protocol. Review the patients chart and x-rays prior to seating the patient. All supplies should be included in your original set up to make sure you do not have to get up during your procedure. Any time the clinician leaves the patients, the risk of contamination is increased and can lead to bond failures.
- The patients chart should be reviewed to clarify the type of brackets to be used and which teeth are to be bonded. These brackets should be added to the original set up. All attachments should be included – lingual buttons, bite turbos, etc. Additionally, all required products need to be included such as porcelain primer, alternative adhesives for crowns, veneers, etc.
- Prophy: Using a slow speed hand piece, fluoride and glycerin free pumice, the facial surface of all teeth to be bonded should be cleaned to remove all traces of plaque or debris. Care should be taken during this process not to aggravate the gum tissue. This may lead to bleeding and contamination of the bonding surface. Fully rinsing all paste from the tooth surface is very important. Confirm all teeth are free from plaque (especially second molars) before continuing to the next step.
- Isolation: Keeping the teeth dry during the entire bonding process is key to the process. I would advise using a retraction system that provides for suction. The NOLA retraction system works well. The tongue guard can be altered to make it more comfortable for the patient and increase the suction. The use of dry angles can aid in the reduction of saliva during the bonding process. The ability for the orthodontist to have a clear view of all teeth can be achieved using this system.
- Etching: Etch and its use (or misuse) has always been a controversial issue. The etch solution should be 37% phosphoric acid and can be either gel or liquid. To properly apply, gently dab the etch – if using liquid form – or apply the gel etch to the facial surface of the tooth. Avoid contact with the gingival tissue. The etch should be allowed to sit on the tooth surface for 30 – 45 seconds. This time frame typically allows the clinician to apply etch to one arch at a time and rinse fully between arches.
- Rinsing: A complete and full rinse should begin no more than 60 seconds after the etch has been applied. The rinsing process should begin on the first tooth etched and continue the same pattern as the application process. Rinsing each tooth for a full five seconds is imperative!

- Drying: Once the etch has been applied and the teeth rinsed properly, they should be dried with a tooth dryer. This will help eliminate the chance that there is air and/or oil coming through the air/water lines in the office. The tooth surface should appear chalky white. If this does not appear, re-etch for 15 seconds, rinse and dry again.
- Sealant: Use a very thin coat of sealant or primer that is cohesive with the adhesive being used. The sealant should be applied with a dabbing motion to protect the enamel rods. Manufacturers instructions for each product should be strictly followed.
- Adhesive: Adhesive should be added to the bracket base and immediately be placed on the prepared tooth surface. The clinician should make certain the adhesive is pressed into the bracket base to avoid having any voids between the bracket base and the tooth surface.
- Light Curing: Follow the manufacturer's recommended light curing time for each light cure unit. Each unit may have different curing times. When using the light cure unit, the tip of the wand needs to be as close to the bracket as possible without touching the bracket. The wand needs to be held so the light reaches the adhesive – either mesial or distal or from the occlusal of the bracket. I prefer to light cure from both angles to make sure the adhesive is fully cured.

Maintenance of the light cure units is necessary to ensure maximum output is achieved. This is done on a weekly basis by one of the clinical team. The light should be tested prior to and immediately after a bonding to make certain the proper output is achieved during the entire bonding process.

Once the light cure process is complete the retraction system can be removed and arch wires can be placed. Occlusion should be checked and addressed following the orthodontist's preferences.

Each step of the bonding protocol is critical. Any step that is not completed as instructed could result in a compromised bond and a reduction in overall bond strength. This failure to follow the protocol may lead to a bond failure chairside but could also cause bond failures later during treatment.

About the Author

Andrea Cook's in-office, hands on training motivates and energizes orthodontic clinical teams. She bases training systems on practical knowledge gained through 20 years chair-side experience in Dr. David Turpin's office. She works as a clinical consultant and trainer for premier orthodontic offices across the country.

Since effectively training clinical team members is a critical portion to the advancement of clinical productivity and profitability Andrea works with teams to increase efficiency, improve communication and guide the office to a new level of excellence.

Her years of experience include working in single, double, and multi doctor practices. She has extensive experience as clinical coordinator for a multi doctor practice seeing over 120 patients per day. Andrea's experience allows her to understand and address the concerns of the clinical team.