INDIRECT BONDING SIMPLIFIED

Indirect Bonding Simplified

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Co-Clinic Director, Master Clinician, Professor (Ret.)
University of Illinois at Chicago 30+ Years

Private Practice 1974 to Present in Northern Illinois
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The Bonding Appointment System (IDB: Part 2)

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This program will outline step by step what the doctor and his/her support staff need to do to accomplish flawless bracket placement without the bond failures often reported when indirect bonding.
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**BEFORE the doctor arrives, the staff:**

- Primes the brackets and tubes in the custom tray (before preparing the teeth).
- Explains the process to the patient, including how we isolate (put them at ease).
- Isolates & prepares the teeth.
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**Priming the Brackets:**

![Image](image_url)

A thin coat of primer/sealant should be painted on the custom bracket pads (cured Transbond™ adhesive) prior to the Dr. arriving at the chair.

We use Add & Bond® made by Parkell as our primer.
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Air dry lightly, then keep the tray in a light tight case while the teeth are being prepared.
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Prepare the Teeth (Clinical Asst. Task):

- If crowns exist, microetch as a first step.
- Rinse thoroughly.
- Prophy. Rinse thoroughly.
- Place isolation.
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**Isolation:**

- It is important that the teeth be kept dry.
- Moisture will cause bond failure at the enamel/adhesive interface!
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**Isolation:**
- We don’t use Nola or similar systems.
- *Impossible to properly sterilize (OSHA).*
- We find our isolation offers superior isolation & visualization and is more comfortable for the patient.
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Helpful to Isolation:

Use Sal-Tropine® to Control Moisture
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Buy in bulk; dispense in individual "penny envelopes" with printed instructions
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Sal-Tropine®:

Prescription:

- Two .4 mg. tablets over 90 lbs.
- One .4 mg. tablet under 90 lbs.
- Take one hour prior to the bonding appointment with a full glass of water.
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**Sal-Tropine®:**

**Contraindications:**
- Glaucoma
- Asthma or allergies being treated with medication
- Pregnancy
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Buccal Isolation:

Foil backed Theta Dri-Angles™ are placed in the cheeks, with the foil side facing the teeth.
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**Buccal Isolation:**

Cheek retractors are then placed...
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**Buccal Isolation:**
Cheek retractors - Buccal extensions cover the Dri-Angles.
Lingual Isolation:

Two additional Dri-Angles are placed lingually between the tongue and teeth with the foil side facing the teeth.
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Isolation in Place:

Note the ISOLATION and VISUALIZATION
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Lingual Isolation “Pearl”:

Tape the lingual Dry-Angles together to keep the teeth dry, make insertion and removal easier, and improved patient tolerance.
Dry the teeth prior to placing 3M Unitek Self Etching Primer™.
Use a saliva ejector.
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Prepare the Teeth (Clinical Asst. Task):

- Apply 3M Unitek Transbond™ Plus Self-Etching Primer.
  - 5 full seconds
  - Rub each tooth
  - Re-wet applicator after each tooth
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*If crowns are to be bonded:*

- After isolation, prepare the crown with 3M ESPE RelyX™ crown primer.
- To enhance bond strength, apply multiple times.
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The Dr. Comes to the Chair NOW:

The doctor air dries the teeth and checks for moisture. (If the lingual Dri-Angles are saturated, the assistant replaces just prior to the doctor’s arrival).
Seating of the trays is done one arch at a time, beginning with the lower. Gravity will cause saliva and other moisture to collect in the floor of the mouth making isolation of the lower hardest and the upper easiest.
There are three doctor tasks:

- The doctor will now apply a second coat of Transbond™ Plus Self-Etching Primer and air dries.
- The doctor then immediately seats the trays and has the patient bite on cotton rolls.
- The doctor “tacks” the brackets in 7 key locations after placing each tray.
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1). Doctor placing Self-Etching Primer

- The Dr. applies a second coat of Transbond™ Plus Self-Etching Primer “as fast as your hand can move”. It is not necessary to rub for 5 seconds.
- The objective is to “re-wet” the teeth (eliminate moisture from the enamel surface).
Doctor placing Self-Etching Primer:

- Moisture can result from:
  - Saliva
  - Crevicular weeping
  - Moisture condensing on the teeth from the patient’s breath
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**Important:**

The tooth surface prepared with 3M Unitek Self Etching Primer™ is extremely hydrophilic.
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If there is any time lag between preparing the teeth and the Dr. placing the tray, moisture from a patient’s breath can condense on the tooth surface. This can cause bond failure at the enamel/adhesive interface.
Assistant prepares the brackets:

While the Dr. is reapplying Transbond™ Plus Self Etching Primer, place a very small amount of Transbond Supreme LV ™ (flowable composite) on each bracket.

Only use a PIN HEAD amount of the flowable composite.
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The Magic Bullet:

3M Unitek Transbond Supreme LV™.
This is WAY TOO MUCH Transbond Supreme LV™!!!
Visualize the amount of flowable composite you see here. This is borderline too much! Excess Transbond Supreme LV™ will flow all over the tooth...including interproximally, bonding teeth together.

**NOT A GOOD THING!**
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This is Better
2). Seating the lower tray:

After reapplying the Transbond™ Plus Self Etching Primer and air drying, the Dr. is handed and immediately places the lower tray.
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Seating the lower tray.
2). Seating the Lower Tray:

- The Dr. places two cotton rolls perpendicular to the arch in the bicuspide area.
- The patient is instructed to bite pretty hard, but importantly, with constant pressure.
3). The doctor “tacks” the adhesive as follows:

- Midline is cured first.
- Next, cure the central incisors/lateral incisor contact on each side.
- Cure the most distal bracket or tube on the right side.
- Cure at the second most distant bracket or tube on the right side.
- Repeat on the left side brackets or tubes.
Note the cotton rolls perpendicular to the arch.
Tack the midline first.
Tacking the posterior teeth.
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The upper tray:

- Repeat the procedures listed for the lower arch on the upper arch in order.
- If severe moisture problems (should be very rare) replace the Dri-Angles before proceeding.
Now reapply Self Etching Primer to the upper, re-dry. Note the cotton rolls are left in.
Remove the cotton rolls and quickly seat the upper tray.
Push on posterior to ensure it is fully seated.
Again, bite on cotton rolls. Constant pressure!
Now tack the upper midline first
Tack the same seven areas as in the lower. The doctor is now done!
The patient keeps biting on the cotton rolls (constant pressure) until the assistant has light cured each proximal of both arches through both trays.
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I prefer a Plasma Light:

Light cure time is cut in half versus LED lights...

Time is money - Dr. time AND chairside time.

Deeper penetration of stronger beam = better total curing under pads = stronger bond.
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**Plasma Lights:**

🌟 Are available through your dental supplier. They cost about $4,500 and are worth the investment.
NOW remove the cotton rolls.
Also remove the outer hard trays
The assistant now light cures each proximal through the soft trays for an additional 10 seconds/proximal. (or 5 seconds with a plasma light)
Light cure all lower teeth first. This is where moisture control is hardest.
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Isolation is removed
The teeth are rinsed to remove the taste and cotton stuck to the cheeks (from Dri-Angles).
The soft tray is removed starting in the lingual of the molar region and peeling toward the buccal.
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Peeling the brackets from the anterior teeth.
Removing the upper soft tray.
Freeing the final tube.
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Floss EVERY contact to ensure Transbond LV™ has not bonded teeth together.
Final Thoughts:

- Only use good models (which must begin with good impressions).
- The place appointment should ideally be within days, but at most one week after the IDB impression. This is especially important if there are partially erupted teeth or teeth that are mobile (from prior mechanics or if separators have been placed).
- The Dr. should finalize bracket placement and cure within hours of the lab technician placing bonds on the model.
**Final Thoughts:**

- Separation will cause tooth movement and may lead to trays not fitting. Either place separation after IDB or IDB only the teeth anterior to molar separation.

- For Forsus cases, we separate upper molars and take impressions for the IDB trays (upper 5=5 and lower 7=7). On the placement appointment we first IDB. After the trays are removed, we then DB the uppers 7s and lastly band the 6s.

- Extractions should always be done AFTER you IDB.
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Final Thoughts:

- A case with loose primary teeth is not a good candidate for indirect bonding.
- Phase I treatment and anything other than late mixed dentition treatment is not an ideal use of IDB. The most efficient use of IDB is with permanent dentition.
Final Thoughts:

- For teeth with short clinical crowns (not erupted fully or gingival hyperplasia), consider:
  - Scraping plaster
  - If this is not feasible, don’t include in the set up
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😊 If you do ALL the steps of tray preparation properly (Part 1) and all the steps at the bonding appointment properly (part 2), you should be able to indirect bond brackets and tubes routinely and not experience a single bond failure at tray removal for weeks!
😊 If you experience bond failure on the bonding appointment higher than this, look for the cause as follows:
Troubleshooting: What if a bond fails?

- Look for the site of the bond failure.
- WHERE the bond failed gives insight into WHY it failed (and solutions reducing future bond failures).
  - Adhesive on the tooth usually means either the custom (Transbond) pad was not properly prepared to receive the bonding agent (Transbond Supreme LV™) or the tray fit poorly (bracket poorly adapted to tooth)
  - NO adhesive on the tooth means your bonding appt. systems leading up to light curing and tray removal were flawed.
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Adhesive on the tooth at tray removal:

Most likely means the cured custom (Transbond) pad was not properly prepared to receive the bonding agent (Transbond Supreme LV™).

Did you microetch ever so lightly the custom pads and blow away silica with an air syringe?

Did you forget to next clean (denatured alcohol) the cured custom pad and blow dry?

Did you forget to apply Add & Bond®?
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NO adhesive on the tooth at tray removal:

Means your bonding appointment systems leading up to light curing and tray removal were flawed.

Moisture from poor isolation or the patient’s breath is the most likely cause.

Inadequate tooth preparation is the second most likely cause.
No adhesive on the tooth at tray removal:

- Poor technique priming teeth:
  - Not RUBBING the tooth with self etching primer
  - Not rubbing a FULL 5 seconds
  - Doctor NOT reapplying/re-wetting the teeth

- Moisture contamination:
  - Inadequate isolation (saliva, crevicular weeping)
  - Allowing moisture to collect on primed surface (humidity from the patient’s breath)
  - Poorly fitting soft tray
Troubleshooting: What if multiple bonds fail at tray removal?

This is likely a result of:

- Moisture.
- A poorly fitting custom tray (steps in Part 1 were not faithfully followed).
- The tray was not fully seated.
- There was not CONSTANT pressure applied during the initial light curing.
Troubleshooting: What if multiple bonds fail at tray removal?

If this should occur: Look for the cause!
- Does the tray fit properly?
- Was moisture contamination a problem?
- Did a long time occur from tooth preparation to tray seating?
- Did the patient bite with constant pressure?
A final word about bond failure on the bonding appointment:

- Individual/single bond failure at tray removal should be a very rare occurrence (1 bracket in 20 cases).
- Bond failure involving multiple brackets in the same tray are due to failure to diligently and consistently follow the protocols laid out in these slides. We experience multiple bond failure on tray removal perhaps once every 6 months!
Troubleshooting: What if a bond fails after the bonding appointment?

The most likely cause is occlusion. Any bracket placed in occlusion will likely fail.

Solution:

On tray removal test for occlusion. Have the patient bite gently and determine if there is contact on any bracket.

Place a bite-block or turbo to temporarily open the bite and avoid this contact.
Troubleshooting: What if a bond fails AFTER the bonding appointment?

The second most likely cause of failure after the bonding appointment is engaging too heavy a wire initially (the bonding adhesive fully cures in 24 hours).

Solution:
Place resilient light wires to initially align teeth on the first visit (we place .014 3M Unitek Nitinol SE).
Indirect bonding is incredibly technique sensitive.

At every step any small deviation will likely lead to bond failure.

Focus on consistency and adherence to protocols/systems.
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Indirect bonding offers the opportunity to improve bracket position in less doctor time. This results in better treatment results, with less effort. Follow my slides and don’t cut corners or deviate from the systems presented. Stay the course, and enjoy the outcome!
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