

Clinical Guide for Restorative Materials



Prepared by:

Afnan Abdullah Al-Juaid
Dalia Mohamed
Noor Yousef Al-Sammahi
Rana Jamal Al-Zaqzouq
Reem Jamal Al-Zaqzouq

Supervised by:

Dr. Mashaal Bin Hasan

Index

1 Amalgam

1.1 Megalloy® EZ spherical amalgam

2 Composite

2.1 Clinpro™ Sealant

2.2 Heliomolar Flow

2.3 Tetiric N flow

2.4 Tetiric N Ceram

2.5 IPS Empress Direct

3 Glass Ionomer

3.1 GC Dentin Conditioner

3.2 3M™ ESPE™ Ketac Fil Plus (Glass Ionomer)

3.3 GC Fuji II LC CAPSULES

3.4 Photac™ Fil Quick Aplicap™ Light-Cured Glass Ionomer

3.5 Ketac™ Glaze Light-Cured Varnish

Index

4 Liners and Bases

- 4.1 Dycal**
- 4.2 Urbical LC**
- 4.3 PROROOT® MTA**
- 4.4 Vitrebond**
- 4.5 IRM Densply**

5 Adhesive System

- 5.1 Etching**
- 5.2 ALL-BOND 2**
- 5.3 Compobond 1**
- 5.4 Optibond S™**

6 Other Materials

- 6.1 Fluoraphat pro**
- 6.2 Prisma® Gloss Densply**
- 6.3 System p®.inlay & System p®.onlay**
- 6.4 Zircate® prophylactic paste Densply**

7 Guidelines to use Bluephase® light cure unit

Amalgam

Uses: Restoration of decayed teeth

Clinical application:

- 1- Prepare cavity maintain the resistance and retention form for Amalgam cavity.
- 2- Mix the appropriate amount of Amalgam.
- 3- Carry amalgam into the cavity.
- 4- Condense amalgam.
- 5- Pre-carve burnishing (adaptation against the margins).
- 6- Carve the restoration following the anatomy of the tooth.
- 7- Post-carve burnishing.
- 8- Finishing and polishing (after 24hrs.).

Composite

Uses: used in fissure sealing.

Clinical application:

1. Etch for 30-60 sec using 34% phosphoric acid.
2. Apply the product then light cure it for 20 sec gradually the pink color will transform into white.

(Bonding is not required but can be used, to increase retention)

Flowable microfilled composite.

Uses:

- As a fissure sealant.
- In minimally invasive restorations such as in small P.R.R.s.

Clinical application:

1. Select the shade prior to rubber dam application
2. Etch the cavity preparation and apply the bonding agent, light cure for 20 sec. (refer to Adhesive System section for further details)
3. Apply Heliomolar Flow and light cure for 15 sec.

Flowable Nano-hybrid composite

Uses:

- As a fissure sealant.
- In minimally invasive restorations such as in small P.R.R.s.

Clinical application:

1. Select the shade prior to rubber dam application
2. Etch the cavity preparation and apply the bonding agent and light cure for 20 sec (refer to Adhesive System section for further details)
3. Apply **Tetric N flow** and light cure for 15 sec.

Universal Nano-hybrid filling material for direct esthetic restorative procedures. For anterior esthetically critical restorations.

Clinical application:

1. Select the shade prior to rubber dam application (enamel + dentin shade + translucent shade)
2. Etch the cavity preparation and apply the bonding agent and light cure for 20 sec (refer to Adhesive System section for further details).
3. Apply it in a layering technique use dentin to substitute missing dentin structure and then apply your enamel shade as the last veneering layer to give that realistic effect. Light cure after each layer for 15 sec

Micro-hybrid + Nano-fillers composite for direct restorative procedures

Clinical application:

1. Select the shade prior to rubber dam application
2. Etch the cavity preparation and apply the bonding agent and light cure for 20 sec
(refer to Adhesive System section for further details)
3. Apply it in increments on 2mm and cure for 20 sec.

Glass Ionomer

Use:

The 10% polyacrylic acid solution cleans tooth surfaces to improve adhesion of glass ionomer cements.

Clinical application:

Apply with a pellet for 20 sec, rinse with water, dry properly and apply the glass ionomer.

Uses:

- Class V restorations (root or D margins)
- Primary teeth fillings
- Fissure sealing
- Fillings of cervical erosions
- Blocking undercuts on indirect restoration

Clinical application:

1. Apply the Ketac conditioner for 10 sec
2. Rinse the cavity with water → dry the cavity until you have matt shiny surface.
3. Activate the capsule and mix it for 10 sec

Uses:

- Class V
- Restorative for primary teeth.
- Cases where radiopaque restoration is required.
- As base or liner
- Cervical erosion
- Blocks undercut.

Clinical application

1. Wash and dry the cavity (Do not desiccate)
2. Apply GC cavity conditioner OR GC dentin conditioner.
3. Activate the capsule and then mix it with an amalgamator 10 sec (working time > 3 minute)
4. Light cure for 20 sec.

Uses:

- luting agents
- Cavity liner or base
- Block undercuts.
- Direct restorative material for class V.
- Pit and fissure sealant
- Retention of orthodontic brackets

Clinical application

1. Etch the cavity with polyacrylic acid for 10 seconds.
2. Rinse thoroughly for 10 seconds.
3. Keep the tooth hydrated
4. Mix RMGI, inject into the cavity, incremental technique.
5. Light cure for 20-30 seconds.

Use:

Protective varnish for conventional glass ionomer filling.

Clinical application:

1. Dispense a dose onto a pad directly before use and immediately reseal the bottle.
2. Use a cotton pellet or disposable brush to apply a thin layer of varnish to the fully built up filling.
3. Cure with light for 30 seconds.

Liners and Bases

Uses: direct and indirect pulp capping.

Clinical application:

1- Direct pulp capping:

1. Rinse the cavity and exposure site(s) with 2.6%-5% NaOCl. Heavy bleeding may be controlled with a cotton pellet moistened with sterile saline, apply pressure for 3 min.
2. Gently dry preparation with cotton pellet. Avoid desiccation.
3. Dispense equal volumes of base and catalyst pastes on the parchment paper pad provided. Replace container caps. Using a Dycal[®] Liner applicator, stir immediately to mix thoroughly until a uniform color is achieved. Apply it on the exposure and seal it with a base (e.g. Vitrebond), to avoid washout of the liner.

2- Indirect pulp capping:

1. Under suitable isolation, complete cavity preparation and caries removal.
2. Wash cavity thoroughly with water spray and air dry.
3. Dispense and mix Dycal[®] Liner components.
4. Apply mixed material to desired dentin surfaces. Quick application of the mixed material into the cavity takes advantage of the essential flowability of the mass for efficient placement before setting starts at only on the deepest (less than 1mm remaining) dentin, leaving the rest of the cavity surface free for bonding.
5. Remove any set excess from retention areas, enamel, and/or margins with a sharp spoon excavator or a bur.
6. Seal it with a base (e.g. Vitrebond)
7. Complete the restoration.

Light cure calcium hydroxide.

Uses: Indirect pulp capping and as a cavity liner.

Clinical application:

- 1- Under suitable isolation, complete cavity preparation and caries removal.
- 2- Wash cavity thoroughly with water spray and air dry.
- 3- Apply Urbical LC directly above the needed area, and remove any excess.
- 4- Light cure the material for 40 seconds.
- 5- Complete the restoration.

Uses: Direct pulp capping

Clinical application:

1. Rinse the cavity and exposure site(s) with 2.6% - 5% NaOCl. Heavy bleeding may be controlled with a cotton pellet moistened with NaOCl.
2. Preper MTA by:
 - 2.1. Open a pouch of ProRoot MTA root repair material and dispense the powder onto a mixing pad.
 - 2.2. Pull off the end of a ProRoot liquid micro-dose ampoule and squeeze out contents onto the mixing pad next to the root repair material.
 - 2.3. Gradually incorporate the liquid into the cement using the ProRoot MTA mixing stick.
 - 2.4. Mix the material with the liquid for about one minute to ensure all the powder particles are hydrated.
 - 2.5. If needed (one extra ampoule is provided, sterile water can also be used), one or two drops of liquid can be added to make the material into a thick, creamy consistency. Discard the remaining liquid.
3. Using a small ball applicator, apply a small amount of ProRoot MTA over the exposure.
4. Remove the excess moisture at the site with a dry cotton pellet, and cover the MTA with any base.
5. Complete restoration.

Uses: liner or base under the following restorations: Composite, amalgam, and ceramic.

Clinical application:

- 1- One level scoop of loosely packed powder and one drop of liquid provide the
- 2- Mixing: Use a small cement spatula to rapidly mix (10-15 seconds) all the powder into the liquid. The mixed cement should have a smooth consistency and glossy appearance. Excessive spatulation will shorten working time.
- 3- Avoid water and saliva contamination during application and setting of the liner/base. Rubber dam is the best means of isolation. Apply the mixed liner/base to the dentin surfaces of the prepared cavity in a thin layer (1/2mm or less) using a dycal applicator. The Vitrebond liner/base has a minimum working time of 2 minutes 40 seconds at room temperature.
- 4- Cure the Vitrebond liner/base. Then place the restoration.

Uses:

- 1- Temporary direct restorative filling material.
- 2- Base material under non resin containing permanent restorations.)

Clinical application:

1. Gently dry cavity with cotton pallet. Avoid desiccation.
2. fluff powder (tumble powder bottle) before use
3. Fill the measuring scoop with excess without packing, then level scoop with spatula.
4. Dispense the 1 level scoops onto a clean, non- absorbent glass slab or mixing pad.
5. dispense 1 drop of liquid for each level scoop of powder

Mixing:

1. Quickly combine 50% of powder into all dispensed liquid.
2. Bring the remaining powder into the mix in 2 or 3 increments and spatulate thoroughly.

Proper mix → will appear quite stiff and should be stropped (wiped vigorously) for 5 to 10 sec. A proper mix results in a working consistency that is smooth and adaptable.

Add liquid → if the mixture is dry, stiff or rubbery.

Add powder → if the mixture is sticky and soft.

Upon sitting, check and adjust occlusion if needed

Adhesive System

Clinical Application:

Apply the etchant on the prepared enamel and then flow the etchant onto the prepared dentin. The etchant should be left to react on the enamel for 15 to 30 seconds and on the dentin for 10 to 15 seconds. After that, remove all etchant with a vigorous water spray for at least 5 seconds. Excess moisture should be removed leaving the dentin surface with a slightly glossy wet appearance (wet bonding). Excess moisture should be removed with air gun, a dry brush, a foam pellet or other lint-free absorbents.

Do not over dry the dentin!

The reaction time on unprepared enamel (e.g. fissure sealants) is 30 – 60 seconds.

Uses: adhesive system that bonds to:

- Dentin and enamel
- new or old composite
- precious, semi-precious and non-precious casting alloys
- silane-treated porcelain
- new or old amalgam

Clinical application:

- 1- Prepare cavity and clean surface with pumice.
- 2- Etch enamel and dentin using UNI-ETCH for 15 seconds. Rinse thoroughly. Remove excess water with a brief burst of air.
- 3- Mix PRIMERS A and B. apply 5 consecutive coats to enamel and dentin. After primer application is complete, dry all surfaces for 5-6 seconds with an air syringe to ensure thorough solvent and displaced water removal. Properly primed surface will appear glossy when coverage is sufficient. Light cure for 20 seconds.
- 4- Mix an equal volume of D/E RESIN and PRE-BOND RESIN on a mixing pad and brush a thin layer onto entire cavity surface. Lightly air thin to prevent pooling.

For Amalgam: condense amalgam. Carve and finish as usual.

For Composite: Light cure for 20 seconds. Place and finish composite.

Uses: Bonding for direct restorations of all filling classes with light-curing restorative materials. It is the 5th generation.

Clinical application:

- 1- Dry the cavity but don't desiccate.
- 2- Etch the cavity, and rinse it for 20 sec. Then, dry it, but don't desiccate.
- 3- Apply Compobond 1 with micro brush.
- 4- Light cure it with LED light cure for 20 sec.
- 5- Place the restoration.

Uses: adhesive system for

- Direct composite to enamel or dentine.
- Composite to composite.
- Composite to porcelain.
- Amalgam sealing.
- Adhesive in post and core.

Clinical application:

- **Under restorative materials**

1. Etch enamel and dentin and wash.
2. Dry the cavity lightly, but don't desiccate.
3. Apply Optibond S™ to enamel or dentin with applicator for 15 sec.
4. Air thin for 3 seconds, and then light cure for 20 sec.
5. Place composite and light cure.

- **Under Veneers and Onlay restorations:**

1. Follow previous steps 1-4.
2. Select appropriate shade of base luting resin and place it into the restoration according to manufacturer's instructions.
3. Gently seat restoration. Remove excess cement.
4. Light cure all surfaces. Polish margins with appropriate materials.

Other Materials

Dental desensitizing varnish

Uses:

- treatment of hypersensitive teeth, incipient caries.
- sealing of dentinal tubules

Dosage

Primary teeth → 0.25ml

Permanent teeth → 0.40ml

Clinical application:

1. Clean and dry the treatment area
2. Use brush applicator or foam pellet to uniformly apply Fluoraphat pro as a thin film covering the entire target surface.
3. Moisten area of application (gentle rinsing or natural salivary flow) to ensure proper setting.
4. Instruct the patient to avoid solids, alcohol, brushing and flossing for 30 minutes after application.

*Fluoraphat pro contains colophony which inhibits polymerization and adhesion of composites.

Composite polishing pastes

Uses: final polishing of anterior and posterior composite restorations , diastema closure , esthetic incisal lengthening or veneers.

Clinical application:

1. Proceed with normal procedures for finishing and polishing of excess cured composite.
2. Apply a small amount of Prisma®-Gloss™ material to the surface of the polishing cup or enhance foam polishing cup. Work the surface of the restoration, dry initially at moderate speed and pressure.
3. To increase surface luster, add water in a small amount to dilute paste, then use a light circular buffing action.Repeat as needed to produce a smooth surface.
4. Rinse the Prisma®-Gloss™ from the tooth surface. THIS IS THE FINAL STEP FOR MICROFILLED COMPOSITES. Continue with the next step for hybrid composite materials.
5. Apply Prisma®-Gloss™ Extrafine paste to the polishing cup as described above in steps 3 & 4 and lightly buff the surfaces for the final luster. A high luster should rapidly develop in 20-30 seconds of polishing. Rinse all surfaces and discard the polishing cup after use.

Uses:**Systemp.inlay:**

- Temporary restoration for deep inlay preparations with parallel walls.
- Can be used if small undercuts are present.
- Relining prefabricated, temporary crowns and bridges made of polycarbonate or methacrylates.
- Sealing implant screw access openings.

Systemp.onlay: Is especially suitable for large preparations (onlays).

Clinical Application:

1. Clean cavity with water spray.
2. Application of Systemp.desensitizer: Apply Systemp.desensitizer and brush the material gently into the dentin for 10 seconds.
3. Carefully dry with blown air.
4. Place a sufficient quantity of Systemp.inlay or Systemp.onlay into the cavity, using a spatula or another suitable instrument. Contour the restoration → can be contoured more easily by wetting the instrument with Systemp.desensitizer or an unfilled bonding agent.
5. Increments of up to 4 mm can be cured with a standard curing light (e.g. bluephase[®]) after an exposure time of 10 seconds in the low power mode (LOP).

Cleaning and polishing material

Uses:

To effectively clean and polish tooth structure with minimal abrasion.

Clinical application:

1. Dispense Zircate Prophylaxis Paste into a shallow dish or other suitable container. A saliva ejector may be helpful during the actual prophylaxis.
 2. Fill rubber prophylaxis cup with paste. Before starting handpiece, carry paste to field of operation and deposit a small amount on each tooth surface.
 3. Run rubber cup at a slow speed over each tooth surface for approximately 10 seconds. Make sure that the edge of the cup goes below the free margin of the gingiva into the gingival sulcus. Continue procedure until all exposed surfaces of the teeth have been thoroughly cleaned and polished.
- *A rubber cup or soft bristle brush may be used on occlusal surfaces.
- *Use unwaxed dental floss to draw excess Zircate Prophylaxis Paste through interproximal areas

Guidelines to use Bluephase[®] light cure unit.

Curing program	Application	Stipulated curing time of selected materials
High power program	Consistently high light intensity for the polymerization of restorative and cementation materials for direct and indirect restorations.	10 sec : Tetric N-Ceram / Tetric N-Flow IPS Empress Direct 15 sec: Heliomolar Flow, All conventional composites
Low power program	Reduced light intensity with reduced heat development for the polymerization of adhesives, liners, and restorative materials in areas near the pulp when restoring Class V cavities.	10 sec : Tetric N-Bond / Tetric N-Bond Self-Etch Fermit / Fermit N Systemp inlay Systemp onlay ExcITE F
Soft start program	Step-by-step increase of the light intensity with reduced shrinkage stress and reduced heat development for the polymerization of restorative materials.	15 sec: Tetric N-Ceram / Tetric N-Flow IPS Empress Direct



