The Griptab provides total and secure control of the restoration. Modifying the internal tints and colors in bonding resins for veneers requires a firm, stable grip on the veneer while various areas of the veneers are loaded with different colored resins as needed for optimal esthetic matching.

Managing small inlays and onlays during hydrofluoric etching and silanation is problematic. The Griptab system provides total control, not only during preparation for bonding, but also during the placement of the resin cements and final placement of the restoration in the cavity.

**RELEVANCE TO ESTHETIC DENTISTRY**

One of the major challenges in placing indirect esthetic restorations is handling and controlling the restoration during preparation for bonding, loading with bonding material, and accurate placement of the restoration. The Griptab system (Triodont Corp., Katikati, New Zealand) (Figure 16-8) has been designed as a universal system for controlling all indirect restorations during prebonding and cementation procedures. It comes with plastic tabs of three different shapes that can be bonded to porcelain and metal restorations with a light-cured adhesive. The Griptab is held with a pair of pin tweezers that provides a secure grip while at the same time allowing free rotation through 180 degrees in one plane.

**BRIEF HISTORY OF CLINICAL DEVELOPMENT AND EVOLUTION OF THE PROCEDURE**

Several products have come to market trying to deal with these issues. None have been completely successful in achieving the goals of reliable adhesion, ease of placement, and the ability to passively release the restoration and pick it up again during preparation for bonding and then to passively release the restoration again once it has been located on the tooth. Some products work adequately with veneers but do not work with irregularly shaped inlays, onlays, and crowns. The goal has been to develop a product that has universal application to all restoration types, reliable adhesion to the restoration, ease of pickup and release, and easy and clean removal after placement of the restoration.

**RELATING FUNCTION AND ESTHETICS**

Accurate placement of veneers is critical. The removal of adhesive stick systems can lead to accidental displacement of a veneer, causing accidental and unnoticed air entrapment, and failure at either a bonding or esthetic level.

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**CLINICAL CONSIDERATIONS**

**Indications**

The Griptab is designed as a universal system for the prebonding steps and placement of all ceramic and metal restorations. It is also effective in many clinical situations when control of small objects is required, including the placement of Maryland bridges, rebonding of extracted teeth using Ribbond wings, and the placement of implant abutments, to name a few. The use of this system will be limited only by dentists' imaginations once they see its simplicity and logic.

**GRIPTAB BEING USED TO MANAGE A DIFFICULT RESTORATIVE PROBLEM**

An elderly patient with limited financial means had a periodontally involved tooth No. 31 that had to be extracted. The lower anteriors would also have benefited from periodontal splinting, and the patient did not want to wear a removable prosthesis. The newly edentulous space was restored 5 days after extraction by bonding the extracted tooth 31 (lower left central incisor) into place using Ribbond after the tip of the root had been removed (Figure 16-9, A). At the same time the lower anterior teeth were splinted. Control of the small tooth and attached Ribbond would have been very difficult but for the Griptab attached to the labial surface before the beginning of the procedure. A groove was cut in the lingual of the tooth and Ribbond attached into the groove, ensuring that no bonding resin extended out into the exposed Ribbond (Figure 16-9, B and C). Easy manipulation of the tooth and Ribbond simplified resin bonding and placement of a layer of composite onto the Ribbond (Figure 16-9, D) before placement of the splint or bridge into place.
FIGURE 16-8 The Griptab system. A, Pin-Tweezers used for holding the Griptab, Wave-Wedges and Tab-Matrices from the V3 Ring system. B, Assortment of Griptabs on rack. C to E, The three sizes of Griptab. The small one (C) is designed for inlays and small onlays. The medium one (D) is for average-sized restorations and veneers, and the large one (E) is for full crowns and bridges. F, Griptab being held with the pin tweezers. (Courtesy Triodent Corp., Katikati, New Zealand.)
element during insertion. By simply allowing the pin tweezers to rotate on the Griptab, any torquing moment is removed, allowing the restoration to be passively seated. The occlusion can be checked on crowns and onlays while the Griptab is still attached. After placement and the setting of the restoration adhesive, the Griptab can be easily peeled off the restoration with no adherent residue.

Disadvantages
New users may accidentally hold the wrong end of the pin tweezers and accidentally release the restoration. Holding the proximal end of the tweezers keeps them closed, and squeezing on the distal half of the tweezers releases the Griptab. The bite cannot be checked when placing small inlays while the mouth. Final placement of the splint or bridge was facilitated by the use of the Griptab to accurately locate the tooth while the splint was initially polymerized (Figure 16-9, E and F).

Contraindications
There are no contraindications.

MATERIAL OPTIONS

Advantages
The Griptab system allows total control of any restoration. The use of the pin tweezers to hold the Griptab means angulation can be changed at will and there is control of the rotational element during insertion. By simply allowing the pin tweezers to rotate on the Griptab, any torquing moment is removed, allowing the restoration to be passively seated. The occlusion can be checked on crowns and onlays while the Griptab is still attached. After placement and the setting of the restoration adhesive, the Griptab can be easily peeled off the restoration with no adherent residue.

Disadvantages
New users may accidentally hold the wrong end of the pin tweezers and accidentally release the restoration. Holding the proximal end of the tweezers keeps them closed, and squeezing on the distal half of the tweezers releases the Griptab. The bite cannot be checked when placing small inlays while the
Griptab is attached, but this is not possible with any of the placement systems available. The Griptab adhesive is specially formulated to bond to ceramics. Dentists must not be tempted to use ordinary dental resins as a replacement for the Griptab adhesive, as they provide a very unreliable bond to glazed and polished porcelain and will fail at the most inopportune moment.

**Current Best Approach**

Other approaches include various adhesive sticks, waxes, and vacuum systems. All have shortcomings that leave dentists struggling to find a universal approach to confidently manage indirect adhesive restorations. The Griptab system is the most useful modality available today.

**TREATMENT CONSIDERATIONS**

**Preparation**

The dentist must ensure that the surface the Griptab is being bonded to is clean. No wax, oil, or silane should be present.

**Procedure**

The adhesive is applied to the Griptab, which is then placed on the desired surface of the restoration, and the adhesive is polymerized for 10 to 20 seconds. The Griptab is bonded before commencement of any prebonding preparation such as Hydrofluoric acid etching and silanation.

**Finishing**

The Griptab is peeled off with a flat-bladed metal instrument. No further finishing is required. If remnants of the adhesive remain on an inlay, they can be easily removed with a sharp curette or scaler.

**CLINICAL CONSERVATION CONCEPTS**

The Griptab reduces stress by eliminating the juggling act associated with controlling and placing small, slippery, cement-laden restorations.

**CLINICAL STEP-BY-STEP PROCESS**

Once the restorations are ready for placement, the appropriate Griptab is selected from the strip, grasped with the pin tweezers, and twisted off the rack. There is the option for laboratories to provide indirect restorations to the dentist with the Griptab already attached.

The dentist ensures that the restoration is free of any oil or contamination by wiping with alcohol. To ensure a secure bond, the Griptab is applied before hydrofluoric acid etching and silanation. The presence of silane will prevent a secure bond between the porcelain and the Griptab. A small amount of adhesive is applied to the fitting surface of the Griptab, and the Griptab is placed onto the desired area of the clean restoration, taking into account the area of the mouth into which the restoration is going to be placed. It might be easier in certain situations for the Griptab to be placed on the palatal surface of an upper posterior crown, rather than the buccal. Depending on the stability of the Griptab, it can be released from the pin tweezers before light curing of the adhesive, or the Griptab can be held on the restoration while the adhesive is cured. Depending on the intensity of the curing light, the adhesive will polymerize in 10 to 20 seconds and change from red to gold. It is

**INNOVATIVE ELEMENTS**

**Scientific Elements**

Scientific elements include a simple, semi-flexible, light-cured ceramic adhesive, combined with an innovative tab that is bonded to the restoration. The bonding adhesive is light cured with a conventional dental curing light and changes from red to gold when polymerized.

**Technological Elements**

The combination of a simple pin tweezer design, in conjunction with the Griptab and associated adhesive, provides secure control of the restoration. There are three Griptab sizes to accommodate all types of restorations, ranging from bridges, crowns, veneers, and onlays and down to the smallest of inlays.

**Artistic Elements**

As suggested, the Griptab aids in the control of veneers during the loading of the bonding resins. If subtle color matching is required, the Griptab provides a secure and stable grip of the restoration while various areas of the veneers are layered with different tints or flowable composite. This improves the accuracy of resin placement and consequently improves the esthetic outcome.

**TREATMENT PLANNING Options**

What system should be used that is appropriate for the current case? There are several systems available on the market that go some way toward addressing the problems associated with control, handling, and placement of indirect restorations. The Griptab system comprehensively addresses all the issues, with the goal being to make life as simple as possible for the practitioner. Griptabs were designed by dentists, for dentists.
important that the adhesive be well cured to ensure a sound bond (Figure 16-10).

The placement of inlays requires a slightly different technique. A small amount of adhesive is dispensed onto a pad, the end of the inlay Griptab is dipped into the resin, and this is applied to the occlusal surface just behind the marginal ridge. This technique avoids accidental overloading of the Griptab and having the adhesive flow over the margins of the restoration, compromising the seating of the inlay (Figure 16-11).

Once the Griptab has been attached (Figure 16-12), the restoration can be picked up and put down again as often as is required during the prebonding preparation phase (Figure 16-13). The Griptab will stay securely attached if the restoration requires ultrasonic cleaning at any stage in the preparation procedure.

Once the restoration is ready to be loaded with cement and placed, the restoration is picked up such that the orientation of the pin tweezers will provide the best angulation for ease of placement of the restoration (Figure 16-14). Once the restoration is placed, the pin tweezers are released, and cleanup and polymerization of the cement continue. The Griptab is then removed by peeling it off the restoration with a flat-bladed metal instrument such as a Ward wax carver (Figure 16-15). One should not try to remove a Griptab from an inlay or a veneer before it has been bonded in place, as there is a risk of fracturing the restoration.
FIGURE 16-11 Inlay Gr iptab dipped into adhesive (A and B) and located on one of the marginal ridges and polymerized (C and D). Locating the Gr iptab at the end of the restoration will aid in placing the restoration in the correct orientation.

FIGURE 16-12 Griptabs applied to an onlay, crown, veneers, and inlays, ready for bonding.
FIGURE 16-13 The Griptabs provide easy manipulation and control during hydrofluoric etching and silanation of the restorations.

FIGURE 16-14 Griptabs being used for the location of a veneer (A), inlay, and onlay (B). Note the location of the Griptab on the onlay. The ability to rotate the Griptab within the pin tweezers makes this a simple procedure.

FIGURE 16-15 The Griptab adhesive is semi-flexible and can be peeled off the restoration with a flat bladed metal instrument.
Case Study

After completion of endodontics on the first molar, the first and second molars (Figure 16-16, A) were restored with E4D computer-aided design and manufacturing (CAD-CAM) restorations using e.max CAD porcelain.

The prepared teeth were scanned and the restorations then designed and milled in e.max porcelain, then glazed and fired (Figure 16-16, B). An inlay Griptab was bonded to the occlusal surface of the second molar restoration, and a mid-sized Griptab was bonded to the buccal surface of the first molar endodontic onlay (Figure 16-16, C).

Once the Griptabs were bonded, they were used to control the restorations during hydrofluoric acid etching (Figure 16-16, D), then placed into an ultrasonic cleaner to remove the etching byproducts from the porcelain (Figure 16-16, E) before being picked up again with the pin tweezers for silanation (Figure 16-16, F). The Griptabs are not affected by ultrasonic cleaning, and the adhesive is not challenged by the presence of silane once it has been polymerized.

After placement of an Isolite (Isolite Systems, Santa Barbara, California), Triodent Wave-Wedges were placed below the gingival interproximal margin to aid in control of the cleanup of the bonding cements. The restoration was placed first, and then the appropriate-sized Wave-Wedge was gently placed. Observation was made to see whether or not the wedge had displaced the restoration. The restoration was removed by reattaching the pin tweezers to the Griptab, but the Wave-Wedges were left in place. Alternatively, as was the case in this situation, the Wave-Wedges can be placed first (Figure 16-16, G and H) and then the restorations can be tried-in, checking

![Figure 16-16 A, Pre-treatment state of the teeth. B, Completed E4D computer-aided design and manufacturing e.max low-translucency restorations. C, Griptabs bonded to the restorations. D, Pin tweezers holding the Griptab during hydrofluoric acid etching.](https://example.com/image.png)
FIGURE 16-16, cont’d  
E, Ultrasonic cleaning.  
F, Pin tweezers holding the Griptab during silanation of the restoration.  
G, Placement of the Wave-Wedge with the pin tweezers.  
H, Interdental papillae protected with Wave-Wedges of different sizes. They also control the flow of expressed cement, aiding in cleanup.  
I, Minimal interproximal cement was present once the Wave-Wedges were removed.  
J, Completed restorations immediately post-cementation.
that the margins are closed to confirm that the wedges are not interfering with the seating of the restorations. The Wave-Wedges also protect the interdental papilla when the preparation surfaces are air abraded before the bonding procedures.

The bonding procedures were completed for the tooth and restoration, and the bonding cement was placed on the restoration, which was placed again into the cavity. The Wave-Wedge will prevent excess cement from contaminating the interproximal restoration margins and reduce the volume of interproximal excess. Once the cement has begun to gel, removal of the minimal excess cement is facilitated by the removal of the Wave-Wedge (Figures 16–16, I and J).