Special technique for attachment incorporation with an implant overdenture

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The Hader bar system is a popular bar and clip concept because of its 20-degree clip rotation, simplicity, and versatility. Two procedures may be used to incorporate the Hader nylon clip into a denture base. The direct technique consists of attaching the clip to the denture base as a clinical procedure. With the indirect technique, the clip is attached during laboratory processing. An alternative method of attaching the clip with a metal superstructure is presented. This procedure combines the advantages of the direct and indirect techniques for incorporation of the nylon clip of the Hader bar into the denture base. (J Prosthet Dent 2003;89:93-6.)

Implant-supported overdentures offer improved retention stability, function, proprioception and an acceptable level of comfort. Approximately 60% of implant restorations in completely edentulous patients are restored with the overdenture concept because of functional, anatomic, economical, or esthetic considerations.

A large number of retentive devices are currently available presenting a wide range of function and fabrication complexity. In general, implant-supported overdenture attachments can be classified as studs, magnets, and bars. Determinants for attachment selection include type of prosthesis, the length of the bar, the number and inclination of implants, dexterity, expectation, and financial capabilities of the patients. Although magnets and studs provide more favorable load transfer to bone and are less expensive and easier to use, bar and clip attachments provide greater retention and stability, permit splinting of implants, and can mask excessive residual ridge atrophy. A variety of bar designs has been advocated. The Hader bar developed by Helmut Hader in the 1960s has become one of the most popular bar-and-clip concepts because of its simplicity, versatility, low profile, and 20-degree clip rotation. Plastic clips are advantageous over metal clips because they are easier to replace and are usually less expensive.

Two techniques are used to incorporate the clip into the denture base. The direct technique allows the clip to be inserted intraorally. The indirect technique accomplishes the clip insertion during laboratory processing. Common problems with the indirect technique include clip contact with the bar without tissue contact under a functional load with the denture base, and possible movement and damage to the attachment during packing procedures. The disadvantages of the direct technique include necessity for blocking out all undercuts during the clinical procedure, the retention clips that will not hold if free monomer is present, and shrinkage, water sorption, and voids within the autopolymerizing resin.

TECHNIQUE

Bar assembly fabrication
1. Record the final impression in the customary manner with the impression pins or screw-retained impression copings.
2. Attach the appropriate analog and pour the impression by use of a die stone (Silkey Rock; Garreco, Heber Springs, Ark.).
3. Fabricate the Hader bar (Hader bar; Sterngold, Attleboro, Mass.).
4. Verify the framework fit intraorally (Fig. 1).
5. Pick up the bar in a new complete arch final impression with screw-retained impression copings and pour die stone for superstructure fabrication.

Metal superstructure fabrication
1. Place the appropriate number of nylon clips on the bar. Block out all undercuts gingival to the clips and to the greatest contour of the bar using utility wax (Wax plastic; Peristicks, Buffalo, N.Y.) (Fig. 2). Keep approximately 1 mm of the lower part of the
nylon clip covered with utility wax to allow clip expansion during seating of the final prostheses.

2. Adapt a thin sheet of wax spacer (0.02 inches) (S-U-Flexible Wax; Schuler-Dental, Ulm, Germany) on the entire surface of the bar coping assembly. The nylon clips must be left exposed. Duplicate the cast and pour the duplicate mold with refractory investment (Wiroduble; BEGO, Brewer, Germany) (Fig. 3).

3. Adapt a sheet of casting wax (0.02 inches) (S-U-Flexible Wax; Schuler-Dental) around the entire bar-coping assembly, including the clips. Add irregularities, loops, or resin beads to the surface of the pattern for mechanical retention (Fig. 4).

4. Invest the pattern (Wirovest; BEGO) and cast in cobalt chromium alloy (Wironet; BEGO) or an equivalent metal. Finish and polish the subsequent casting.

5. Verify the retention of the Hader clips inside the receptacles of the metal superstructure before seating the assembly on the master cast. Incorporate 1 to 4 nylon clips in the receptacles of the metal superstructure (Fig. 5).

Overdenture fabrication

1. Seat the metal superstructure with the clips in place on the master cast. Cover the metal superstructure with tin foil and duplicate the master cast with die stone (Silkey Rock, Garreco). Form a trial base material (Special Tray; Dentsply Ltd, Weybridge, Surrey, United Kingdom) to the new duplicate cast.

2. Seat the metal superstructure assembly before the trial base in the patient’s mouth and adjust to record centric relation and the vertical dimension of occlusion.

3. Mount the trial base with opposing cast in an articulator and complete the denture tooth arrangement.

4. Verify the denture tooth arrangement clinically and modify as indicated.

5. Paint a thin mix of white plaster over the superstructure of the duplicated die stone described in step 1. After providing approximately 1 mm relief over the

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Fig. 2. Placement of clips with all undercuts blocked out. Wax spacer adapted to entire surface of bar; only clips are left exposed.

Fig. 3. Master cast duplicated in refractory investment.

Fig. 4. Wax pattern of metal superstructure with retentive resin beads applied.

Fig. 5. Clips securely seated in receptacles of metal superstructure with seating tool.
superstructure, complete the overdenture laboratory processing.

**Overdenture delivery**

1. Screw the bar coping assembly on top of the abutment heads. Snap the metal superstructure in position (Fig. 6).
2. Seat the overdenture over the metal superstructure intraorally and adjust the intaglio fit of the denture base with pressure indicating paste (PIP; Mizzy Inc, Cherry Hill, N.J.) to achieve intimate adaptation of the denture base to the residual ridge.
3. Seal openings around the metal superstructure with Oraseal silicone putty (Oraseal putty; Ultradent Products Inc, South Jordan, Utah) (Fig. 7).
4. Apply a thin mix of autopolymerizing resin (Acry Self; Ruthinum, Rovigo, Italy) in the recession of the overdenture. Seat the overdenture and guide the patient to close in centric relation until the resin is polymerized. Remove the prosthesis with the metal superstructure attached and ask the patient to repeat insertion and removal (Fig. 8).

**DISCUSSION**

The method described alleviates many of the difficulties associated with current techniques of clip incorporation into denture base. The benefits include the following: (1) risk of locking the prosthesis in the undercuts during intraoral pick up is eliminated; (2) intimate adaptation of the denture base to the residual ridge can be achieved; (3) clips can be easily incorporated into the receptacles of the metal superstructure with an accurate fit; (4) it is possible for the patient to replace the clips; (5) the relief between the bar coping assembly and the metal superstructure allows adequate resiliency; (6) the relationship between the bar and clips will not be compromised during future relines, repairs, or rebases; and (7) risk of denture base fracture is minimized because of the additional reinforcement provided by the metal superstructure. The disadvantages of the technique include the extra steps during fabrication and potential interference of attaining proper tooth position when interarch space is limited.

**SUMMARY**

An alternate method of retaining the nylon clips of a Hader bar in a denture base is described. Although the suggested method involves additional laboratory procedures during fabrication, it offers several advantages by combining the advantages of the direct and indirect techniques for incorporation of the nylon clip into the denture base.

**REFERENCES**

Noteworthy Abstracts of the Current Literature

Two-year clinical evaluation of four polyacid-modified resin composites and a resin-modified glass-ionomer cement in Class V lesions

Problem. It is difficult to achieve sufficient macromechanical retention for cervical restorations because of their location and proximity to the pulp. Polyacid-modified composites have become popular for restorations for these lesions because of their esthetics, ease of application, radiopacity, and easy handling characteristics. However, their physical properties and wear resistance are inferior to those of hybrid composites.

Purpose. The purpose of this study was to compare the clinical performances of 4 polyacid-modified composites and a resin-modified glass-ionomer cement in Class V lesions over 2 years of service.

Material and Methods. Twenty restorations each of 5 restorative materials were placed in noncarious cervical abrasion/erosion lesions by 1 operator following the manufacturer’s recommendations. No mechanical preparation or abrasion of tooth surfaces, enamel beveling, or etching were performed. The materials used were: F2000 (3M Dental), Dyract AP (Dentsply International, York, Penn.), Compoglass F (Ivoclar-Vivadent, Schaan, Liechtenstein), Elan (Kerr, Orange, Calif.), and Vitremer (3M ESPE, St. Paul, Minn.). Restorations were finished and polished immediately after the placement. Evaluations were performed at baseline and 6 months, 1 year, and 2 years after placement for retention, color match, cavo-surface marginal discoloration, anatomic form, marginal adaptation, secondary caries, and postoperative sensitivity.

Results. Retention levels at 2 years were 90% for F2000, 90% for Dyract AP, 89% for Compoglass F 84% for Elan, and 95% for the resin-modified glass-ionomer cement, Vitremer restorations. No significant differences were found among the materials after 2 years for any evaluation category.

Conclusion. The resin-modified glass-ionomer cement and polyacid-modified composites evaluated in this study appeared to be clinically acceptable in all criteria after 2 years. 43 references.—ME Razzaog