VLC Record Bases
Increase Predictability in Removable Prosthodontics

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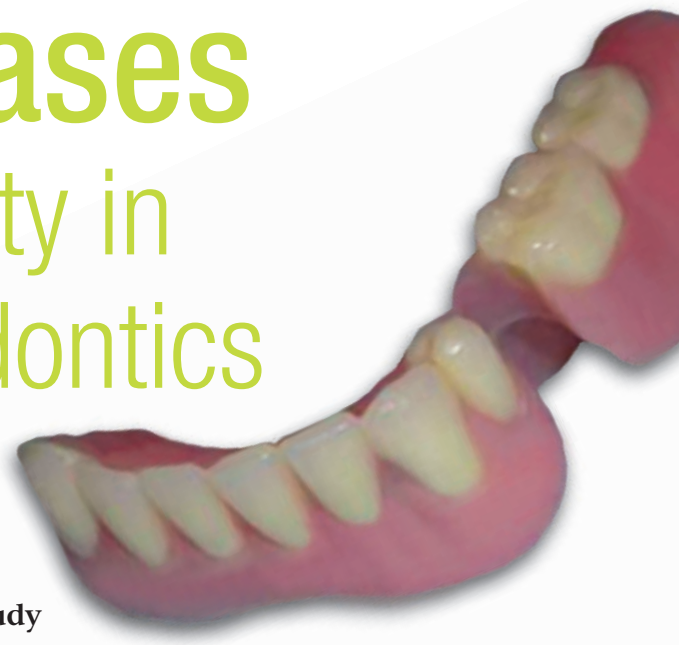

Abstract

Management of partially edentulous patients can still be a prosthodontic challenge. Replacing the missing teeth with conventional removable partial dentures (RPDs) is the traditional method for the treatment of partial edentulism.[1] The development of sophisticated narrow diameter implant techniques to produce satisfying results improves prosthetic rehabilitation.[2] Visible Light Cured (VLC) resins significantly increase the predictability of a restoration, contributing to the precise planning of both implant placement and subsequent esthetic and functional rehabilitation. In this case, a patient presenting with anterior mandibular restoration needs was rehabilitated with a reinforced VLC partial denture, supported by locator implants. This proved to be a clinically predictable and cost effective treatement for the partially edentulous patient.

Case Study

The prosthodontic rehabilitation section of this case study begins with a patient presenting as in figures 1, with three implants (Locator, Zest Anchors, Escondido, CA) in place. Two of these were in the root canal of anterior mandibular teeth, and the third in the mandible itself (Fig. 1a).

VLC Record Base as a Lab Communication Tool

To initiate the prosthodontic rehabilitation, a final impression was taken using a VPS material and a disposable tray (Exafast and COE, GC America, Alsip, IL) with locator analogs in place. Putty VPS was placed in the palate to create a box rim analog. The master cast was poured using a fast setting gypsum composite (Earth Stone, TAK Systems, Wareham, MA). The boundaries of the record base were marked on the model (Fig. 1b), after block out was accomplished using a contrast-colored modeling compound (Play-Doh, Hasbro, Pawtucket, RI).

Fig. 1a: Patient at presentation

Fig. 1b: Marked Master Model

Fig. 2a: Triad Gel Outlining

Fig. 2b: Triad Transheet Record Base

Fig. 3a: Cured Record Base on Model

Fig. 3b: Gingival Aspect of Record Base

Fig. 4a: Record Base with Retention

Fig. 4b: Final Jaw Relation Record

Visible Light Cured resin Gel (Triad, Dentsply Prosthetics, York, PA) was then used to follow the outline (Fig. 2a). A length of about an inch at a time was laid out following the markings. The Triad Gel was tack-set with a handheld light (Coltolux, Coltene Whaledent, Cuyahoga Falls, OH) to increase stability in handling, though the manufacturer's directions do not call for this step. This step offers a clear boundary to fabricate the record base in the next step.

Transheet VLC record base material (Triad, Dentsply Prosthetics, York, PA) was adapted to the boundaries marked by the Triad gel (Fig. 2b). Note that the record base is kept 2-3mm below the plane of occlusion, and notches are created in it. The record base is then cured according to directions in the Triad 2000 VLC curing unit (Figs. 3a, 3b). The cured record base then becomes an effective lab communication tool.[3]

The Triad record base fabricated in the previous step can be enhanced by the addition of a simple bite registration step.

The notches placed in the record base act as a mechanical retention. Recall that the record base is fabricated to fit well below the plane of occlusion by 1-2mm (Fig. 4a). The final jaw relation record can then be picked up with a VPS registration material (Fig. 4b) with a mousse-like viscosity

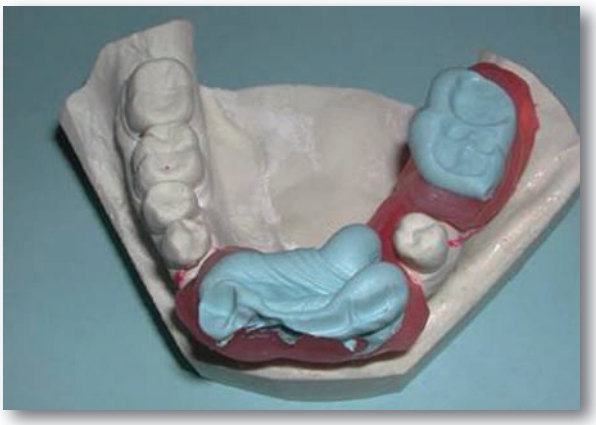

Fig. 5a: Bite Registration with Record Base

Fig. 5b: Mounted Casts

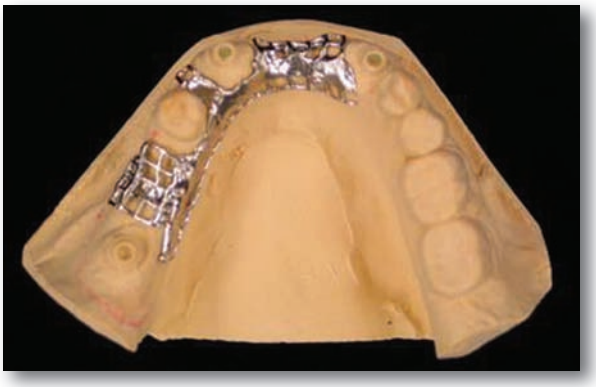

Fig. 6a: Cast Vitallium Framework

Fig. 6b: Framework in Mounted Cast

Fig. 7a: Adapting Eclipse to Model

Fig. 7b: Reinforced Eclipse Baseplate

(Access Blue, Centrix, Shelton, CT). The bite registration (Fig. 5a) can then be transferred into mounted casts (Fig. 5b), giving the laboratory comprehensive information about the case, including all relevant spatial relationships.[4] Overall, this process cuts down a process of 2-3 appointments to 60-90 minutes.

Partial Denture Fabrication and Delivery

Given the span of the partial denture and the flexure constraints imposed by the implants, I decided to prescribe a hybrid partial denture – one created of a visible light cured denture base resin (Eclipse, Dentsply Prosthetics, York, PA) reinforced with a durable chrome-cobalt alloy (Vitallium 2000, Dentsply Prosthetics, York, PA).

The contour and set-up resin areas on this RPD would be fabricated using a conventional high-strength acrylic (Lucitone 199, Dentsply Prosthetics, York PA). The design and fabrication of the cast partial framework is illustrated below (Figs. 6a, 6b). The framework was microetched and coated with a primer (Metal Primer II, GC America, Alisp IL).

The choice of VLC resin systems for the partial denture base is also significant. Processing of the dentures with traditional methods has been a time consuming procedure. This normally delays delivery of the finished dentures following the try-in appointment.

Fig. 8a: Record Base with Wax

Fig. 8b: Patient Try-In

Fig. 9a: Finished RPD

Fig. 9b: Finished RPD – Alternate View

Utilizing the new lightcurable system, Eclipse (Dentsply Prosthetics, York, PA), baseplate processing time can be shortened to less then thirty (30) minutes.[5] A further advantage to the system is that the resin is processed directly on to the model, reducing the possibility of distortion in injecting (Figs. 7a, 7b).

The processed Eclipse base plate is used with wax and highly cross-linked acrylic teeth (Portrait IPN, Dentsply Prosthetics, York PA) for try-in (Fig. 8a). The patient expressed satisfaction with the occlusal scheme after minor modification (Fig. 8b). Functionality was verified with phonetic excursions.[6]

A high impact strength denture base acrylic (Lucitone 199, Dentsply Prosthetics, York, PA) was used to create the contour and set-up areas of the partial denture using a conventional flasking process. The finished denture was esthetic, and created an excellent fit (Figs. 9a, 9b).

The manufacturer recommended tool (Zest Anchors, Escondido, CA) was used to remove the locators. Male locator retention options were evaluated, and straight locators (3-1.5lb torque) were selected. The male locators were inserted into the RPD, and the final result delivered to the patient (Figs. 10a, 10b). The patient expressed esthetic and functional satisfaction. He was subsequently instructed in home care and dismissed.

Fig. 10a: RPD Insertion

Fig. 10b: RPD Insertion – Alternate View

Summary

Implant supported RPDs deliver many of the combined advantages of fixed and removable partial dentures to the patient. The use of an expedited clinical and laboratory sequence, featuring visible light cured systems (Triad, Eclipse, Dentsply Prosthetics, York, PA) enhances efficiencies in delivering patient care. The predictability of the prosthodontic rehabilitation, in the author's opinion, was significantly increased by use of the VLC record base and final RPD base.

References

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About the Author

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