Abstract

Accurate implant impressions are required for the successful delivery of prosthetics. The reseat impression technique offers an alternative employing triple trays without intercuspation.

Template material has been utilized to form a custom patient-specific preliminary impression that undergoes a light body reline to accurately capture fine anatomical detail applied through hydrostatic pressure. The technique provides a simple, accurate and clinically acceptable method.

Further developments have employed the Tres Perfect impression carrier and vinylsiloxanether to impress the implant fixture without the use of copings.

Introduction

The efficient execution of dental impressions is necessary for both the clinician and patient. Detailed accuracy of the impression is essential for the successful delivery of implant-supported prosthetics, particularly in the esthetic zone. Conventional impression procedures can prove to be a difficult hurdle (Fig. 1). The reseat impression technique has been developed as a simple alternative.

Conventional implant impression techniques rely on either the closed or open tray technique, with the option of splinting. Both techniques have limitations based on the following:

- Stock trays are inappropriate for PVS impressions.
- Limited tray size availability for tray impressions.
- Difficult posterior access for the open tray technique.
• Unparallel impression copings complicate the insertion and withdrawal.5
• Closed tray “snap” impression copings may shift during tray insertion.
• Lack of detail of the impression requires retakes.

The reseat impression technique is based on the premise that triple trays can be employed without intercuspalation to accurately impress the copings. Ultra-quick set silicone matrix material can be utilized to form a patient-specific custom tray and preliminary impression.

Rigidity and rapid setting are ideal characteristics of the silicone. Light body material is required to reline the preliminary impression. The relined impression is then seated back onto the patient’s dentition to accurately capture fine detail through hydrostatic pressure. The reseat technique is an adapted form of the rebite impression technique.6

Methodology

Clinical case of an implant-supported anterior crown

A 68-year-old male presented with an asymptomatic fractured central incisor. Radiographic and clinical exam indicated a bone level horizontal fracture on tooth #21 with no apical pathology or buccal plate disruption. The treatment option of root extraction and immediate implant placement followed by a porcelain fused to metal crown was selected over the guarded prognosis of endodontic therapy, post- and core-retained crown restoration.

Following an unremarkable immediate Straumann implant placement, the patient was followed post-surgically and dismissed until the final impression appointment.

Clinical examination revealed normal healing (Fig. 2) and the reseat impression technique was employed. An anterior Quad Tray (Fig. 3) (Clinician’s Choice: London, Ontario, Canada) was selected and loaded with Template (Figs. 4 and 5) (Clinicians’ Choice: London, Ontario, Canada). The Template preliminary impression was taken of the maxillary arch (Fig. 6) with the healing cap in place.

The impression was removed (Fig. 7), and the section of the impression where the healing cap was located was removed using a scalpel (Figs. 8 and 9). A screw-retained open tray impression coping was seated (Fig. 10) and tightened (Fig. 11). A periapical radiograph confirmed the fit. The fit and path of insertion of the preliminary impression was confirmed (Fig. 12). Affinity light body (Fig. 13) (Clinician’s Choice) was employed to reline the preliminary impression (Fig. 14).
The relined impression tray was reinserted (Fig. 15) and additional light body was added immediately if needed. Adequate pressure was applied to reseat the preliminary relined impression hydraulically. The light body was cleared from the impression coping screw to allow for easy driver positioning. The impression coping was unscrewed and removed with the final reseat impression (Fig. 16). The healing cap was replaced, shade taken (Fig. 17) and the patient dismissed.

The patient returned for delivery of the custom milled titanium abutment and porcelain fused to metal crown. The abutment and crown were seated and assessed on the cast (Figs. 18 and 19). The patient had the healing cap removed and the abutment seated (Fig. 20). A periapical radiograph confirmed the seating (Fig. 21) and the screw was torqued to specifications. The crown was seated and assessed for fit, contacts, occlusion and esthetics (Figs. 22 and 23). The screw hole was sealed and the crown cemented (Fig. 24) with Fujicem (GC America: Chicago). The patient returned for 48 hours post-cementation assessment (Figs. 25 and 26).

**Clinical investigation of CAD/CAM abutment and crown**

Because of the limited application of the Quad tray, a new tray has been employed. Tres Perfect impression carriers (Research Driven: Kiloworth, Ontario, Canada) provide a full-size, adjustable triple tray (Fig. 27). The tray size offers coverage of the posterior
molars bilaterally. That the tray can be manipulated by hand allows the clinician ideal fit and adaption to any arch arrangement. The supporting material is thick enough for material support yet thin enough to provide minimal distortion during maximal intercusption.

Identium is a vinylsiloxanether impression material (VSXE) (Kettenbach: Huntington Beach, Calif.) that combines a polyether and A-silicone into one (Fig. 28). VSXE exhibits extreme hydrophilicity, is highly flowable and provides excellent resilience. The material handles very well clinically and produces highly detailed impressions.

A modified reseat impression technique has been employed without sectioning the area at the healing cap with a scalpel (Fig. 29). The result was an extremely efficient and accurate impression containing the impression coping (Fig. 30). The resultant model was fabricated (Fig. 31). A further simplified step was executed in which the Tres Perfect and Identium were employed to achieve an impression of the implant fixture without the utilization of an impression coping (Figs. 32 and 33). Digitization and morphogenesis are required to assess the validity of the technique.

_Discussion_

The reseat impression technique provides a simple and accurate method to replicate implant location and the soft-tissue framework. The ability to add Template incrementally allows for an easy chairside fabrication of a patient-specific custom tray and preliminary impression. The removal of the template with a scalpel at the impression coping site allows for an unobstructed path of insertion. By relining the preliminary impression, the clinician can capture the finest details of the fixture and soft tissues via hydrostatic pressure.

The reseat impression technique does have limiting factors. That the anterior quad tray is only available in one size and is only a segmental tray may limit case and patient selection. The template surface must
be dry and free of contaminants prior to adding the Affinity reline. The template cannot be reseated if severe undercuts are present. Equal seating force is required so that the hydrostatic pressure can force the light body for an accurate and void-free impression. Laboratory studies, to quantify the impression properties, would strengthen the validity of the technique.

Tres Perfect impression carriers combined with Identium offer further simplification with profound accuracy. Further studies are required to validate the procedure.

Conclusions

The reseat impression technique provides a simple, efficient and accurate method to replicate implant position and soft-tissue architecture. Template can be utilized to modify an anterior quad tray to be a patient-specific custom tray. Template can also be utilized as a preliminary rapid set impression material. Affinity light body can act as a reline to capture fine anatomical detail through hydrostatic pressure of the reseating. Because of the limited tray size, case selection may be limited.

A modified reseat impression technique employs the Tres Perfect impression carriers and Identium. This development allows for a more efficient technique that can be applied to all patient cases.

An alternative impression technique has been presented that provides an effortless procedure, simplifying the task for the clinician and patient. The result is the easy yet accurate replication of oral structures, providing for the successful delivery of implant support prosthesis.

Disclosure: Les Kalman is the co-owner of Research Driven and the developer of Tres Perfect Impression Carriers.

References

5) Pavlatos J. Mandibular implant-supported overdentures.
Les Kalman, DDS, graduated from the University of Western Ontario with a doctor of dental surgery degree in 1999. He then completed a GPR at the London Health Sciences Centre. He has been involved in general dentistry within private practice since 2000. He has served as the chief of dentistry at the Strathroy-Middlesex General hospital. In 2011, he transitioned to full-time academics as an assistant professor at the Schulich School of Medicine and Dentistry. Kalman is also the coordinator of the Dental Outreach Community Services (DOCS) program, which provides free dentistry within the community.

Kalman has authored articles ranging from pediatric impression to immediate implant surgery in both Canadian and American journals. He has been a product evaluator for several companies, including GC America and Clinician’s Choice. Kalman is the co-owner of Research Driven Incorporated, a company that deals with intellectual property development. His most recent dental product invention has been featured on the W Network’s “Backyard Inventors” television series.

Kalman is a member of the American Society for Forensic Odontology, International Team for Implantology, Academy of Osseointegration, American Academy of Implant Dentistry and the International Congress of Oral Implantology, where he has been recognized with master distinction. He can be contacted at (519) 661-2111, ext. 86097, lkalman@uwo.ca or through www.researchdriven.ca.