TECHNICAL NOTE

REDUCTION OF EXCESS CEMENT DURING CEMENTATION OF IMPLANT RETAINED CROWNS

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ABSTRACT

The osseointegrated implants has changed the treatment methods of edentulous patients. This technical note presents a simple chair side technique to minimize the overflow of cement at the time of cementation with the use of a custom-made abutment replica during the placement of an implant retained crown.

Keywords: Cementation of Implant Retained Crowns; Cement-retained prostheses

Introduction

Introduction of osseointegrated implants has changed the way partially and completely edentulous patients can be treated.1 Although the reported success rates are high, implant treatments are not entirely risk free and may result in a range of reversible and irreversible complications.2,3 Restorations supported by implants can be either cement retained or screw retained.4 Cement-retained prostheses have gained preference in many cases, making them the restoration of choice for the treatment of implant patients.5 This technical note presents a simple chair side technique to minimize the overflow of cement at the time of cementation with the use of a custom-made abutment replica during the placement of an implant retained crown.

Technical Note

First of all evaluate the implant restoration for the fit with the abutment. Then attach the abutment to a lab analogue (Figure 1). Line the abutment with poly-tetra-fluoro-ethylene (PTFE) tape commonly known as Plumber’s tape or Teflon tape or TFE (tetra-fluoro-ethylene) threaded seal tape which provides a space of approximately 50μm, which represents the cement space and may be used for both custom and prefabricated abutments (Figure 2). Seat the implant restoration completely onto the abutment to facilitate the transfer of the tape to the intaglio surface of the implant restoration (Figure 3). Mix small amount of condensation silicone putty (Zhermack C-Silicones Zetaplus - Putty Impression Material) and the catalyst and using an applicator with a smaller diameter tip, completely fill the implant restoration and form a handle (Figure 4).

Remove the putty material along with the PTFE and compare the implant abutment to the putty model; ensure that no voids are present and that the abutment finish line has been accurately duplicated (Figure 5). This is the abutment replica. Place the abutment intra orally. Torque it in place and block the access hole (Figure 6). Use the luting agent of choice line the intaglio of the implant restoration. Place the crown onto the abutment replica and wipe off the excess cement immediately (Figure 7). While the cement is still fluid, remove the crown from the abutment replica as there will be a layer of residual cement on the abutment replica (Figure 8). Place the implant restoration onto the implant abutment intra orally. There will be little or no excess cement thus minimizing the amount of excess cement extruded into peri-implant tissues (Figure 9). Post-Cementation intra oral periapical radiograph was advised (Figure 10).

Discussion

One of the drawbacks of cement retained restorations is extrusion of excess cements into the peri-implant sulcus with subsequent complications.6-8 The soft tissue attachment onto the implant surface is more delicate than that seen at the natural tooth surface due to the lack of Sharpey’s fiber insertion, the reduced number of collagen fibers, and the direction in which these fibers run.9 Both the detection and the subsequent removal of the excess cement are significantly complicated by the depth of the gingival sulcus and by the contours of the abutment and the implant crown.

Several methods are used to prevent cement-related complications for cement-retained prostheses. Removal of excess cement with plastic and metal scalers may result in scratches and gouges on the implant surfaces. It has been documented that a rough surface will cause increased plaque deposition and that plaque deposition is heavier and occurs faster around titanium implants than around natural teeth.10 Placement of the abutment collar margin should be just apical to the gingival crest in the esthetic zone and at the gingival crest or slightly occlusal elsewhere to allow unimpeded ability of cement to escape coronally. A lingual escape hole can also be used to provide an escape route for the cement.

Control of cement volume has been documented previously using the ITI solid abutment (Straumann USA, Andover, Mass). This requires an implant analog or practice abutment as described by the authors. When a custom abutment is to be used under the crown, this becomes more challenging. The dental laboratory may be instructed to make a duplicate analog using an acrylic resin, but this is time consuming for the technician and involves additional laboratory costs.11

Conclusion

In conclusion dentists can use a simple chair side technique with the use of a custom-made abutment replica as described here to minimize the overflow of cement at the time of cementation of implant retained crown.
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