

## **SCREW RETAINED IMPLANT RESTORATIONS**

**Bob Lathrop, CDT, MBA – Nakanishi Dental Laboratory, Inc.**

Implant supported restorations are becoming a main stream solution for many laboratories and the decision between 1-piece and cemented crowns has become a major concern for the general dentist. Screw retained abutments and cemented crowns have been very popular over the years, however, studies have shown that the cement causes potential problems with implant failure due to the cement not being removed from the implant site. In an effort to help prevent this from happening, the technicians are very diligent about how deep the margins are placed below the tissue around the implant. The typical depths of the margin are 1.0mm deep at the facial, .5mm deep around to the lingual. Any margins that are deeper than these parameters make it very difficult for the restoring doctor to clean sufficiently after cementation resulting in a potential failure of the implant.

As a result of the studies showing the cementation issue with cement retained restorations, many restoring doctors are asking for screw retained restorations. These restorations eliminate the cement issue as they are screwed into place.

The traditional fabrication process for these screw retained restoration has been to use a UCLA abutment that is waxed to adequate contours for porcelain support. The waxed up abutment is then sprued, invested, burned out and cast out of an appropriate porcelain fused to metal alloy. The porcelain is then fired directly onto the abutment leaving an opening for the screw access. The major down side to this type of restoration is the added cost involved for the gold used in the casting process. The cost of gold could add another \$200.00 to the cost of the restoration to the doctor. This additional cost did go over well in many instances!

To help mitigate the cost of the screw retained restoration, a modified version of a 1-piece crown was developed. This restoration is a combination of the screw retained restoration and the cemented restoration. This modified restoration consists of a CAD/CAM titanium abutment and a separate PFM crown that is fabricated with an access hole cut into it. The porcelain is applied to the coping in the normal manner and all adjustments are made as far as contacts and occlusion is concerned. The doctor can then request that the case be sent to them in two pieces, (i.e., the abutment and crown). The doctor then makes the necessary chair side adjustments and then cements the crown to the abutment making sure that the access hole is covered to prevent any cement from entering the access hole. Once the cement is set, the access hole is cleaned out and the abutment and crown are removed in one piece. The doctor then removes any excess cement outside of the mouth ensuring that all of the cement is cleaned up. The one piece restoration is then re-inserted into the implant and torqued down to the appropriate specifications based on the implant type.

Some doctors prefer that the restoration comes to them as a one piece restoration. In this instance the laboratory technician cements the crown to the abutment in the

laboratory. All adjustments are made making sure that the contacts and occlusion are correct on the stone model. The abutment is then placed on the model and the screw is tightened finger tight. The access hole of the abutment is blocked out and the cement is placed into the crown. The crown is placed over the abutment and held in place until the cement sets. The screw access hole is cleaned out and the restoration is removed from the model. Any excess cement is removed and the restoration is sent to the doctor as a one piece restoration.

There are several limitations to using this technique. One is the location of the access hole. In both screw retained techniques, the screw access hole has to be on the occlusal table of the posterior teeth and on the lingual of the anterior teeth, not affecting the incisal edge of the tooth. If the patient has short clinical crowns, the technician should not use the two piece technique for fabricating a one piece restoration. There has to be sufficient surface area for the cement to bond the crown and the abutment together. In this case, the traditional UCLA type restoration would be indicated.

Screw retained restoration are the safest alternative to restore an implant because the lack of cement eliminates one critical factor in potential failure of the case. Having several options for fabricating these implant crowns allows the technician and restoring doctor to choose the best and most economical treatment plan to discuss with the patient.