

A simplified method for the removal of cemented implant prosthetics

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There are times when it becomes necessary to remove the cemented prosthetic restoration from one or more implants and the prosthesis is not amenable to conventional crown and bridge removal devices. In order to remove these prostheses, we need to gain access to the abutment screws by drilling through the crown or bridge. The challenge is to create the smallest possible access hole and to do this with a minimum of clinical time and effort. This article will describe a simple method for constructing and using a device to guide the creation of appropriate access holes in the implant prosthesis. I was lucky enough not to have a patient with a loose or damaged bridge to use for this presentation, so I used a patient education model to provide the images to facilitate the description of the technique (Figs. 1a & b). Figure 2 shows the location of the implants.

Constructing the device

The master cast that was used for the construction of the implant prosthesis is the central element for this

technique (Fig. 3). Long screws from impression copings (Fig. 4) or long laboratory screws are inserted into the implant analogues (Figs. 5a & b). The cast is blocked out with periphery wax to act as a formwork for the construction of the device (Figs. 6a–c). The wax should extend for at least one tooth on either side of the prosthesis. If no tooth is present distal to the prosthesis, then additional teeth are covered anteriorly to maximise stability of the device. The wax should also block out the full dimensions of the prosthesis. I like to construct the mesial aspect of the device to be sufficiently wide and robust for a finger or thumb to be readily placed on this area for stabilising the device during preparation of the access holes. The model and the screws are lubricated with either petrolatum or a water-based lubricant. Auto-polymerising or light-curing resin is adapted to the cast to cover the adjacent occlusal surfaces and encompass the screws in the implant analogues (Figs. 7a–c). I prefer to use GC pattern resin and in the later stage of polymerisation, I remove the screws before they potentially become locked in the resin. Once the mate-



Fig. 1a



Fig. 1b



Fig. 2



Fig. 3



Fig. 4



Fig. 5a



Fig. 5b

rial sets, it is trimmed and polished (Figs. 8a & b) then checked for stability on the model. Additional material can be added if required. If a stone model of the prosthesis is available, it is convenient to confirm the stability of the device and to assess that there is no contact between the prosthesis and the device (Fig. 9). The intaglio surface is adjusted as required to ensure appropriate adaptation.

In the clinic

The chairside process is simplified by the use of this acrylic resin guiding device that provides a visual aid for the appropriate position for drilling the access holes. Ideally, porcelain should be removed using a diamond high-speed bur with copious irrigation. I prefer to use a round diamond bur for this purpose, as it is less likely to cause porcelain chipping. If the prosthesis is metal ceramic, the metal substructure is first penetrated with a small round carbide bur. Subsequently, a metal-cutting tungsten carbide bur is used to widen the access as required. Figure 10 shows a screwdriver passing through the guide into the abutment screw. Figures 11a and b show the precision of the preparation without over-preparation. Once the access hole has been debrided of obturating materials, an appropriate screwdriver is inserted. In order to prevent ceramic delamination, it is important to ensure the driver is not contacting any porcelain before significant torque is applied. I initially insert the driver and inspect for lack of contact with the porcelain. Following, I apply light hand torque to the driver in order to determine that it is fully seated before a second inspection to ensure no porcelain contact. Finally, the screw and the prosthesis are removed.

Discussion

Drilling free hand into the prosthesis with no guide can result in oversized access holes and wasted chairside time. The primary goal of the method described here is to maximise laboratory procedures in order to reduce chairside time. The method also minimises the size of the access holes, which reduces damage to the prosthesis. Delegation of the construction of the device to a technical assistant can further reduce cost, for both the patient and us. Thereby, a task to which we look forward

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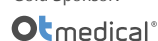


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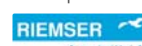
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Fig. 5c



Fig. 6a

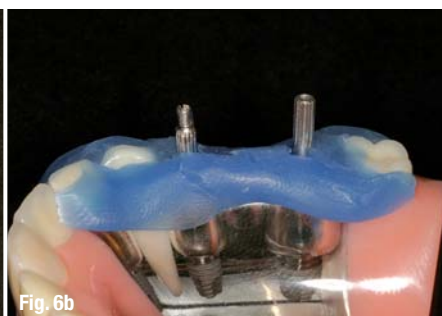


Fig. 6b



Fig. 6c



Fig. 7a



Fig. 7b

with trepidation can be reduced to a minor inconvenience. By minimising the diameter of the access holes, we increase the probability that the prosthesis can be returned to the patient after dealing with the reason for removal. Once the prosthesis has been removed from the mouth, there are two options. Firstly, we could consider the abutment/prosthesis as a single item. After inspection and cleaning, the prosthesis can be replaced. Had the abutment screw become loose, then the grain structure of the screw may have become elongated and the screw should be replaced.

The second option is separating the abutment from the crown or bridge. When they cannot be separated by mechanical means, they can be separated by gentle heating in a furnace. Slowly heat to less than 200°C for

five minutes, then the abutment and prosthesis should separate very easily. Allow to cool to room temperature slowly, then inspect porcelain for defects before returning to the patient.

_about the author

implants

Dr Scott Davis graduated from the University of Sydney in 1984 with a Bachelor of Dental Science degree and completed his Master of Dental Science degree in Prosthodontics in 1993 at the University of Western Australia. He worked as a senior lecturer in Restorative Dentistry. Since 1997, he has worked in a private specialist practice. Dr Davis can be contacted at scott@davisdental.com.au.



Fig. 8a



Fig. 8b



Fig. 9



Fig. 10



Fig. 11a



Fig. 11b

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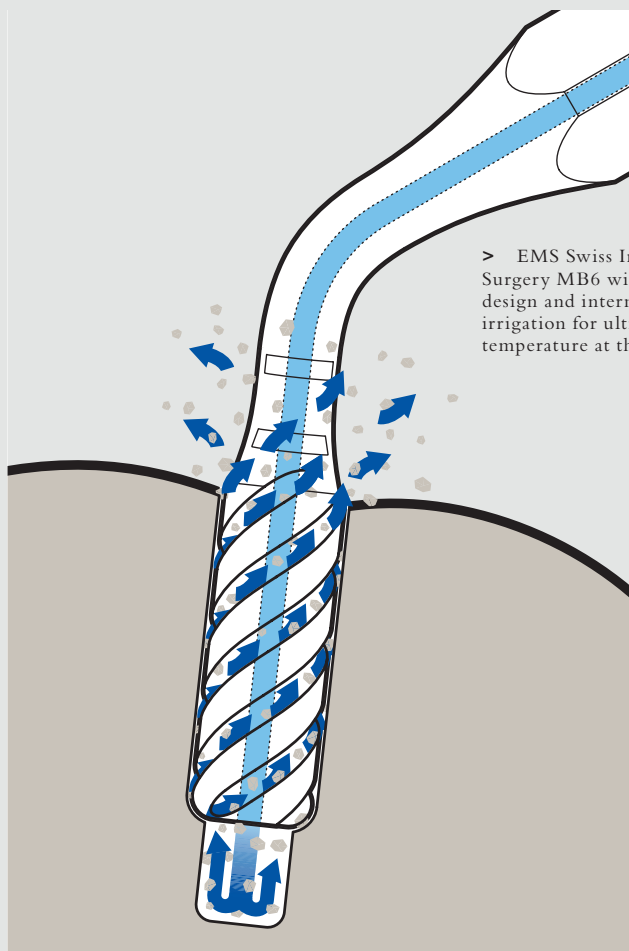
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