

# Saving the 'hopeless' tooth....

## 1. Restoring a broken-down, root-filled molar



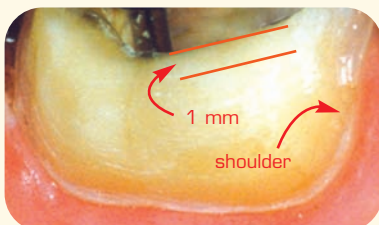
by Dr Edward Bass

**Problem:** A patient has a badly broken down lower molar tooth with a sound root filling. With the little remaining coronal tooth structure, the problem is choosing the right combination of materials and the appropriate technique to restore the tooth to full function.

**Solution:** Use a cast core with two posts providing the retention in diverging root canals with the advantage of minimal removal of root canal or coronal tooth structure.



Photograph of the root-filled lower first molar tooth on the cast shows how little sound tooth structure remained.



Before preparing post holes a shoulder was prepared and thin tooth walls were reduced down until they were at least 1 mm in thickness.

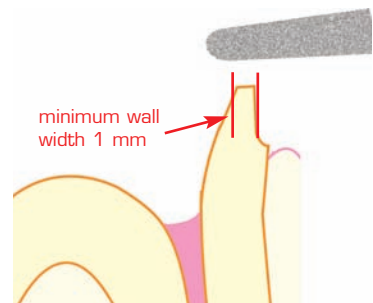
### Technique

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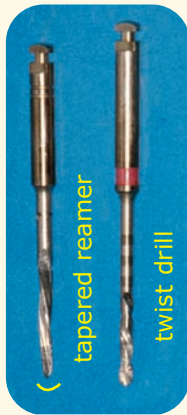
The first step is to carry out the gross reduction required for a full-crown preparation. The final detail is done later in treatment.

(Doing it at this stage allows one to easily assess remaining dentine-wall thickness. This cannot be done if the shoulder is prepared after the core and posts have been cemented).

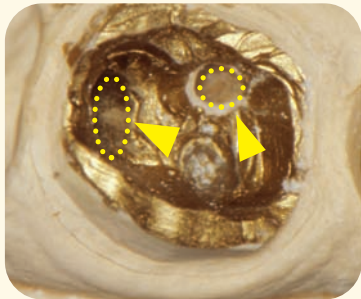


Reduce thin walls down until they are at least 1 mm thick.

# restoring a broken-down, root-filled molar ... (cont)



A tapered reamers (example product **PD Spiral-Bladed Reamers** - Produits Dentaires) of the appropriate size were used to prepare the distal canal. With each reamer the protruding tip was removed beforehand to prevent undue disturbance of the remaining root filling. Parallel-sided round twist drills of the appropriate size (example product **OP-PO twist drills** - Optident) were used to prepare the mesio-lingual canal. This canal was used because it is straighter than the mesio-buccal canal.



Photograph of the cast of the prepared tooth shows the distinct ovoid

shape of the prepared distal canal compared to the round shape of the prepared mesio-lingual canal.

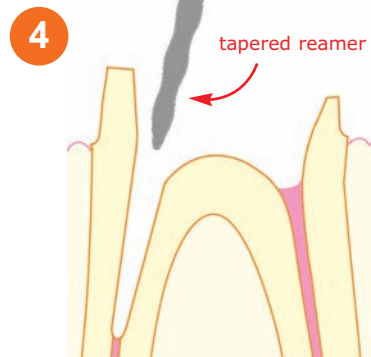


Photograph of the cast sectioned to show the distal post hole and the mesial

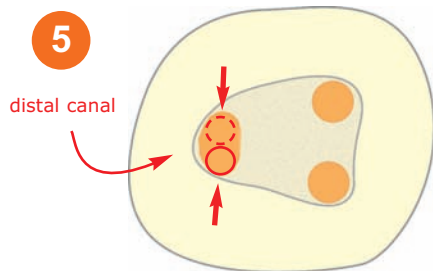
wall of the pulp chamber. Note how the two are parallel. The remaining walls of the pulp chamber were flared slightly.

This was necessary to ensure that, at the laboratory stage, the wax pattern of the post and core could be removed easily from the cast.

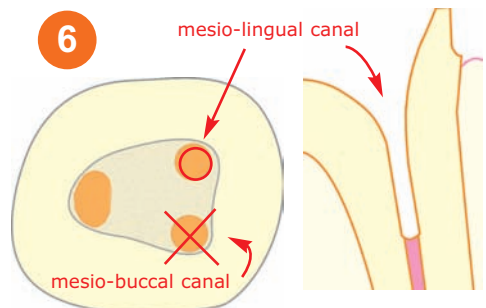
## Technique (cont)



A dowel space is prepared in the distal canal with tapered reamers. (The author prefers a No.2 size to start). A depth of 6-8 mm is usually sufficient.



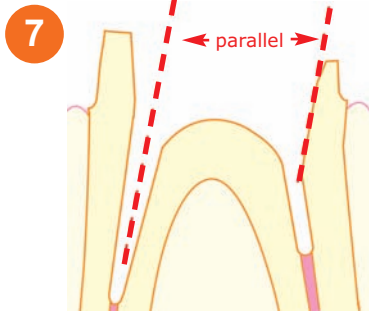
A tapered reamer is used for the oval-shaped distal canal because it is a side-cutting instrument. Moving it laterally in a bucco-lingual direction will free the walls of any remaining root-filling material and create a smooth surface.



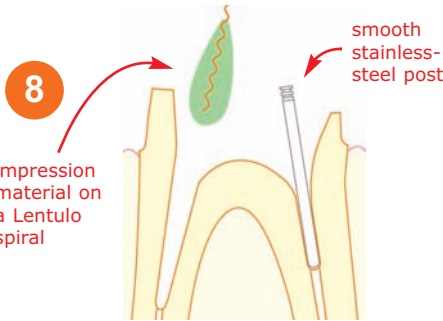
Use a parallel-sided twist drill such as an **OP-PO** (Optident) to prepare a round hole approximately 4-5 mm deep in the mesio-lingual canal. (This canal is invariably much straighter than the mesio-buccal canal).

# restoring a broken-down, root-filled molar ... (cont)

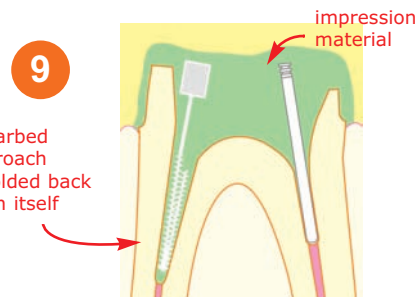
## Technique (cont)



Ensure that the walls of the pulp chamber are slightly flared and that the mesial wall is parallel to the long axis of the prepared section in the distal canal.



Place a shortened smooth stainless steel post such as an **OP-PO Temporary Post** (Optident) in the mesio-lingual canal and introduce the light-bodied impression material into the distal canal on a shortened No.4 **Lentulo** spiral.

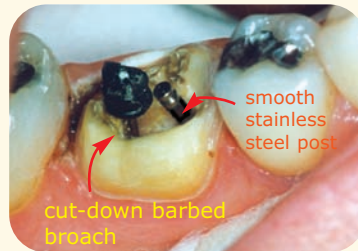


To facilitate removal of the impression material from the distal canal, a barbed broach folded back on itself, is placed in the distal canal before the pulp chamber is filled with the light-bodied impression material. The heavier-bodied material is then placed.



EDTA is used to clean the post holes prior to taking the impression. In this case a wisp of cotton wool was

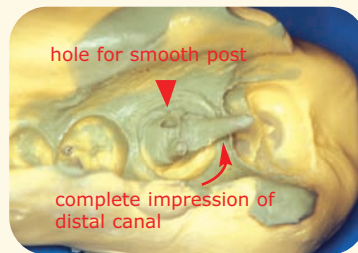
wrapped around a finger plugger and soaked in EDTA (example product **EndoPrep** - PDS)\* before being inserted into the prepared holes. This was followed by 100% alcohol used in the same manner. The canal was then dried.



One of the problems when taking an impression of a post hole is that the set impression material may not come out

cleanly from this site when the impression is removed. To prevent this the author used a suitably sized barb broach bent over on itself at the end. It was inserted into the distal canal after the impression material had been introduced on a **Lentulo** spiral.

The photograph shows a cut down barbed broach being tried for fit in the distal canal and the smooth stainless-steel post (**OP-PO Temporary Post** - Optident)\* being tried for fit in the mesio-lingual canal prior to the impression being taken. Both were free of occlusal interference.

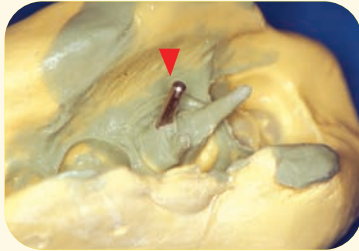


Photograph of impression after being removed from the mouth shows a complete impression

of the distal canal. In this case the smooth stainless-steel post remained in the mesio-lingual canal. It was removed re-inserted in the impression (see next page).

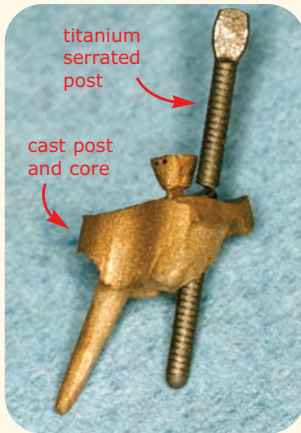
\* Australian Supplier - Henry Shein Halas Dental

# restoring a broken-down, root-filled molar ... (cont)



The post was removed from the tooth and re-inserted in the

impression as shown. The grooves at the end of the post facilitate this step as the post can be felt to 'click' into place as it is seated home.



Photograph showing the cast gold post and core (Type IV gold) with a titanium serrated post (**OP-PO Titanium Post - Optident**)\* fitted through the hole corresponding to the position of the original smooth stainless-steel post.

The sprue is left in place to act as a handle so that the casting

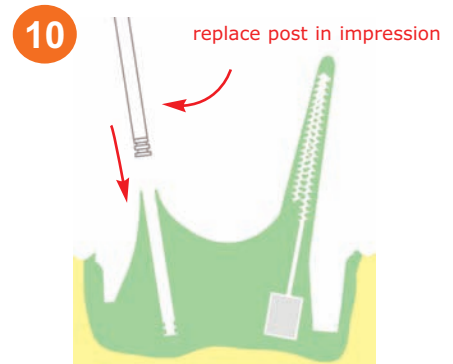
can be easily removed at the try-in stage. Notches are placed in the sprue and serrated post to make removal of the unwanted sections easier after the assembly has been cemented.



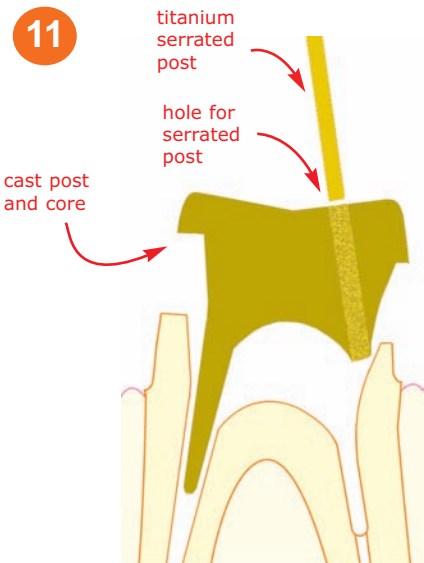
The casting and serrated post being tried in the mouth for fit. The post and core and serrated post were then cemented with **Fuji Plus** (GC Corp). In cases where extra cementing time is required **Fuji Plus Extended Working Time** is used.

\* Australian Supplier - Henry Shein Halas Dental

## Technique (cont)



When the impression is removed from the mouth the post may stay in the mesio-lingual canal. If this happens, remove the post from the tooth and insert it back into the impression. Send the assembly to the laboratory for the next stages.



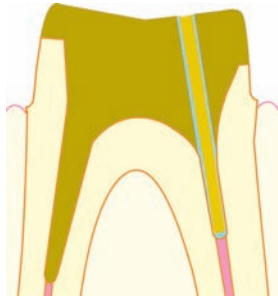
A post and core is cast in hard gold. It has a hole to take a titanium serrated post of the same size as the smooth post used previously in the mesio-lingual canal and transferred with the impression.

Before being cemented, the casting and serrated post are tried in the mouth for fit.

## restoring a broken-down, root-filled molar ... (cont)

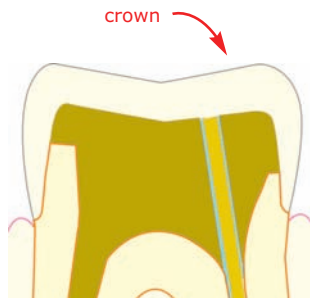
### Technique (cont)

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The cast gold post and core and the serrated post are cemented in place.

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At the appropriate time the crown preparation is finished, an impression taken and, at a subsequent appointment, the crown fitted.



Photograph showing the casting and serrated post cemented in place and further preparation for the full crown carried out.



Appearance of final crown in place.

### tip

If using this technique on a badly broken-down, root-filled upper molar tooth select the palatal root canal as the main canal for the cast post and core. Use the relatively straight disto-buccal canal for the round-hole preparation by the twist drill. The buccal wall of the pulp chamber should be made parallel with the long axis of the palatal root post hole.

**Footnote:** The twist drills, temporary posts and titanium serrated posts used are part of the **OP-PO Parallel Post System** from Optident, West Yorkshire UK. In Australia The **PD Spiral-Bladed Tapered Reamers** and the **OP-PO Parallel Post System** can be obtained through Henry Shein Halas Dental.

### about the author.....

Dr Edward Bass is a specialist prosthodontist at the HCF Dental Centre, Sydney, Australia.

He has done around 2000 of the restorations described in this article over the past 12 years without any reported failures. An earlier publication on the technique was published by Dr Bass in the Australian Dental Journal 2002;47:57-62.