

Top 10 endodontic tips

Jarlath Loftus presents his top 10 tips for endodontic treatment

1. Rubber dam

I like this technique. Put the dam over the frame so that the frame is not visible; bring it to the tooth so that the correct area for hole punching can be found.

Get your assistant to hold the punched dam over the correct tooth so that the gingivae can be seen on each side, and then apply the clamp. If the tooth is broken down, ensure there is not too much tension on the dam in the compromised area. Apply a caulking agent such as Oraseal (Ultradent Products) in areas where the seal is vulnerable. In compromised but restorable cases where crown lengthening is not immediately possible, the avoidance of rubber dam is unacceptable; sometimes in extremis I believe it to be acceptable to clamp the gingivae in non-aesthetic areas where there is little tooth structure left. If there is difficulty clamping a tooth, always ask yourself whether it will be restorable without crown lengthening or extrusion, and if the answer is no, abandon the endodontics and arrange for this to be done first.

2. Access

Most of my mishaps in endodontics have come from violating the simple rule of 'think very hard, cut very little'.

Dr Jarlath Loftus BA BDentSc (Hons), MFD RCS, MSc (Restorative Dentistry) FFD RCS (Endodontics) qualified in 1999 from Trinity College Dublin. Dr Loftus completed specialist training in endodontics in Newcastle upon Tyne and was awarded a fellowship in endodontics by the Royal College of Surgeons in 2007. He is now in practice devoted to endodontics in the Gate Dental Clinic, Dock Road, Galway.

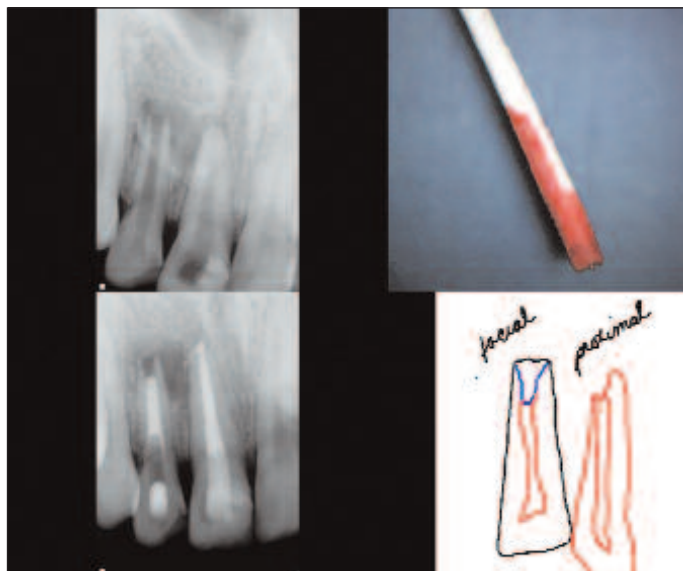


Figure 1: In canals with large or blown-out apices, a paper point may be helpful to confirm working length

Remember the anatomy will still be there another day, unless you take it away. Microscopes are a prerequisite for calcified canals and finding MB2 or second lingual canals. At under €6,000 for basic models, these are well within budget for a conscientious clinician with an interest in endodontics. I like to do most of my initial access to the chamber with the dam off as the root form in the soft tissues helps me with orientation.

3. Canal identification

I believe this to be one of the greatest challenges in endodontics. A sharp DG16 probe is helpful for picking up narrow canal entrances, denticles, pulp stones and areas of calcification. Under the scope, these areas appear lighter or darker in relation to the surrounding dentine. A goose neck or pin bur is used to follow these areas of calcification. Some use ultrasonics but this can char, desiccate or otherwise alter the appearance of the dentine so that subtle clues are lost. Extreme patience is required for this work

and an inkling of when you are doing more harm than good only comes with experience. *Primum est non nocere*. Extracted teeth are the answer to getting this experience without compromising patient care.

4. Canal negotiation

My first file is usually a size 10, which I use with EDTA paste to scout the canal. Sizes six and eight do not have sufficient rigidity in my hands. It is sometimes necessary to pre-curve the 10 file 3-5mm from the tip if loose resistance is encountered high up in the canal. If tight resistance is an issue, watch-winding and 'picking' with the 10 file will resolve this as the file walks apically. A tight 10 may be helped by a passive step-back with 15, 20, 25 files to eliminate coronal interferences.

5. Working length determination

Measure the length of the tooth from an undistorted pre-operative radiograph with a ruler or a sterile file, adjusting its rubber stop to the correct length.

Estimations can also be made digitally depending upon what system is being used. Dry the canal before using an apex locator and get a 'zero' reading with a file of compatible size to the apex. Half a millimetre short of this is an acceptable working length. For dento-legal reasons, it is prudent to confirm this length radiographically with at least a size 15 file. In canals with large or blown-out apices, a paper point may be helpful to confirm working length (Figure 1).

6. Shaping the canal

I enlarge all canals to a stainless steel 20 before introducing nickel titanium rotary instruments. I like to use Gates Glidden drills four at orifice level, and three and two in the canal to prepare the coronal and middle third of the canal. I like to have an eight to 10% taper in the apical 3mm, and achieve this by stepping-back with progressively larger rotary nickel titanium instruments in half-millimetre increments. Initially I prepare to 20 apically, and once I have achieved my taper I gauge the width of the apex with passively inserted nickel titanium 2% taper hand files.

7. Cleaning the canal

Warm sodium hypochlorite will quickly dissolve organic matter and reduce microbial load. Neat, thin bleach is better than salt-containing Milton, which precipitates out of the solution. Insert the safe end needle tip into the canal so that the needle fits loosely and use the index finger rather than the thumb to inject. The hypochlorite can be agitated by aspirating with the syringe or by inserting and withdrawing a tapered gutta percha cone or with ultrasonics. Seventeen per cent EDTA will remove the smear layer and

should be left in the canal for one minute after mechanical instrumentation is completed. Another flush with hypochlorite or chlorhexidine completes my irrigation protocol.

8. Filling the canal

The canal is now ready to fill unless there are reasons to believe that the tooth is highly infected. This is as much a hunch as a science, but a large radiolucency, apical resorption, a weeping canal or a tooth with previous symptomatology would have me reaching for the calcium hydroxide medicament. There is currently no conclusive evidence that multi-visit endodontics is superior to single-visit.

A medium 8% taper cone trimmed to the apical width previously mentioned should be radiographed prior to coating in sealer and seating in the canal. It should display short 'tug-back' in that it should fit snugly in the apical 1-2mm of the canal. Heat should be applied to condense

the cone vertically, as there is evidence emerging from the ongoing 'Toronto Study' that warm vertical condensation may be superior to cold lateral. A radiograph is taken with the clamp on after downpack to ensure that no voids are visible and that the heating device has not inadvertently removed the apical part of the root filling (Figure 2).

10. Costing your treatment

'Every tooth in a man's head is worth more than a diamond,' said Miguel de Cervantes in *Don Quixote* in 1608.

Dentists can be gauche about talking about money, but it is essential that we inform patients of the full cost of extraction, grafting and implant placement followed by prosthetic rehabilitation before telling them the price of root canal treatment and coronal coverage. As the former is usually over 50% dearer than the latter, it is then easy for the patient to

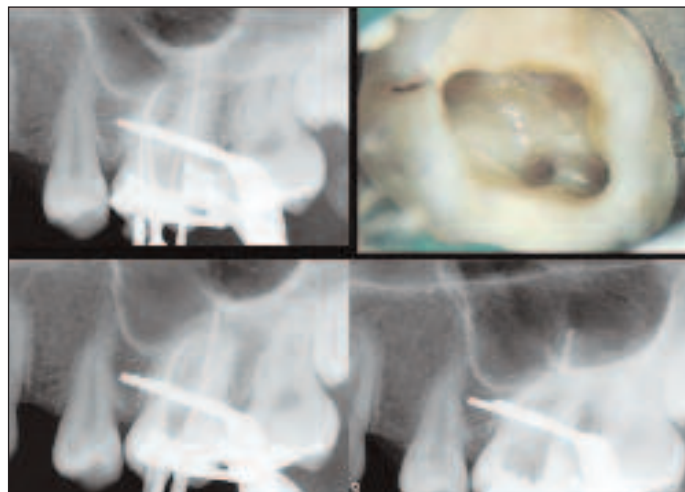


Figure 2: A radiograph is taken with the clamp on after downpack to ensure that no voids are visible and that the heating device has not inadvertently removed the apical part of the root filling

understand the value you are offering them by attempting to save their tooth. Well-selected, well-treated and well-restored root canal treated teeth enjoy functional survival at levels comparable to those for osseointegrated implants as

evidenced by a recent paper by Doyle et al (2006) in the *Journal of Endodontics*. 

Clinical images courtesy of rxroots.com.

Knowledge Network Bone Level comes to Ireland

This April will see Straumann host yet another remarkable event, as its annual Knowledge Network returns to Ireland at this year's IDA, with the primary focus on the revolutionary Straumann Bone Level Implant.

With over 1,400 implants clinically documented at launch, the Straumann Bone Level Implant is already proving to be highly successful.

Featuring the unique SLActive surface, Bone Level simplifies the soft tissue management process, offering practitioners complete confidence by minimising complications and optimising results.

The Knowledge Network Bone Level events have already enjoyed enormous success in the UK, now

Straumann has great pleasure in inviting dentists in Ireland to learn more about this exciting new development.

This interesting and thought-provoking event is free of charge and will be hosted by the UK's leading dental implant experts Stephen Barter BDS(Lond) MSurgDent RCS, specialist in oral surgery, and Mike Heffernan BDS MS(Iowa).

Both speakers have placed and restored numerous cases using the Straumann Bone Level Implant and are delighted to be sharing and discussing their clinical experiences.

Knowledge Network events are now well established as being of enormous interest to all implant dentists and successfully demonstrate Straumann's unrivalled commitment to improving education and knowledge within the exciting disciplines of implant dentistry and oral tissue regeneration.

Practitioners can discover more about the latest technology and scientific know-how behind this exciting innovation on Wednesday 23 April 2008 in the delightful surroundings of Whites Hotel, Wexford.

The evening begins at 6.00pm with registration and will finish at 10.30pm; canapes and refreshments will be provided and a fork buffet will be available at the end of the evening.



This event is complimentary and open to delegates and non-delegates of the IDA. To book your place please call the Straumann Education Department on +44 (0)1293 651270.