

Irrigation in endodontics— New standards in the dental office

By DTI



Dr Uwe Radmacher.

A main goal of endodontic treatment is to effectively irrigate the canal and thus prevent reinfection of the periapical tissue. Recently, a range of new products have appeared, many of them claiming to provide effective and safe irrigation. We spoke to German endodontist Dr Uwe Radmacher about his experience with the new IrriFlex irrigation needle launched by PD (Produits Dentaires) in March this year.

The success of endodontic treatment depends on the eradication of microbes from the root canal system and prevention of reinfection. How important is irrigation in this process?

Irrigation is like a 3D file. I liken it to drilling pipelines in a generally complicated root canal system with many variations and flooding these with an effective irrigant, which is still sodium hypochlorite, able to reach anastomoses and lateral canals. The infected tissue can be removed and sufficient cleaning and disinfection can occur. The 3D cavity is prepared.

Mechanical devices have been developed to improve the penetration of irrigants and effectiveness of irrigation in the most apical part of the main root canal

in order to overcome the limitations of conventional metal needles. Could you tell us what these limitations are, and how these have impacted on your day-to-day treatment workflow and irrigation protocol?

First of all, chemical and mechanical disinfection have the same impact on successful outcomes in endodontics. Currently, there is none without the other.

The main claim of mechanical shaping is the creation of a tapered, funnel-like preparation to support an effective eradication of microbes and to support proper sealing. At the same time, the apical foramen should not be unnecessarily enlarged and should be kept as small as is practical. Discussion about the preparation sizes to be reached is as old as endodontics itself.

Previously, irrigation needles were mostly not able to reach the most apical part and prevent blocking due to remaining debris. Furthermore, there is a present risk of blocking the needle and over-extruding fluid, especially with a front-vented design. Personally, I did not like the common single-side-vented needles for my irrigation protocol because I did not feel comfortable with the penetration of the fluid at the most apical point. Owing to the existing needle diameters and a small apex size, it is frequently not possible to reach working length and rinse the debris out. This back-draft can't be compensated for by activating the fluid with sonic and ultrasonic devices just when a particular block of remaining debris has already appeared is frequently not as easy to detect as it is in an endodontic training glass block. Thus, the prevention of residual debris by irrigating the critical parts of the root canal system copiously and continually is essential for successful treatment outcome.

You have recently begun using IrriFlex, a new revolutionary 30-gauge irrigation needle. What is the main benefit of this new product, and how has it affected your irrigation procedure?

I did some trials before the official launch with the new TruNatomy shaping files (Dentsply Sirona). Previously, it was almost impossible to create proper delivery and exchange of the fluid in the apical third of the root canal. This changed totally when the new IrriFlex became part of the game. The needle is totally flexible and comes in size

30/.04 and perfectly fits even the tiny TruNatomy Prime shaping file with a size of 26/.04 v.

The efficient delivery up to working length and the minimised risk of over-extrusion of the double-side-vented design is the final building block of sustainable disinfection.

IrriFlex features two back-to-back side vents and thus delivers a greater volume of irrigant compared with conventional side-vented needles. How can this feature improve the endodontic irrigation procedure?

Irrigation is now much more powerful in the critical most apical part with a tremendously decreased risk of accidentally pushing sodium hypochlorite through the apical foramen into sensitive areas like the sinus and mental nerve. This is definitely a huge improvement.

The new-generation root canal instrumentation systems respect the canal anatomy as far as possible. Can you tell us whether IrriFlex furthers this aim?

IrriFlex is fundamental for preserving the dentine using TruNatomy shaping files, for example. The orifice of the root canal, the entrance of the funnel, is about 40 per cent smaller, and the taper in the upper two-thirds is regressive. Even by using devices to agitate the irrigation fluid, there is no possibility of removing the debris without a tiny and highly flexible irrigation needle that reaches the apical end.



The new IrriFlex irrigation needle (Produits Dentaires SA).

IrriFlex is undoubtedly a game changer in endodontic irrigation. Do you consider it your new irrigation standard?

Absolutely, IrriFlex has become a fundamental part of my irrigation protocol.

