Excellence in endodontics

Daniel Flynn discusses endodontic microsurgery

Endodontic surgery has evolved to become a technically accurate, highly predictable procedure with remarkable success rates.

Modern techniques and equipment have transformed the procedure. Using CBCT scans from the outset we can plan surgery exactly; three dimensional picture of bone loss is clear as is the position of anatomically sensitive structures; lengths can be accurately measured and existing treatment such as posts and MB2s assessed.

Radiographic examination (Fig 1) revealed a large multiple episodes of pain and swelling from the UL5. There was an initial root canal treatment and subsequent retreatment provided by a competent GDP using rubber dam and sodium hypochlorite irrigation. There was a well-fitting new crown placed and no associated periodontal pocketing greater than 5mm.

A provisional diagnosis of acute exacerbation of chronic apical periodontitis was made and treatment options discussed with the patient (who had just paid for and was satisfied with a new crown.)

1 Root canal retreatment through the crown

2 Endodontic microsurgery

3 Extraction +/- prosthetic replacement

Endodontic surgery has evolved to become a technically accurate, highly predictable procedure with remarkable success rates.
There are significant differences between the above microsurgical techniques and traditional surgery approaches.

1. Osteotomy size
The use of smaller instruments, magnification and illumination allows access to the root tip, often without removing any additional buccal bone should the plate be already perforated. Staining

the PDL makes it easier to differentiate between bone and root tip. The smaller the size of the osteotomy, the quicker the healing (2)

2. Bevel Angle
Traditionally the root was resected at 45 degrees for access, visualisation and sealing purposes. But, this method results in the exposure of a greater amount of dentinal tubules and may not remove enough of the apical anatomy lingually. Modern techniques using a cut perpendicular to the long axis of the tooth result in exposure of far fewer tubules, enables a smaller osteotomy, retention of more buccal bone and no periodontal communication. There is less chance of a lingual perforation in the retro-preparation and it is easier to identify the apices of

Beverly Hills Formula is delighted to announce that their Total Protection Whitening toothpaste is proven to be less abrasive than some other leading brands of both whitening and regular toothpastes
the roots.

3. Root end resection
It is recommended to remove 3mm of the root tip. At this level 88 per cent of apical ramification and 95 per cent of lateral canals are removed (5). Following resection it is critical that the root end is inspected under high power visualisation, stained and viewed with micro-mirrors. Identification of isthmuses, cracks and lateral canals may be treated at this stage.

4. Retropreparation
Micro-hand pieces and burs are no longer the ideal treatment for retropreparation. Instead, diamond coated ultra-sonic tips are excellent for allowing the operator to clean along the original canal, the isthmus and minimise microcrack formation.

The use of MTA as a root end filling material is another improvement. Superior to amalgam in terms of sealability and biocompatibility, it is more difficult to place and doesn’t give an aesthetically pleasing result when viewed on a radiograph post-operatively. Critically MTA results in regeneration of periodontal ligament and cementum cells and appears to have inductive effects on bone and tissue cells. Super-EBA has also shown favourable results using microsurgical techniques.

Endodontic microsurgery is a great option to keep in mind when planning treatment and has an added bonus for patients being the least expensive intervention when compared to endodontic re-treatment and crown, extraction and fixed partial denture, or extraction.

For more information about EndoCare please call 020 7224 0999 or visit www.endocare.co.uk.

‘Endodontic microsurgery is a great option to keep in mind when planning treatment’

DO NOT throw your models away!

Gypsum plaster cast is prohibited from landfill as per giving off hydrogen sulphide gas (HTM 07 01 Safe Management of Healthcare Waste, DH 2010) and therefore, cannot be disposed of as domestic waste. The material must be separated into an appropriate container and sent for gypsum recycling arranged through a specific contractor.

Let MediMatch organise collection of your gypsum waste.

Order your collection bags today and let us deal with the model disposal for you powered by Gypsumwaste Ltd.

12 month contract = £200 (12 Collection Bags)

£20 per individual Collection Bag (minimum of 3 bags per order)

T: 08 444 993 888

MediMatch Dental Laboratory

About the author
Dr Daniel Flynn
BDS dent Sc MFFDS RCSI McClin Dent BChD RCSIR qualified from the Dublin Dental Hospital, Trinity College, Dublin in 2002. Daniel has recently joined the EndoCare team headed by Dr Michael Sultan. Daniel lectures and provides hands-on courses for general practitioners. He also teaches Endodontics at the Eastman Dental Institute for Oral Healthcare Sciences.


powered by Gypsumwaste Ltd.
Do we treat patients based on radiolucency?

Dr Sander Loos provides a case report

Just after Christmas, on 26 December 2010, a 76-year-old male patient, who was in great pain, consulted the emergency dentist. The patient indicated that he felt a throbbing pain in his lower left jaw. The pain was unbearable and had kept him awake all night. The dentist took radiographs of teeth #36 and 57 and an orthopantomogram (OPG; Figs 1 & 2).

Although the radiograph did not show the full anatomy of tooth #57 and its surrounding structures, the dentist diagnosed apical periodontitis (AP) and advised an endodontic retreatment or extraction and an implant. To make the patient comfortable for the time being, he prescribed 500 mg Amoxicillin and Ibuprofen.

After another sleepless night, the patient consulted a different emergency dentist on 27 December. The analyses did not give him pain relief and he was starting to become desperate. The second dentist confirmed the original diagnosis and referred the patient to an oral surgeon because an endodontist was not available at short notice. He requested apical surgery on tooth #57.

The following day, the oral surgeon took another OPG and concluded that surgery was not the best treatment option in this case because the apex was located too close to the nerve alveolaris inferior and access to the apices of tooth #57 was difficult.

He also confirmed the diagnosis of an AP and suggested extraction or endodontic retreatment.

On 5 January 2011, the patient visited my office for the first time. The pain had diminished but not disappeared. Intra-oral examination showed a well-restored dentition with a cantilever bridge on teeth #35 to 37, with #36 and 37 functioning as cantilevers.

The Visitus by the patient’s general practitioner confirmed the original diagnosis and referred the patient to an oral surgeon. To make the patient comfortable for the time being, he prescribed 500 mg Amoxicillin and Ibuprofen.


Dental A2Z Limited is EN ISO 13485:2003 certified dental manufacturing and distribution company based in the United Kingdom.

Dental A2Z Limited, Unit 11, Pitlochry PH18 5TL, Perthshire
Company Reg # SC 348678, Tax Identification # GB 983322117

View company profile @ http://dentala2z.co.uk/Trade-fairs

WEB: www.dentala2z.co.uk FREEPHONE: 0800 04 39 503
tioning as abutments. Tooth #37 showed an occlusal filling in the crown. Palpation of the buccal fold was not painful and there was no mobility of teeth #36 and 57. The pockets of #36 were within normal limits. However, periodontal probing distal of #37 provoked strong pain and extreme bleeding. The distal pocket measured approximately 6mm.

As the previously taken radiographs were not available and the OPT was considered unsuitable for proper diagnosis, a peri-apical radiograph (Fig. 5) was taken. The radiograph showed that tooth #37 had previously been treated endodontically. The mesial canals were filled with silver cones rather too short of the apex. There also appeared to be some gutta-percha and a large metal post in the distal canal. Additionally, radiolucency was noticeable around the apex of the mesial root. According to the patient, he had received endodontic treatment about 15 years ago owing to pain following bridge cementation. The tooth had been without symptoms since then.

Considering the history and my clinical and radiographic findings, my differential diagnosis was:

1. painful AP owing to reinfection or leakage
2. painful marginal periodontitis distal of tooth #37 owing to poor oral hygiene
3. vertical root fracture (VRF) of the distal root of tooth #37

As diagnosis 1 and 3 would have required rather invasive therapies (retreatment or extraction), we opted to rule out the local marginal periodontitis first. Under local anesthesia, the distal pocket was thoroughly cleaned and the patient was instructed to use dental floss distal of tooth #37 on a daily basis.

On 31 January, three weeks after initial treatment, the patient returned for evaluation and appeared free of complaints. There was no bleeding on probing and pain could not be provoked.

It should be noted that by selecting this strategy, neither an AP nor a VRF was definitively excluded as a cause of pain. It should be taken into account that owing to the patient being on antibiotics, the symptoms of the AP may have temporarily disappeared and returned at a later stage. Nevertheless, at that point we treated the patient based on history, a radiograph and patient complaints rather than merely on the basis of the radioluency evident on the radiograph.

In May 2011, the patient returned to our office once again. He was free of complaints, pockets were within normal limits and there was no bleeding on probing.

“The radiographic picture is only one means of diagnosis... the picture may show a lot of rarefaction, but to use it as the sole means of diagnosis is unwise.” Thomas Philip Hinman, 1921

---

**Introducing the Laser-Lok® 3.0 implant**

Laser-Lok 3.0 is the first 3mm implant that incorporates Laser-Lok technology to create a biologic seal and maintain crestal bone on the implant collar. Designed specifically for limited spaces in the aesthetic zone, the Laser-Lok 3.0 comes with a broad array of prosthetic options making it the perfect choice for high profile cases.

- **Two-piece 3mm design offers restorative flexibility in narrow spaces**
- **Implant design is more than 20% stronger than competitor implant**
- **3mm threadform shown to be effective when immediately loaded**
- **Laser-Lok microchannels create a physical connective tissue attachment (unlike Sharpey fibers)**

For more information, contact BioHorizons
Customer Care: +44 (0)1344 752560 or visit us online at www.biohorizons.com

---

2. Implant strength & fatigue testing done in accordance with ISO standard 14801.
Root-canal retreatment is a very common procedure that endodontists and general practitioners are faced with on almost a daily basis. The biggest challenge here is to re-establish the initial pathway of the canal and its original exit or apex. During the past decade, several techniques required that gutta-percha be used to fill the root canals. Sometimes and for many reasons, such as leakage or short preparation and/or obturation, the gutta-percha needs to be removed and the canal re-negotiated.

Generally, NiTi rotary files were used in such cases in order to facilitate and expedite our task. However, the files used to accomplish this task faced additional challenges, that is, the debris coming from the previous obturation and the density of the obturation material. The first difficulty is piercing the mass of the obturation material. Here, our choice of file should focus on a strong tip that can take the pressure and engage the mass of the gutta-percha, break it down and push it back into the access cavity. The second challenge is to select an instrument that can enter the root-canal structure and engage the obturation material, pushing it out coronally, while offering enough flexibility to go around curves and shape the root-canal surface safely.

Today, thanks to heat treatment that has changed the world of rotary NiTi files, allowing us to modify the crystalline structure of the metal, we have been able to obtain several types of the alloy to give us different files, from the Twisted File to the latest modification of the K5 system, the K3XF (SybronEndo; Fig. 1). The K3 system files are known to be robust yet very safe.

The slight modification in their structure gives these files much-needed flexibility, while preserving their very high safety levels. The clinical applications are very simple. My favourite sequence of the K3 system is the G-pack, which allows me to do crown-down using the taper of the files and keeping the tip stable at ISO 0.25. This sequence allows for a very nice start, removing the obturation material from the coronal third with relatively short files, such as orifice openers, and doing so in a relatively short time. The deeper we go, the more we need to decrease the taper, especially when curves are present inside the canals and smaller taper files are needed.

Clinical cases
The first clinical case could be described as a very bad day in a dental office. Two files had been trapped and separated in the mesial canals and the patient was referred to the clinic but had to drive for more than two hours to...
get to our clinic. When I first saw the X-rays (Fig. 2), I remembered a very similar case from several years ago with practically the same location of file separation. The separated files in the mesial canals were clearly visible. It was also noticeable that the distal canal had not been treated to full length. Ultrasonic tips and the use of an operating microscope allowed me to retrieve the separated files and then time to reshape the canals and retreat the distal canal (Fig. 5). Owing to the combination of requirements for the treatment of this case—shaping and retreatment in one tooth—my instruments of choice were K3XF files. I started with 25.08, followed by 28.06 and concluded crown-down with 25.04.

This gave access to the apical part, which was enlarged to 55.04 in the mesial and distal canals in order to prepare the apical portion of the root-canal system. The speed of the micro-motor for the shaping procedure was 500rpm and a sequence of push-and-pull movements—four to five strokes per canal—with each file was used in order to reach full working length. Figure 4 shows the obturation of the canals, which was performed with RealSeal (SybronEndo) after both separated files had been removed and the root-canal system reshaped.

The second case came as another referral. The patient was suffering from pain in her lower molar and was sent to the office in order to check the case and give the necessary treatment. The preoperative X-ray (Fig. 5) showed an apical lesion with an incomplete root-canal treatment. Because diagnostic found no sign of a root-canal crack, retreatment was my choice. However, we had to overcome two obstacles: the crown placed on the tooth and the fibre post inside the distal canal. I decided to go through the crown without removing it in order not to place any tension on the distal canal. When analysing the anatomy, it appeared that the roots were fused. In such cases, avoiding any tension is recommended in order to avoid any cracks.

Under the microscope and through the crown, I managed to remove the filling surround-
ing the post. With the use of the ultrasonic WHAT, I managed to remove the fibre post itself to-gether with the previous filling from the access cavity. Using the K3XF after removal of the fibre post was a great help in reshaping the root-canal system, which appeared very convergent.

The files displayed no sign of metal fatigue and the 25.06 was taken deeper into the canal com-
pared with the standard K5 files. The extra flexibility and strength of the K3XF allowed me to per-
form crown-down and final apical shaping. Obturation of the root-canal system was performed with the Elements Obturation Unit (SybronEndo) and RealSeal material. The post-operative X-
ray (Fig. 6) shows that the merging canals had been cleaned, shaped and filled; and the same had been done for the fibre-post space.

Conclusion

In the two clinical cases present-
ed here—both rather a challenge for root-canal retreatments—the final results were an endodon-
tic success. This lends support to the fact that each challenge needs to be treated separately without fear or tremor from the initial pre-operative X-rays. Our fear shall control neither our judgment nor our choices!

I would like to thank Yulia Vorobieva, interpreter and transla-
tor, for her help with this article.

About the author
Dr Philippe Sleiman, Dubai Sky Clin-
ic, Burjuman Business Tower, Level 23, Trade Center Street, Bar Dubai, Dubai, UAE
phil2sleiman@hotmail.com

Great new features

Dental System™ 2012 - the future proof solution

Model Builder

Create lab models directly from TRIOS® and 3rd party intraoral scans. Support for implant models.

TRIOS® integration
Receive TRIOS® digital impressions instantly from dentists and start designing right away.

3Shape Communicate™
Upload 3D design visualizations with a single click. Share and discuss your cases with dentists.

2nd Generation Removable Partial Design
Intuitively mimics the familiar workflow while significantly reducing production time.

Digital Temporaries
Create cost-effective temporaries without pouring a model using Virtual Preparation and Virtual Gingiva.

D500 3D scanner
3Shape’s new D500 model with Dental System Standard provides the market’s best entry-level CAD/CAM solution for small to medium labs and can later be upgraded to extend the range of available indications.

D800 3D scanner
Two 5.0 MP cameras. Scans a single-die in 25 seconds, captures texture and scans impressions.

Backing our users with technology, care and expertise

New Dynamic Virtual Articulation
Like using your physical articulator. Support for Occlusion Compass. KaVo PROTARtevo, Whip Mix Denar® Mark 330, SAM® 2P, Artex® compatible and more to come.

Next Generation Telescopes
Full freedom for designing telescopic crowns. Support for attachment crowns and open telescopes. Add multiple bands, parametric attachments, and customized attachments.

Scan the QR code
& sign up for our newsletter

Meet us at Dentistry Show
in March 2-3, Birmingham UK, NEC Booth M3
Rubber dam hazards?
Dr Kenneth Serota gives his opinion

The September issue of Oral Health included an article by Dr Ellis Neiburger entitled Rubber dam hazards. The contextual inaccuracy, skewed perspective and postulatory bias of the author was disingenuous.

I'm not certain how it managed to secrete itself into our beloved centenarian journal, but it did. Before I comment on the text, I’d like to share a scientific article with you published by Smith and Pell in the British Medical Journal in 2005 (entitled Parachute use to prevent death and major trauma related to gravitational challenge).

The abstract reads:

Objectives: To determine whether parachutes are effective in preventing major trauma related to gravitational challenge.

Design systematic: Review of randomised controlled trials. Data sources: Medline, Web of Science, Embase, and the Cochrane Library databases; appropriate Internet sites and citation lists.

Study selection: Studies showing the effects of using a parachute during free fall.

Main outcome measure: Death or major trauma, defined as an injury severity score > 15.

Results: We were unable to identify any randomised controlled trials of parachute intervention.

Conclusions: As with many interventional studies intended to prevent ill health, the effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials. Advocates of evidence-based medicine have criticised the adoption of interventions evaluated by using only observational data. We think that everyone might benefit if the most radical protagonists of evidence-based medicine organised

---

**Figure 1**

**Figure 2**

Not wishing to misjudge the author, I searched the many publications attributed to Dr Neiburger in the literature using Google Scholar. My personal favourite was Similar anabibul dorosous lesions in Tyrannosaurus Rex and man, followed closely by Fondoos Barber and the dental office not to be outdone by Water line biofilm dangers—A tempest in a teapot. Of note, none of the references pertaining to the hazards were dated beyond 1990.

As to the inaccuracies, rather than repeating the text, I’ll answer the “factoids”: rubber dam is routinely used in the vast majority of endodontic and restorative procedures by contemporary dentists; sterilisation of the rubber dam can be done readily; reuse is the most scurrilous of the factoids proposed; number is not an issue, in fact it can be used to enhance photographic documentation; the physical and chemical properties of the dam enable it to be used with most if not all dental materials and its strength cannot be in dispute, as the average endodontic procedure does not require multiple replacement; damage from clamps occurs because of improper placement; the sheer enormity of clamp sizes and design allows for literally any clinical situation with tissue injury essentially non-existent; there are a raft of alternatives to clamp placement (Fig 1); the issues pertaining to time for placement, phobias, material residue in pockets anon... even providing a rebuttal to the text gives it a undeserved credibility.
Dentistry is perched on a slippery slope. In North America alone, it represents a siq of approximately $60 billion. Evidence-based science has been replaced by anecdotal science and the concept of “nonfiduciary advocacy” has been lost in the ether. I wish I possessed Randy Lang’s erudition and Will Rogers’ wit. His recent editorial on a specific orthodontic band of dubious value beyond the strength of its marketing showcaused the fact that even amongst those whose focus is narrow rowed by a specialty, a segment can be catalysed through market forces to recognise something as the holy grail, when another faction sees the same product as having the value of a Gwyneth Paltrow GOOP-substantiated cleanse.

In my own area of interest, a recent article by one of the better-known clinicians questioned the value of the wealth of new endodontic products coming to market, especially the latest Niti iteration that reintroduced reciprocation. The essence of the article was, “if it ain’t broke, don’t fix it”, which then included the take-away message that the product long associated with the reputation of the author had served the discipline well and it too required only a paucity of instruments to achieve 100 per cent predictable clinical success.

To bring this to a purposeful conclusion, I would encourage you to Google Bayes’ theorem. It is in essence an equation and depending upon whether you are a frequentist, a subjectivist or and objectivist, the theorem suggests that if we assign some a priori probabilities and then compute a posteriori probabilities, the degree of confidence those hypotheses can be conditioned by the new data that becomes available. For example, the Venn diagram (Fig. 2) relates to a population, the number expected to have a type of cancer, the number that are indeed positive for by virtue of a test for markers. Alter the variable, consider the efficacy of lasers by way of example, the degree of penetration into the dental profession, the advocacy of those that use them and the perception of the value inherent based upon their need to see viable applications and substantiated results. It is a technology that will inevitably prove to be an invaluable tool, albeit currently in its infancy.

Read all publications with extreme caution – think HealO-zone. Dentistry is getting very complicated as technology and innovation after its construct. The one essential aspect that must never be overlooked is the need to sustain biological fundamentalism through assiduously conceived investigations and authorship that follows the Cochrane Collaborative principles. We are about to enter a decade wherein it is manifestly conceivable that teeth can be regenerated or replicat-ed and achieve morphological and functional integration into the gnathostomatic apparatus. While it may not impact on the $4 billion a year whitening arena of oral services, it will impact on many others. The number of rubber dam hazard articles may well breach the levees and floodgates and overwhelm the profession, decimating the landscape and relocating the populace. It is Oral Health’s job to stand on guard:

“...Oh Canada, to stand on guard for thee”.

References
An in-vitro study

James Prichard discusses the effect of ultrasonic irrigation variables on the dimensions of artificial root canals

**A**im: To investigate the effects of power setting, type of irrigant and duration of ultrasonic irrigant agitation with Irrisafe™ on the mean percentage change in the cross-sectional area and diameter of artificial root canals in an in-vitro model.

**Methodology:** Twenty-five extracted anterior human teeth were collected and split into halves, each of which was embedded in epoxy resin. The external root surfaces were polished to produce flat, smooth dentine surfaces. A pilot score was used as a guide to prepare an artificial canal using rotary instruments to a size 30/.06. The root canals were randomly assigned to five groups. Group 1: irrigation with 2.5 per cent NaOCl, ultrasonic agitation at power setting 7 (n=5); Group 2: irrigation with 17 per cent EDTA, ultrasonic agitation at power setting 7 (n=5); Groups 3, 4, and 5 were irrigated with 2.5 per cent NaOCl and 17 per cent EDTA, respectively. Irrigation was delivered by a syringe and ultrasonically agitated with a P5 Satelec® and Irrisafe™ tips. Canal area and depth were measured at 17, 16 and 9mm from the canal orifice at baseline and after one, two and five minutes of ultrasonic agitation.

This study came about as a result of a presentation that Chris Stock, Godfrey Cutts and I made to Prof Kish Gulabivala. We showed him a protocol for shaping and then cleaning root canals using Irrisafe. He announced that all steel instruments and tips remove dentine and cut root canals, so I set out to prove him wrong!

I would like to express my thanks to Prof Gulabivala for the idea behind this project and the incredible opportunity he afforded me.

Contemporary endodontics falls into three distinct categories:

1. Preparation (mechanical shaping)
2. Irrigation (syringe flushing and adjunctive cleaning)
3. Obturation (sealing the root canals in three dimensions)

The existence of several morphologically different microorganisms was shown to be associated with necrotic pulps as early as 1984 by W.D. Millar. Bacteria in the root canal system has been shown to cause apical periodontitis in gnotobiotic rats (Kakehashi et al. 1965). Sundqvist demonstrated that 18 out of 19 traumatised but intact teeth associated with periapical radiolucencies gave positive bacterial cultures (Sundqvist 1975).

Schilder (1967) suggested that the root canal be cleaned and then shaped to allow for three-dimensional obturation. However, at least 58 per cent of the root canal surface could remain uninstrumented during root canal treatment (Peters et al. 2001) and 70 per cent more debris remained following instrumentation when compared with instrumentation and irrigation (Baker et al. 1975).

Furthermore the landmark studies of Byström and Sundqvist (1981, 1983) demonstrated a 100-1000 fold decrease in bacterial counts when 0.5 per cent Sodium Hypochlorite (NaOCl) was introduced instead of saline. Therefore it has generally been accepted that a chemo-mechanical approach to root canal debridement is required to significantly reduce the bacterial load that may encourage more...
predictable healing.

The role of root canal preparation has therefore undergone a shift from one primarily fulfilling a debriding function to one regarded more as establishing radicular access to the complex root canal system, for irrigation and obturation (Gulabivala et al. 2005).

Root canal irrigants should be biologically compatible, chemically able to remove both organic and inorganic substrates, be antibacterial, demonstrate good surface wetting, have no adverse effects on remaining tooth structure and be easy to use and effective within clinical parameters (Gulabivala et al 2005).

Penetration of irrigants into the root canal is a function of irrigating needle diameter in relation to preparation size (Ram 1977), and placement of the needle closer to the working length increased the efficiency of irrigation (Abou-Rass & Piccinino 1982, Sedgeley et al. 2005).

Improvement of the efficiency of irrigation especially in the apical third of the root canal system has been attempted by agitating the irrigant. The use of hand-files, pumping of well adapted GP cones (manual dynamic), continuous irrigation during rotary instrumentation and sonic and passive ultrasonic devices have all been described (Gu et al. 2009).

Richman first described the use of ultrasonics in endodontics in 1957. Endosonics was a term first described by Martin and Cunningham (1984) and referred to the simultaneous preparation and irrigation of root canals. Passive ultrasonic irrigation (PUI) was first described by Weller et al. (1980) and relates to the non-cutting action of the ultrasonically activated file. The free movement of the file or wire allowed irrigant to penetrate more easily into the apical part of the root canal (Krell et al. 1988).

However significant problems were encountered with k-files as they produce irregular shapes and apical perforations (Stock 1991, Lamley et al. 1989, straightened canals (Chennail & Teplitsky 1985, 1988) and ledged simulated root canals (Al Jadaa et al. 2009).

IrrisafeTM (from Acteon UK) is a stainless steel instrument that is non-cutting, parallel sided and available in two lengths (21 and 25 mm) and two tip sizes (ISO 20 and 25) and designed to be used after root canal shaping is complete to agitate freshly delivered irrigants.

It can be pre-bent in curved canals and introduced to 1mm short of the working length. It should fit loosely within the prepared canal shape so that the movement of the irrigant around the tip is uninhibited and the tip can vibrate freely. Once inserted, the power is activated and the violent movement of the irrigant “scrubs” the walls of the canal thereby implying the effective removal of dentine debris, micro-organisms (biofilm and planktonic bacteria) and organic tissue from the root canal (van der Sluis 2007).

The technique requires that the NaOCl irrigant is delivered in
Evolution in action

The original LED turbine just got even better!

Unbelievable Value:
Buy four W&H Synea Handpieces & receive the least expensive FREE*

Synea offers an unbeatable range of handpieces to meet the needs of our customers. This range includes W&H’s revolutionary range of LED handpieces.

But not all LEDs are the same - and we want our customers to have the best. So we are pleased to announce that W&H has raised the bar once again! Improved positioning of the LED source at the head of the handpiece ensures accurate bright illumination of your treatment site. The new LED+ also has an unparalleled Colour Rendering Index (CRI) giving colours a supremely natural feel. And Synea has a small head too, so your daylight quality light will not be obscured by your handpiece.

Contact W&H today to see things more clearly with Synea LED+.

*Conditions apply

The current trend in surgical techniques is to offer minimally - or even non-invasive protocols. By using an operating microscope together with high-tech micro-instruments, it is now possible to treat the entire root canal.

The irrigant effect is amplified not only by the mechanical activation provided by the vibration, but also by the heating effect of the ultrasonics, which intensifies the sodium hypochlorite dissolution and debridement properties.

The irrigant activation cause its loops generate turbulences and optimize the irrigant activation

The blunt-end prevents any perforation to the apex or to the canal walls

The special steel benefits from a specific surface treatment that provides the instrument with a better resistance and transmission of the ultrasonic vibrations and a complete compatibility with sodium hypochlorite, versus nickel-titanium ultrasonic wires

Godfrey Cutts and I run an annual two-day endodontic re-treatment course, throughout which we also use Acteon’s Endo Success Kit. This ultrasonic tips kit has been designed as a solution for the problems most often encountered during non-surgical endodontic treatments. The new titanium-niobium alloy allows optimum use of ultrasound in the trickiest situations.

The irrigant effect is amplified not only by the mechanical activation provided by the vibration, but also by the heating effect of the ultrasonics, which intensifies the sodium hypochlorite dissolution and debridement properties.

Non-cutting edges to prevent any damage to the root canal anatomy

IrriSafe is more efficient than smooth wires, because its loops generate turbulences and optimize the irrigant activation

To the canal walls

The blunt-end prevents any perforation to the apex or to the canal walls

The special steel benefits from a specific surface treatment that provides the instrument with a better resistance and transmission of the ultrasonic vibrations and a complete compatibility with sodium hypochlorite, versus nickel-titanium ultrasonic wires

Godfrey Cutts and I run an annual two-day endodontic re-treatment course, throughout which we also use Acteon’s Endo Success Kit. This ultrasonic tips kit has been designed as a solution for the problems most often encountered during non-surgical endodontic treatments. The new titanium-niobium alloy allows optimum use of ultrasound in the trickiest situations.

The irrigant effect is amplified not only by the mechanical activation provided by the vibration, but also by the heating effect of the ultrasonics, which intensifies the sodium hypochlorite dissolution and debridement properties.

Non-cutting edges to prevent any damage to the root canal anatomy

IrriSafe is more efficient than smooth wires, because its loops generate turbulences and optimize the irrigant activation

To the canal walls

The blunt-end prevents any perforation to the apex or to the canal walls

The special steel benefits from a specific surface treatment that provides the instrument with a better resistance and transmission of the ultrasonic vibrations and a complete compatibility with sodium hypochlorite, versus nickel-titanium ultrasonic wires

Godfrey Cutts and I run an annual two-day endodontic re-treatment course, throughout which we also use Acteon’s Endo Success Kit. This ultrasonic tips kit has been designed as a solution for the problems most often encountered during non-surgical endodontic treatments. The new titanium-niobium alloy allows optimum use of ultrasound in the trickiest situations.

The irrigant effect is amplified not only by the mechanical activation provided by the vibration, but also by the heating effect of the ultrasonics, which intensifies the sodium hypochlorite dissolution and debridement properties.

Non-cutting edges to prevent any damage to the root canal anatomy

IrriSafe is more efficient than smooth wires, because its loops generate turbulences and optimize the irrigant activation

To the canal walls

The blunt-end prevents any perforation to the apex or to the canal walls

The special steel benefits from a specific surface treatment that provides the instrument with a better resistance and transmission of the ultrasonic vibrations and a complete compatibility with sodium hypochlorite, versus nickel-titanium ultrasonic wires

Godfrey Cutts and I run an annual two-day endodontic re-treatment course, throughout which we also use Acteon’s Endo Success Kit. This ultrasonic tips kit has been designed as a solution for the problems most often encountered during non-surgical endodontic treatments. The new titanium-niobium alloy allows optimum use of ultrasound in the trickiest situations.