BDA survey shows most dentists want to leave NHS

By DTI

LONDON, UK: New doubt has been cast on the future of NHS dental care, as a recent survey issued by the British Dental Association (BDA) has found that the majority of dentists currently working in the service intend to leave it within the next five years. The results further showed that one in two dentists under 35 see no future for themselves in the NHS.

Instead, that demographic is now considering increasing the private work they do, working in private practice or moving abroad. Buying a practice is no longer considered a viable option, according to the poll, as only 16 per cent of those surveyed thought they would be able to own a practice in the next five years.

The worrying figures come after statistics from NHS Digital showed that the income of dentists in England and Wales has decreased by almost 45 per cent over the last decade. According to the BDA, the government is mainly to blame, as commitments to overhaul the controversial 2006 dental contract have not been honoured.

“The dental contract has reduced our patients to a line in a spreadsheet. This conveyor belt model of care has decisively failed both our patients and the young dentists on whom the future of the service depends,” said Chair of the BDA’s Young Dentists Committee Dr Harman Chahal. “Young NHS dentists are being asked to make impossible choices. They are offered no reward for going above and beyond, just the constant threat of penalties for not hitting government targets.”

Chair of the BDA’s General Dental Practice Committee Dr Henrik Overgaard-Nielsen added that, while young dentists remain the backbone of the dental workforce, government has made NHS high-street practice so unattractive that the next generation is now looking to the exit.

“Practices across the UK are already reporting major recruitment problems. This is a crisis made in Westminster, and Westminster must respond,” he urged.

Report: Policymakers given steps to act against dental caries

By DTI

LONDON, UK: A new report, published last week by the Alliance for a Cavity-Free Future (ACFF) and the Policy Institute at King’s College London in the UK, has highlighted the importance of demonstrating to policymakers the economic benefits of tackling the high rate of dental caries and gaining their commitment to the fight against the disease. The authors have further proposed key steps to speed up the process towards a cavity-free world.

The report is the product of discussions that took place at a Policy Lab meeting in June. This session for the first time brought together individuals from a range of different backgrounds—dentists, economists, public health officials, policy advisers, educators and psychologists—to provide new perspectives on the continuing problem of dental caries.

While the science on preventing the disease and stopping early-stage caries progression is already well understood, efforts to apply it have so far fallen short, the report’s experts emphasised. They estimate that the potential economic and health benefits of a cavity-free world are significant, especially considering that caries has communicable and other non-communicable diseases, such as diabetes and metabolic syndrome. Reducing the risk factors associated with caries could thereby also help improve health more generally and reduce the financial costs arising from other conditions, they explained.

Towards a cavity-free future

How do we accelerate a policy shift towards increased resource allocation for caries prevention and control?

To have policymakers actively engaged in the fight against the disease, systematic economic and comprehensive clinical data must be collected, the report urged. In addition, increased efforts should be made to accelerate the move towards a greater focus on preventative dental care. To this end, the authors proposed creating new remuneration systems for dentists to ensure that caries prevention and control are properly rewarded, as well as promoting efforts to encourage behaviour change in the public and implementing incentives for the industry to adopt more socially responsible agendas, among other measures.

Concerning the proposal to revise dental remuneration systems, ACFF Global Chairman Dr Nigel Pitts told Dental Tribune Online: “Current payment systems do not typically pay dentists to ‘do prevention’ and there is no financial incentive for dentists to spend time and resources on preventatively oriented care pathways. In order to see progress, this needs to change.”

In addition, Pitts highlighted the importance of closer collaboration between dental and medical practitioners. “Maximising the effectiveness of caries preventative caries management will increasingly draw on a multidisciplined workforce of teams made up of...
“Too many sweets, eh?”

GDC: First results of fitness to practise analysis published

By DTI

LONDON, UK: Dentists who are male and have an Asian background are more likely to be investigated by the General Dental Council (GDC), an independent analysis of the regulator’s fitness to practise (FtP) data has suggested. It also found that foreign dentists who registered by taking its Overseas Registration Exam were less likely to be involved in a FtP case than their counterparts from the European Economic Area region.

In fact, dentists from that area were over-represented in FtP proceedings, according to the data.

The analysis commissioned by the GDC is the first to examine data from its FtP process in depth and is part of the organisation’s ongoing efforts to reform dental regulation. Although the findings do not necessarily reflect the actual situation owing to gaps in the information-gathering process, the regulator said it is planning to share them with its partners in order to help transform internal processes and policies, like the development of new materials to ease transition of dentists who were trained abroad into UK dentistry.

They will also be used for a state of the nation report that is anticipated to be released in 2019, the GDC added.

According to the Professional Standards Authority, the regulator opened 250 cases in 2015/2016 that met FtP criteria.

“This is a major step towards improving our use of data and intelligence to inform upstream regulation initiatives—to improve patient protection, ensure the public maintains confidence in dental services and to better support professionals,” explained the GDC’s Executive Director of Fitness to Practise, Jonathan Green. “We made a commitment within shifting the balance to use data and intelligence to inform our approach to regulation and this statistical analysis of our fitness to practise data is one of the ways we are working to fulfil this.”

“We have already started to use the findings to feed into our ongoing work to deliver our commitment.”

global burden of disease study.

Un laundered caries in permanent teeth affects 2.4 billion people and was the most prevalent condition among all participants evaluated in the 2016 Lancet Global Burden of Disease study.

“Unlaundered caries in children’s teeth is the tenth most prevalent condition, affecting over 621 million children worldwide.

“It is our job as dental and health professionals to ensure that the health of the public and patients is our priority. By working together across stakeholders to progress a shift towards prevention rather than just restorative treatment of caries, we will be ensuring a healthier future for millions as well as securing greater access to care for excluded patients,” Pitts said.
Reliable Experience Original Forever
Mechanism behind oral thrush discovered

By DTI

LONDON, UK/PITTSBURGH, USA: A recently discovered peptide toxin has been identified by a team of UK and US researchers as the cause for the mouth to develop an oral thrush. The substance called Candidalysin, which is produced by the fungus Candida albicans, was found to punch a hole into cells lining the mouth thus triggering the immune response, they wrote in a study published by the journal Science Immunology.

Helper immune cells then attack the hyphae of the otherwise harmless fungus which results in the painful infection. “Surprisingly little is known about how fungal immunity in the mouth operates,” said co-author Sarah L. Gaffen from the University of Pittsburgh School of Medicine. “And, until now, it was unclear why Candida does not establish an invasive infection in healthy humans.”

In their study, the researchers used a combination of human oral epithelial cells cultured in laboratory dishes and mice infected orally with Candida, to show the central importance of Candidalysin. Not discovered before 2016 by Professor Julian Naglik at King’s College London, the toxin is the first peptide toxin identified in any fungus that was found to infect humans. Understanding its role in the infection mechanism in the mouth could eventually lead to better treatments for the condition and other fungal infections, the scientists said. They added that despite millions of fungal infections worldwide, there are no commercially available anti-fungal vaccines yet.

“Our research provides vital clues to understand the immune defence network at barrier sites of the body. This knowledge may ultimately be harnessed to design antifungal vaccines,” Professor Julian Naglik from King’s College London Dental Institute, who discovered Candidalysin in an earlier study, said. Awarded a large National Institutes of Health (NIH) grant, Gaffen and Naglik announced to further explore the role of Candidalysin signalling in oral immunity in the near future.

An oral thrush is one of the most common fungal infections of the mouth. While it is treatable with topical medication, it often causes pain that makes it difficult for patients to eat or swallow. It is also believed to be responsible for other serious fungal infections, especially in infants and other patients with a compromised immune system such as HIV/AIDS patients, denture wearers and those on immunosuppressants, including chemotherapy and drugs to prevent the rejection of transplanted organs.

The paper, titled “Oral epithelial cells orchestrate innate Type 17 responses to Candida albicans through the virulence factor Candidalysin” was published in Science Immunology on 3 November.

Tooth found in Dorset traces human lineage to rat-like creature

By DTI

PORTSMOUTH, UK: According to new research from the University of Portsmouth in England, fossils from the oldest mammals belonging to the line that led to human beings have been discovered on the Jurassic Coast of Dorset in the UK. The two teeth are from small, rat-like creatures that lived 145 million years ago in the shadow of the dinosaurs. The animals are reportedly the ancestors of almost all mammals alive today.

The discovery of the teeth was made by University of Portsmouth undergraduate student Grant Smith. Dr Steve Sweetman, a research fellow at the University of Portsmouth and the study’s lead author, said: “Grant was sifting through small samples of earliest Cretaceous rocks collected on the coast of Dorset as part of his undergraduate dissertation project in the hope of finding some interesting remains. Quite unexpectedly, he found not one but two quite remarkable teeth of a type never before seen from rocks of this age. I was asked to look at them and give an opinion and even at first glance my jaw dropped.”

The teeth were recovered from rocks exposed in cliffs near Swanage, which has given up thousands of iconic fossils. “The teeth are of a type so highly evolved that I realised straight away I was looking at remains of Early Cretaceous mammals that more closely resembled those that lived during the latest Cretaceous—some 65 million years later in geological history. In the world of palaeontology there has been a lot of debate around a specimen found in China, which is approximately 160 million years old. This was originally said to be of the same type as ours but recent studies have ruled this out. That being the case, our 145-million-year-old teeth are undoubtedly the earliest yet known from the line of mammals that lead to our own species,” said Sweetman.

Sweetman believes the mammals were small, furry creatures and most likely nocturnal. One, a possible burrower, probably ate insects and the larger may have eaten plants as well. Noting that the teeth are of a highly advanced type that can pierce, cut and crush food Sweetman said, “They are also very worn which suggests the animals to which they belonged lived to a good age for their species. No mean feat when you’re sharing your habitat with predatory dinosaurs.”

The paper, titled “Highly derived eutherian mammals from the earliest Cretaceous of southern Britain,” was published in the Acta Palaeontologica Polonica journal on 7 November.

New survey reveals how often Brits skip toothbrushing

By DTI

LONDON, UK: Only two-thirds of British people brush their teeth the recommended two times a day, a new survey has found. The remaining third only use their toothbrush once a day and primarily in the morning, with 26 per cent who said they skip a second brush regularly, women were found to have slightly better oral hygiene practices.

The survey, the results of which were released this week, was conducted on behalf of YouGov UK and involved over 2,000 adults from across the UK, representing all the respective age groups and social grades. Those in the C, D and E groups (skilled, semi-skilled and unskilled manual workers; state pensioners, casual and lowest-grade workers, unemployed people with state benefits only) were found to brush their teeth three or more times a day. However, the figures pose worrying questions regarding the nation’s attitude towards oral hygiene.

Guidelines issued by the NHS state that teeth should be cleaned for at least two minutes before going to bed and a second time during the day. Furthermore, it appears the vast majority of Brits do not floss, since only one third of all those surveyed responded that they make daily use of this interdental cleaner.

Men, especially, do not seem to be keen on cleaning their teeth, as one in three reported only brushing them once per day. However, with only 26 per cent who said they skip a second brush regularly, women were found to have slightly better oral hygiene practices.

One in three men only brush their teeth once a day, when it has the least effect. Furthermore, two per cent of respondents in the survey said that they do not brush their teeth at all. There is a slight glimmer of hope, as 8 per cent of the respondents said they brush three or more times a day. However, the figures pose worrying questions regarding the nation’s attitude towards oral hygiene.
EuroPerio and Dental Tribune International renew collaboration

By DTI

AMSTERDAM, Netherlands/LEIPZIG, Germany: With thousands of dental professionals expected from around the world, EuroPerio9 is set to be one of the largest and most influential dental meetings next year. The event’s organiser and Dental Tribune International (DTI) have now announced that they will again be collaborating for the 2018 edition, which is to be held in Amsterdam in June.

The organisations first worked together for EuroPerio8, which was held in London in the UK in 2015. For 2018, DTI will again produce a special edition of its show newspaper title today international on each of the three days of the event. In addition, DTI editors will provide daily coverage on EuroPerio9 from the Amsterdam RAI Exhibition and Convention Centre on its news website and social media channels.

With its congress newspaper, DTI already provides daily news on all significant global dental congresses and exhibitions, including the International Dental Show in Germany, the FDI World Dental Congress and the Annual Scientific Meeting of the European Association for Osseointegration.

First held in Paris in France in 1994, EuroPerio is organised every three years by the European Federation of Periodontology, a professional body representing over 30 organisations, with 14,000 members, worldwide. The last edition saw a record attendance of 10,000 visitors, including some of the most high-profile experts and scientists in the field.

For the upcoming edition in Amsterdam, the organiser is anticipating a similar number. Highlights will include a live surgery as part of the Master Clinician/Perio-

...than meets the eye

More information about the event can be found on the official website, www.efp.org/europerio9.
“We are now putting the mouth back in the body”

An interview with paediatric dentistry consultant Dr Claire Stevens, Manchester

The nationwide Dental Check by One (DCby1) campaign aims to combat dental caries in British children by spreading awareness that dental check-ups should be performed even before a child’s first tooth appears. At the BDIA Dental Showcase in Birmingham, Dental Tribune spoke with Dr Claire Stevens, president of the British Society of Paediatric Dentistry and a consultant in paediatric dentistry at the University Dental Hospital of Manchester, about the programme.

While the oral health status of children seems to have improved in the UK in recent years, there are still record numbers of children presenting to hospitals to have their teeth extracted. How can this be explained?

The high number of general admissions for multiple extractions in children isn’t new. Current figures are taken from the Hospital Episode Statistics [a data warehouse containing details of all admissions, outpatient appointments, and accident and emergency attendances at NHS hospitals in England] gathered by NHS Digital and are probably more accurate than ever before owing to vastly improved data collection. When compared with previous methods of data collection, we think it’s likely, in fact, that general admissions are starting to go down.

Sadly, there are communities in which children are not taken to the dentist and there is a high level of unmet need, reflecting societal inequalities. This is one of the most challenging aspects we face as a society.

With £50.5 million spent annually on dental extractions in 0- to 19-year-olds on a disease that is nearly always preventable, downwards is the only way for these statistics to go.

When was DCby1 launched, and how did the idea come about?

The DCby1 concept has been nascent for some time. It’s in the Commissioning Guidelines for Paediatric Dentistry (still unpublished) and was one of the key aims to emerge from a stakeholders’ day organised by the British Society of Paediatric Dentistry (BSPD) last year.

Speaking at the British Dental Association conference in May this year, I spoke publicly of DCby1 for the first time. A new statistic had just emerged and this was that only 19 per cent of 0- to 2-year-olds in the UK had seen a dentist by the age of 2. I challenged my audience to see four extra children under 2. If every dentist took up the challenge, the number of children seeing a dentist before their second birthday would go up by 10 per cent. The campaign had its formal national launch at the BSPD conference in September.

The programme encourages parents and caregivers to take children to the dentist before they have reached their first birthday. What is the evidence regarding the benefits of seeing a child at that early age?

We know that an unacceptable number of children as young as 2 or 3 are suffering from early childhood caries. We also know that one in eight 3-year-olds has caries, so leaving interventions until school age is too late. The only way to change this is by getting in early with preventative advice. We know that a good diet and regular brushing with fluoride toothpaste can prevent dental disease.

Why do you think such a campaign is necessary?

We need a radical approach to bring about change. However, we are undertaking the campaign progressively. We are building awareness by reaching out to parents through health visitors, school and nursery nurses, doctors and pharmacists.

In other European countries, like Germany or France, it is common to have children see a dentist before they even reach the age of 1. Why is the UK still behind in this regard?

Somewhere in this country, we have not placed a high enough value on oral health. I am glad to say that we are now putting the mouth back in the body.

What organisations are supporting the campaign and how?

We have had the most fantastic support across dentistry and healthcare generally. Countless organisations are getting on board with sharing the very simple DCby1 message. If parents hear this wherever they go, they will feel empowered to ask for a dental check and this will become the norm. We are making this issue everyone’s business, and we are glad to be seeing such a positive response.

What feedback did you receive after the launch of the campaign, and what do dentists have to do to join in?

Last week, I curated the @NHS Twitter handle and I took the opportunity to broadcast the DCby1 message. A typical response was the following from a mother: “Thank you for your tweets. Taking my 16-month-old to the dentist for her first appointment on Monday because of it.”

Support from the profession has also been heartening. Joining in is simple. All the information a dental practice needs is on the BSPD website.

Do you think that celebrities, such as Jamie Oliver, who publicly lobby for a sugar tax are creating more awareness around topics like diet and sugar intake and therefore maybe even have a positive influence on children and parents?

Definitely, yes. We live in a culture in which celebrities play an important role, and probably more than any other celebrity. Jamie Oliver has had a positive influence on healthy eating. He is also a parent, so his impact can be felt in schools and in homes. If Jamie was reading this, I am sure he too would be sharing the DCby1 message.

Thank you very much for this interview.
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European dental market survey available in digital and hard copy

By DTI

KORTRIJK, Belgium: The 2017 Survey on the European Dental Trade provides a valuable overview of relevant topics and trends in the European dental industry. Launched by the Association of Dental Dealers in Europe (ADDE) at this year’s International Dental Show in Cologne in Germany, the latest edition of the market review is now available in digital format. Dental dealers and manufacturers can purchase the survey report now via the new ADDE online shop.

Again produced in collaboration with the Federation of the European Dental Industry, the 2017 Survey on the European Dental Trade indicates a further shift towards digital dentistry, manifesting in overall growth of online shopping and use of CAD/CAM systems and intraoral scanners. Besides analysing current trends, the report covers the latest medical device regulations, parallel trade, market surveillance and free movement of dental professionals. Among the survey findings are that the number of practising dentists grew slightly compared with 2015 (in all European countries, excluding Sweden, Denmark and Bulgaria, which were not analysed), totalling about 282,000 in 2016. In contrast, the number of active dental technicians decreased across Europe. The number of patients per dentist remained the same across Europe. In terms of sales, the most significant growth rates were observed in Austria, France, Hungary, Spain and Italy. Regarding the European average across sales segments, sundries, implants and technical services remained stable, while equipment sales increased slightly.

“Our 2017 Survey on the European Dental Trade comprehensively assesses the sales values for the main product categories, sales segments and distribution channels. It also provides unique insights into the market shares of dental dealers and manufacturers in the European Union,” said President of the ADDE Dominique Deschietere. This includes the number of customers and end users, sales values and segments (equipment, sundries/consumables, prostheses, technical services, implants, radiography and CAD/CAM), the use of computers and e-commerce, distribution channels, and VAT charges and their impact on the market.

The latest survey is now available for purchase on the ADDE website in hard copy and as a PDF from the new ADDE online shop.
Legislative parity and transition period priorities for dental industry post-Brexit

By DTI

LONDON, UK: The British Dental Industry Association (BDIA) has called on the negotiating heads of both the UK and the European Union to agree to a transition period after the Brexit. In a letter addressed to Secretary of State David Davis and chief Brexit negotiator for the EU Michel Barnier, the organisation, together with the Federation of the European Dental Industry (FIDE), said that such an extension would be necessary to assure parity in UK and European medical device legislation in the framework of a new trade agreement.

"Recently published EU legislation will be applicable in the UK until it leaves the EU in March 2019," they stated in the letter. "Thereafter, there is a risk that UK and EU legislation may diverge, to the detriment of patients and businesses across Europe."

Among other points, both organisations have recommended that an agreement should include the UK’s adoption of EU medical device regulations and the country remaining an active participant alongside EU member states in the European regulatory framework. Furthermore, the UK should maintain full involvement and participation in the EU database for medical devices (EUDAMED), they wrote in the letter.

"The production and supply of dental devices often involves a complex cross-border network across Member States. In other international markets, it is non-tariff barriers, often arising from conflicting regulatory regimes, that most seriously limit trade," they added. "Ensuring that such barriers do not emerge between the EU and UK will be crucial in protecting the future oral health of EU and UK citizens, and the global competitiveness of European dental businesses."

According to the BDIA, the UK represents one of the key markets in the European dental market, with an annual turnover of almost £0.5 billion. It is the first time that the BDIA and FIDE have publicly announced a detailed list of priorities for the ongoing negotiations.

With their letter, both organisations have joined a growing number of industries worried about the state of Brexit talks and the negative impact of a no-deal scenario as proposed by several members of the UK cabinet, including Prime Minister Theresa May. The start of negotiations for a post-Brexit deal was recently postponed by the EU after discussions about the future rights of EU nationals in the UK and vice versa, and a "divorce bill" stalled in October.

After invocation of Article 50 of the Treaty of Lisbon, UK membership of the EU will end on 29 March 2019.

Fewer products removed from BDIA Dental Showcase

By DTI

BIRMINGHAM, UK: Less counterfeit or non-compliant dental equipment than last year had to be removed from the BDIA Dental Showcase, a representative of the Medicines and Healthcare products Regulatory Agency (MHRA) has revealed. Over the three days of this year’s show in Birmingham, the organisation found an estimated 500 pieces of equipment that may have posed a threat to public safety, MHRA investigator Maxine Marshall told Dental Tribune Online in Birmingham.

The numbers are in line with a general trend of less critical equipment entering the marketplace in recent years. Particularly the distribution of high-risk equipment like handpieces and K-type-files has been on the decline, which is the result of the work that the agency has been doing with the British Dental Industry Association (BDIA), according to Marshall. Since 2014, both organisations have been running an awareness campaign aimed at dental professionals and the general public to educate about the possible dangers of fake or non-compliant products.

“I think the message is understood. There have definitely been fewer referrals of counterfeit products to MHRA,” Marshall said. “However, our work remains challenging because of the Internet. We constantly track suspicious websites and remove listings from online marketplaces.”

Marshall announced that her organisation is planning to talk to both organisers and exhibitors of the Dental Showcase to introduce measures that help identify possibly suspect products earlier in future exhibitions. The successful cooperation with the BDIA will also continue.

According to MHRA figures, over 10,000 individual pieces of non-compliant or counterfeit dental equipment were seized in dental practices per year in the UK. Recently, the General Dental Council had to suspend a 52-year-old dentist from Preston in Lancashire who, after inspections, was found to have purchased risky equipment on an Internet auction website at least three times.

Newly launched device makes every toothbrush smart

By DTI

LONDON, UK: A new, innovative device designed to support patients in their toothbrushing routine has been launched in the UK today. Brushlink tracks individual behaviour, like brushing frequency, duration and—for the first time—angle, and provides real-time guidance and performance monitoring to users.

While tracking of brushing behaviour is already available with the latest generation of electronic toothbrushes, Brushlink can be used with manual toothbrushes too, according to developer and London dentist Dr Dev Patel. Users of the device receive a score after each brush and tips on how to improve their performance. The collected data can be sent to a mobile app via Bluetooth and stored for up to three months for later use.

The main intention behind the device was to give dentists more in-
What would Dr Mo Lar do? Part 7
By Richard Lishman, UK

Over the course of an 11-part series, the 4dentists group explores ways to tackle a number of personal and professional challenges by providing advice and guidance to a fictional character Dr Mo Lar. In this seventh article of the series, Managing Director of the 4dentists group, Richard Lishman explains how Lar should go about purchasing a second practice to expand his business.

Among many other business ambitions, Dr Lar would like to expand his business by purchasing an additional practice. He already has some experience of practice acquisition, having gone through the bidding stage, as is the careful time available for the process before placing a bid, as one wrong move could jeopardise his overall financial goals. The location of the new practice is important as well, since too much travelling time between the two could have a direct impact on his ability to successfully run both businesses.

Practice funding
In order to secure funding for a second practice, Lar has to be able to prove that he can afford the repayments. Detailed accounts and affordability tests are therefore imperative leading up to the bidding stage, as is the careful compilation of a business plan. As for the actual borrowing, he has the option of borrowing the entire sum of the money from the bank or releasing funds from his existing practice and then taking out a smaller loan. Say Lar has been making profits of £200,000 per annum for the last three years, but has only drawn £50,000, it would equate to a total increase in net worth of £150,000. If he wanted to, Lar could borrow that equity from the business. Of course, he should discuss both options with his Independent Financial Adviser before making a decision.

Interest rates are another important factor Lar should consider before purchasing his second practice. If he were to take out a loan with a different provider than the first time and they offer better rates, he could use this opportunity to move all his funding to one place. Not only would that simplify his repayments, it would make them cheaper too.

Besides additional funding, Lar would be required to have the necessary critical illness and life cover in place, as all banks require purchasers to have the correct cover in the event of sickness, injury or death. With life cover already in place from his first acquisition, he would simply need to update his policy to reflect his additional financial responsibilities.

Considering business structures
When expanding a business, there is an opportunity to change its corporate structure. As it stands, Lar is the sole proprietor but, should he choose to, he could form a partnership, incorporate to become a limited company or register as a limited liability partnership. Purchasing an additional practice will change his tax structure, liability and tax burden so it is important that he chooses a structure that will make the business worth his while. In order to increase his income and save on tax, he will need to work closely with an accountant to weigh up his options.

Employees
Purchasing another practice will undoubtedly involve taking on more staff. As such, Lar should consider consulting a lawyer to put together the necessary contracts for new employees. The principle statement would need to clearly detail certain provisions, such as the legal names of the employer and the employee, the job title, the date of the commencement of employment, the details of compensation, the working hours and leave. Most importantly, he must make sure that all the terms of the contract are standardised across all members of staff, otherwise it could lead to allegations of discrimination.

For staff who are self-employed, his lawyer needs to draft an appropriate written contract detailing their arrangement, as there are considerable risks to dental practice owners associated with these agreements.

There really is a lot to consider before expanding a business or practice, which is why it is always advisable that someone in Lar’s position utilises the services of an expert team. Only then, can one guarantee that the process is executed seamlessly, with excellent results at the end.

In the next article, Lar looks at selling his business.

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A whole new dimension of imaging precision

By Julia Maciejek, DTI

Like many fields in dentistry, implantology has been transformed by technological innovations since its humble beginnings more than half a century ago. As the aesthetic and osseointegration properties of implant materials have continued to improve, the number of dental patients opting for implants has risen steadily. With this increase in procedures has come a demand foratraumatic and safe surgery with fewer post-surgical complications. Since 2005, French company ACTEON has established itself as a leader in digital medical imaging and high-frequency ultrasonic devices. Supported by its excellent clinical results, ACTEON continues to push the boundaries of what is possible in implantology as it seeks to provide products that optimise both the patient’s and the dentist’s experience.

With an emphasis on research and development in dentistry and medicine, ACTEON has successfully expanded its offering and introduced several new products this year. Its two multidisciplinary research and development teams and four manufacturing plants are all located in western Europe: in Mérignac (equipment and pharmaceuticals) and La Ciotat in France (dental imaging), Tutlingen in Germany (medical imaging) and Milan in Italy (dental imaging). These teams work very closely together and production processes are highly controlled owing to their geographical proximity. This is further enhanced through collaboration with international dental surgeons, leading to the manufacture of devices that, according to ACTEON, deliver the best results for patients through minimally invasive and less traumatic treatments.

ACTEON granted Dental Tribune International an exclusive look behind the scenes of its 3,200 m² manufacturing plant in Milan, where many of the company’s introral and extraoral imaging devices are produced. The team was proud to introduce its flagship model, X-Mind trium. This extraoral radiographic unit was first introduced at the International Dental Show (IDS) in 2013 and received a major update just in time for the 2017 fair. It offers a complete range of innovative solutions for diagnostics and treatment planning. Considerable attention has been paid to image quality and homogeneity, including X-ray emission, processing, stability and geometry. “X-Mind trium combines CBCT, panoramic and cephalometric imaging, which is why it is called a three-in-one device,” explained Claudio Giani, director of imaging research and development at the Milan site. He demonstrated that CBCT imaging is accomplished using a rotating gantry with a fixed X-ray source and a detector. Giani told us that, during the rotation, multiple sequential projection images, ranging from 150 to 450, are acquired to complete the arc. This procedure varies from a conventional medical CT scan, which uses a fan-shaped X-ray beam in a helical progression to acquire individual image slices of the field of view (FOV) and then stacks the slices to obtain a 3-D representation.

When we first approached X-Mind trium, we noticed right away the distinctive ergonomics of the radiographic unit. The device has an extremely short U-arm, which moves around the patient during the image acquisition phase. This is supported by the patented kinematics and collimation and aids comfortable positioning of the patient’s jaw. The entire system is designed with ergonomic efficiency in mind and takes up very little space in the practice room. With a secondary collimator (X-ray tube assembly) installed, the patient is not exposed to additional collimator movements.

Excellent quality assurance

ACTEON produces high-end quality products that undergo a tried-and-tested quality control process. “The production of X-Mind trium has risen month after month, especially since we obtained U.S. Food and Drug Administration approval and then launched X-Mind trium in the US,” stated Above Reither, the Milan factory manager. He explained that, by changing the factory’s layout and the flow of materials, new workflow processes were established. The manufacturing plant is continuously expanding, and with additional operators, it is able to meet the demands of the market.

“As in this factory, we use the Kanban approach principle, which means that we produce on stock, but finalise the product based on order. This way, we can balance demand with available capacity,” added Reither.

Moreover, ACTEON applies significant quality controls during all processes, from the assembly of the core of the machine to final testing, which includes checking of the components and the configuration of the workstation. According to the factory manager, this procedure has been streamlined significantly in comparison to last year. Reither showed us a large number of testing cabinets containing devices being checked. With complete concentration, employees in front of computers verify the correctness of every step before the X-Mind trium units are distributed. It is in this context that a large quantity of X-Mind trium devices are manufactured, tested and shipped each week. “We have an excellent product quality. We want to ensure a high-quality standard, so employees take turns at the workstations. We also want to make sure that each employee knows and understands all the processes leading up to the finalisation of the product, establishing an appreciation of the importance of each step in the assembly. We further want our employees to respect ACTEON’s standard of quality. This follows the two steps of the quality control: (1) checking that all cables and parts are well assembled and (2) testing the machine’s functionality in the testing cabinets. Our quality manager also inspects the components when they are sent to us and before we put them into stock. No parts are assembled externally. A mix of components, cables, mechanical parts, motors and sensors are assembled by hand. That is also part of our quality management,” Reither detailed.

Sharp images

Excellent image quality is essential for treatment planning and diagnosis. In CBCT, exposure is incorporated in the FOV. This means that only one rotational sequence of the gantry is necessary to acquire enough data for image reconstruction. “In implantology, a CBCT image is indispensable for planning simulation and determining the exact nerve location. With only one image, the entire dental arch can be visualised, which allows for optimal diagnostic planning possibilities. X-Mind trium has a range of FOV options displayed in detail and without movement artefacts. He emphasised that the exposure time is very low and the reconstruction time is three seconds. We saw that, with a cephalometric image, the entire maxillofacial area is shown, making it highly suitable for oral and maxillofacial surgeons. Furthermore, it has a small voxel size of only 75 µm and a fast construction time of 29 seconds. X-Mind trium can be equipped with one or two sensors for an efficient workflow.

With ACTEON’s expertise in medical imaging, a dedicated analytical algorithm has been implemented for X-Mind trium. “We have achieved exceptional results which are able to provide advanced clinical indicators that will be helpful for practitioners in the future,” stated Giani proudly. “The analytical algorithm has been developed in terms of the graphics processing unit (GPU) and a specific type of GPU is installed inside the workstation of X-Mind trium when the CBCT function is configured,” explained Giani.

This algorithm is used to determine the apparent image definition and bone density to facilitate clinical decision-making. The filters ensure detailed recording of the image acquisition by low noise microstepping motors.

Low radiation dose

With X-Mind trium, high radiation exposure is a thing of the past. The low-radiation protocol decreases the required amount of X-ray emissions by a third using the algebraic reconstruction technique. This means that the radiation dose for the patient can be reduced by 50 to 70 per cent. This low-dose imaging guarantees a maximum FOV with minimal radiation exposure to the patient. “This is essential because we do not care only about good images but also about the well-being of the patients,” stated Reither. Furthermore, the software of X-Mind trium monitors radia-
User-friendly software

Computer scientists would say the software is as important as the hardware. ACTEON provides intuitive and ergonomic imaging software that has all the required functions—scanning, measuring, editing, commenting. In the factory cellar, Reither explained the special features of the ACTEON Imaging Suite software and stated that it can be linked to most practice management software and all ACTEON imaging products, such as the X-Mind trium, CBCT and panoramic devices, and intraoral scanners. It is compatible with both macOS (and soon iOS) and Windows and has a TWAIN driver for full compatibility with all imaging software. This gives practitioners the ability to move around and interact directly with their patients.

Safe surgery

X-Mind trium offers extraordinary functionality in the field of implantology, making it suitable for more demanding treatments. Misleading or insufficient information obtained from a radiograph can lead to the loss of an implant, one of the worst scenarios for both the patient and the dentist. “In pre-implant procedures, accurate measurements of the bone density and volume are essential to guarantee a higher success rate in implantology. The 3-D capability of X-Mind trium also facilitates safer osseointegration,” said Giani. Clinical decision making has seemingly become easier than ever with X-Mind trium.

Certainly, our tour would not have been complete without a look at ACTEON’s well-known Piezotome ultrasonic brand. Thousands of dentists worldwide have adopted the company’s celebrated Piezotome devices as their choice for pre-implant surgery, with Piezotome Cube representing ACTEON’s new standard. It is a powerful ultrasonic device with a rotary motor, as well as a handpiece and a tip, ensuring optimum performance. Leading oral surgeon and implantologist Dr Angelo Trodhan successfully uses Piezotome Cube in his everyday treatment procedures. “The Piezotome’s ergonomics makes the device naturally intuitive and reliable. Furthermore, it enables surgeons with less experience to perform a variety of treatments. In accordance with the cutting selectivity, soft tissue (membranes and nerves) is preserved. During piezoelectric surgery, fine and precise cuts minimise bone loss. In 98 per cent of cases, patients do not need to use analgesics postoperatively and barely any swelling is observed. Surgery with Piezotome Cube maintains the patient’s quality of life,” said Trodhan.

In implantology, bone grafting materials may be necessary for the implant to succeed. For this reason, QUALIOS was developed, and it was first introduced at IDS 2017. The material has a unique bone-supporting structure and high level of mechanical resistance. Its large interconnected pores make it particularly suited to bone colonisation, and it is completely resorbable, ensuring high-quality bone regeneration. Being entirely synthetic, it is free of any contamination risk that comes with products of animal or human origin. It is clear from this that QUALIOS complements ACTEON’s implantology product line.

In ACTEON’s continuous product expansion, patients’ well-being continues to be the top priority. We felt the passion employees put into their daily work to support ACTEON’s innovative portfolio for imaging and piezoelectric surgery. These products have positioned the company as a pioneer in oral surgery and dentistry. They are less invasive, safer and faster to operate, and provide patients and practitioners with the best treatment options available.
“This new protocol is almost universal”

At the Nobel Biocare Symposium in London, Dental Tribune spoke with Dr Rubén Davó from Spain about the new Trefoil implant solution.

With Trefoil, Nobel Biocare recently introduced a new implant solution or protocol for achieving a fixed, definitive fixed full-arch restoration of the mandible in one day. Combining a pre-manufactured titanium bar, three implants and a simplified restorative workflow without provisional, it reduces the time to teeth and chair time compared with conventional fixed treatment with implants, according to the company. At its recently held London symposium, Dental Tribune spoke with oral and maxillofacial surgeon Dr Rubén Davó from Alicante in Spain, about the system.

You were one of the first clinicians worldwide to have treated with Trefoil and evaluated its clinical performance. How did you become involved, and what results have you achieved?

I have been collaborating with Nobel Biocare’s clinical research department for many years on various projects. Nevertheless, it was an honour and privilege when they asked me to clinically evaluate the new Trefoil system. From a surgical point of view, we looked at the accuracy of the template guided surgery. We know that the fixation-compensation mechanism allows around 0.5 mm of discrepancy. In our clinical study, we found that structures could be placed properly in more than 99 per cent of the cases.

Almost 20 years ago, a similar treatment protocol was introduced to the market with Bränemark Novum, but it was discontinued in 2007. What makes the Trefoil system different?

In my opinion, the Bränemark Novum system was ahead of its time. While from a clinical point of view it demonstrated good success rates, the market was not ready for it. You have to remember that, in those days, treatment concepts like immediate or soon-to-be edentulous patients were used to rehabilitate edentulous patients. However, the main problems with Novum were related to the prosthetic framework, which posed difficulties from a functional and aesthetic standpoint. As a refined system, Trefoil has completely addressed these problems.

What patient groups are going to benefit from this new protocol?

Potentially all patients edentulous or soon-to-be edentulous cause this protocol does not depend on new technologies or sophisticated therapies. It requires only one surgeon and a basic laboratory to provide patients with fixed immediate teeth.

How difficult is it to learn the Trefoil protocol?

I would recommend doing at least five cases. After that, the clinician should feel comfortable and confident in performing the protocol. While it is not a very complex surgery, the practitioner will need a little bit of training. Nobel Biocare is very aware of that and offers a number of courses in many markets.

You have led some of these courses in Germany, Spain and the UK, to name a few. What has the initial feedback been?

Those who were involved in the clinical studies on Trefoil are teaching the courses now, and this has the advantage that attendees can gain from our experience gained in treating many of these cases. Our goal is to avoid both complications and any possible problems. The feedback has been extremely positive. Many participants have taken the course because they felt it offered the right concepts and provided a good practical learning experience. Consequently, they felt very comfortable performing the surgery.

According to Dr Kenji W. Higuchi, one of the developers of Trefoil, the system will be the next big thing in implant dentistry. Would you agree with that statement?

I think it has become very difficult to innovate in this field because many things have been introduced over the last 20 years. I have no doubt however that, in China, India and other developing countries, this will start a revolution because now more people will have access to these treatment possibilities. Trefoil will also address a gap in many Western countries, where we see many patients that do not want removable dentures, but cannot afford fixed dentures because of a lack of time or money.

The goal of Nobel Biocare is to reach more people for whom a lack of financial resources is a limiting factor. That is why it is an ideal solution not only for more affluent parts of the world like Europe or the US but also for markets like India or China. With Trefoil, the number of patients that can be treated by means of fixed dentures will be much larger be.

The survival rate for implants and prostheses was near 99 per cent after one year. The high number of implants was used to rehabilitate edentulous patients.

You have worked with different implant systems like Novum, but it was discontinued in 2007. However, all the positive feedback we have received lately has made us extremely positive about the future prospects of the system.

Thank you very much for the interview.
Dental biofilms play a crucial role in the overall health of the oral cavity. They are composed of bacteria, bacterial products, extracellular DNA and an extracellular matrix that serves to bind biofilm together and contributes to the characteristic stickiness of plaque. As a complex ecological community on hard surfaces of the dentition, such as teeth, they produce virulence compounds that exacerbate the host inflammatory response.

Plaque bacteria utilise nutrients from saliva and the food we eat for their energy needs and metabolic requirements. Interventions, which employ a combination of active and passive components, are designed to control biofilms. For instance, toothbrushes, mouthrinses, toothpastes and dental gels may have antimicrobial properties that contribute to the overall control of biofilms. These treatments include the use of toothbrushes, mouthrinses, toothpastes and gels, which take advantage of salivary flow and mastication mechanics unique to the oral cavity.

Optimising interventions against biofilms requires a thorough understanding of its dynamics and physical characteristics. In the case of active components present in toothbrushes, mouthrinses or chewing gum, this knowledge provides the foundation for understanding how active components affect plaque biofilm. This includes understanding how deeply an active penetrates the biofilm and affects bacterial metabolic pathways to reduce overall activity.

Ultrastructural invasive techniques such as fluorescent in situ hybridisation have been useful in visualising the location of labelled bacteria in oral biofilm samples. In some cases, select biofilm metabolites have been fluorescently tagged and traced in the biofilm, but they remain invasive techniques requiring considerable sample preparation. Clearly, new technologies that provide a more global, comprehensive and real-time assessment of what is truly taking place in the multispecies biofilm are needed. A novel technology known as "laser ablation electrospray ionisation for mass spectrometry" (LAESI-MS) has revolutionised sample introduction and data analysis for high-throughput biological MS. The LAESI-DP-1000 system (Protea Biosciences) is a new-generation high-throughput direct ionisation system that directly analyses biological samples containing water without the need to apply chemicals or introduce tags or tracers, thus allowing for virtually no sample preparation.

Most significantly, the technology performs 2- and 3-D depth profiling of oral biofilms, allowing for analysis of the 3-D spatial distribution of various molecules throughout the biofilm directly as they exist in nature. This study investigates both the distribution and the effect of a test active on selected molecules and metabolites in oral biofilms to assess its antimicrobial or antiplaque effects.

The experimental protocol

In order to simulate the topography, growth conditions and substratum on which dental biofilm grows, pooled human saliva was used to grow twoday mixed species biofilms on vertically suspended hydroxyapatite discs. As mentioned earlier, the spatial distribution of the active in the biofilm is assessable in both 2- and 3-D. Heat map analysis of five horizontal planes with their corresponding x and y coordinates provided precise localisation of the active for each plane in the untreated and treated biofilms. The composite result of the vertically stacked heat maps allowed for relative localisation of the active in the treated sample for each of the five planes, revealing the highest concentration in the plane furthest from the substratum (Fig. 3).

In addition to mapping where any given active had penetrated the oral biofilm, LAESI was used to map relative localisation of select molecules in the treated and untreated biofilms. The autoducer-2 biological sensing molecule, which is involved in cell density-dependent quorum sensing, was mapped. The heat map signal for this molecule was considerably reduced throughout all coordinates, relative to untreated controls, indicating reduction of the presence and activity of this molecule and thus suggesting that the active reduced levels of autoducer-2 in the treated biofilms.

In addition, the levels of the amino acids arginine and lysine were investigated in untreated and treated biofilms. Arginine is naturally found in saliva and is utilised by some plaque bacteria, resulting in the production of ammonia and carbon dioxide. These two amino acids were chosen as surrogate molecules to further validate the use of LAESI to map diverse molecules of interest in the oral biofilm. Arginine was found in greater abundance relative to lysine in the untreated biofilms.

By Marcelo B. Aspiras, Callee Walsh, Greg Boyce, Haddon Goodman, Panagiota Tsatsos & Michael Dodds, USA & UK
samples, as shown in their respective heat map analyses. Upon treatment with the active, the levels of both molecules were drastically reduced relative to their untreated controls.

Finally, the levels of lactate were investigated in untreated and treated biofilms. Lactate is a by-product of sugar fermentation by caries-causing bacteria such as Streptococcus mutans, which converts sucrose to the sticky glucans that help keep the biofilm intact. Thus, the relative levels of lactate can serve as an indicator of cariogenic activity or the risk of caries progression in the supragingival plaque biofilm. Comparison of the heat maps of the untreated biofilms to those of the active-treated biofilms showed relative reduction of lactate levels in the treated biofilms for all x and y coordinates investigated (Figs. 4a–d).

Discussion and future implications

The application of an MS-based analytical method for oral biofilms that requires virtually no sample preparation represents a breakthrough in improving our understanding of what is really taking place in the oral plaque biofilm in response to chemical challenges. Mere removal of bulk plaque biomass from the interproximal sites is insufficient to account for paradoxical clinical outcomes of test subjects whose gingival health improved even when little plaque biomass was removed. This suggests that the biological activity of specific plaque toxins and other bacterial products embedded in plaque biofilms and their distribution in the biofilm may be more important in triggering the gingival inflammatory response than bulk plaque alone. It is important to understand where these bacterial compounds or metabolic by-products localise in the plaque biofilm, since their location can influence both the magnitude and the sustainability of the pathogenic response.

Pathogenicity factors that localise closer to the biofilm–substratum interface may prove to be more protected from external chemical or mechanical stressors. In instances in which the compound adversely affects the substratum itself (such as lactate and its role in demineralising HA), the continued close proximity of the compound to vulnerable substratum may prove to be particularly harmful over time. Being able to construct a stratified map of where these compounds localise in the layers of the biofilm thus provides strategic insights into how to best manage them.

Conversely, there is little knowledge to date, but high value gained, in understanding how chemical actives directed against the biofilm and its constituents behave as a function of how deeply the actives penetrate the oral biofilm. Although antiplaque efficacy can be gauged as antiplaque (e.g. destabilising or disaggregating biofilm), antimicrobial (e.g. bacteria-killing) or a combination of both effects, it is clear that multiple factors that act in concert to constrain the biofilm penetration capacity of many actives found in toothpastes, mouthrinses and medicated chewing gum will ultimately reduce antiplaque efficacy of even the most effective chemistries.

Ultimately, developments such as quantitative measurement of biofilm depth from the underlying substratum to the surface of the biofilm, along with co-localisation and quantitation of levels of active relative to the concentration of surrounding molecules of interest, will bridge the gaps in establishing a direct causal relationship between an active and the metabolic pathways it affects. The reported investigation represents the first successful demonstration of this application in dental research.

It is envisioned that future research interests will also be expanded into analysis of biofilm on coupons grown in the human mouth to generate plaque biofilms truly grown in the oral cavity that can be conveniently removed and later analysed ex situ. This will inform transient changes in crucial metabolic pathways in naturally occurring plaque and may help identify predictable markers for charting plaque regrowth after external challenges. LAESI thus represents a unique tool for exploring the inner workings of oral plaque biofilms that combines the sensitivity of MS analytical chemistry, the 3-D visual analysis afforded by confocal microscopy and minimal effort in sample preparation.
Cleaning is key
By Aws Alani, UK

Completely disinfecting the canal system is challenging when all factors are considered. If we are looking at the nano level there are approximately 76,000 dentinal tubules per square millimetre of dentine. Each of which can harbour a colony of bacteria. Then there may be inaccessible anatomy such as lateral canals, apical deltas or fins.

These are factors that need considering outside of canal curvatures that may or may not be entirely visible in the plane of the radiograph. It is clear that outside of the contact our files make with the walls of the root canal there needs to be chemical disinfection to further reduce bacterial load. Irrigants disinfect as well as lubricate instruments and they dissolve the pulp. Sodium hypochlorite has been the mainstay irrigant for decades.

During the 1980s, Bystrom and colleagues investigated the effect of mechanical instrumentation with and without adjunctive use of hypochlorite. They found, unsurprisingly so, that when compared to pure mechanical instrumentation, the use of hypochlorite in combination with hand filing significantly reduced bacterial load. As such chemomechanical instrumentation was shown to be crucial for endodontic success. They compared irrigation with saline, 0.5 and 5% hypochlorite over a sequence of 9 appointments. Interestingly they found no difference in the reduction of bacterial components consisting of minerals in combination with hand filing significantly reduced bacterial load. As such chemomechanical instrumentation was shown to be crucial for endodontic success. They compared irrigation with saline, 0.5 and 5% hypochlorite over a sequence of 9 appointments. Interestingly they found no difference in the reduction of bacterial load between 0.5 and 5% hypochlorite. Despite what was likely to be a comprehensive protocol for these teeth, of the 11 specimens in this study still had bacteria that they could grow at the end of treatment. The presence of culturable bacteria does not necessarily mean we have failure—it merely means that there may be a cohort of bacteria that have resisted treatment. Mechanical instrumentation does reduce bacterial load by itself—but this is by way of physical removal of tissues where bacteria reside, while also facilitating the dispersal of the irrigant into the canal. Siquiera and colleagues found that enlarging the canal from size 30 to 40 resulted in a significant decrease in endodontic pathogens.

It seems that irrigation and instrumentation are both highly inter-related in canal disinfection. Take washing your car for instance, purely covering it with soapy water and rinsing won’t remove the motorway bugs and bird produced projectiles. A good scrubbing with a sponge is needed, or if you are really serious about cleaning, a pressure washer! This can be achieved through applying a GIP point into the prepared canal to disperse and disperse. Ultrasonic irrigation transmits energy by an oscillating instrument. This results in two different phenomena. Cavitation is the growth and subsequent collapse of small gas bubbles due to a drop in pressure. Acoustic streaming is the bulk movement of fluid when pressure waves are projected, resulting in vortex motion around a moving instrument. This results in shear stresses to tear the biofilm apart.

Bacteria and the biofilms
Unlike what we once thought, bacteria do not tend to just sit alone and remote from each other. If only they were this antisocial they would not be this successful. They join forces and create bacterial groups, share resources, they also share information that promote each other’s survival through RNA or DNA. As the majority of bacteria will be encapsulated in this layer, purely irrigating without disrupting this layer is inefficient. The word disrupting is a bit kind really—it needs to be destroyed to reveal all its contents and expose it to the bleach for chemical action.

Cleaning is key

Energising the irrigant
This can take many forms. The simple and straightforward energy source appropriate exchange of the fluid and displacement into the recesses where airlocks may reside. This can be achieved through applying a GIP point into the prepared canal to disperse and disperse. Ultrasonic irrigation transmits energy by an oscillating instrument. This results in two different phenomena. Cavitation is the growth and subsequent collapse of small gas bubbles due to a drop in pressure. Acoustic streaming is the bulk movement of fluid when pressure waves are projected, resulting in vortex motion around a moving instrument. This results in shear stresses to tear the biofilm apart.

Keeping the canal clean
Once irrigated and prepared, the clinician has a choice—to obturate or to dress. Some may argue that the canal is cleanest at the end of treatment and that for convenience, obturating in a one visit arrangement is the best option. As we know, not all bacteria are removed or killed during treatment. Dressing the canal with calcium hydroxide may continue the...
process of eradication of the residual microorganisms over a 2-week period. The choice between the two schemes sometimes boils down to the presenting factors of the case. Where a tooth is difficult to instrument, has a large lesion or is quite obviously chronically infected with a history of pain, then a single visit treatment may be more of a consideration. If a tooth is treated in a de novo manner and treatment goals are achieved with no history of pain then a single visit treatment could be utilised.

The goal of obturation is to seal the canal system to prevent any reinfection and entomb any bacteria not eradicated by chemo-mechanical debridement. If the obturation is through the apex, this can have significant implications. GP through the apex can carry bacteria outwith of the canal and exacerbate symptoms. A foreign body reaction could also develop.

We also have to remember that a beautiful obturation of a canal achieved without rubber dam and utilising saline or local anaesthetic irrigation is sub-standard treatment. It can be difficult to assess the “quality” of treatment when a radiograph of a “failed” tooth is examined in this context. Indeed, an obturation that is short of the radiographic apex having been treated under rubber dam and with copious amounts of irrigation is more likely to be successful than the previous scenario. Attaching too much significance to the radiographic appearance of the obturation is short-sighted. Indeed, Katebzadeh and colleagues in the late ‘90s witnessed healing in the absence of obturation where teeth were instrumented and irrigated optimally under isolation. Sealants are also antibacterial and aide filling the voids between the GP and the canal system. One further option would be to provide a seal to each of the canal orifices. This can be achieved by removal of 1 mm of GP and packing a good thick mix of IRM packed with a plugger.

Covering the cusps

The provision of a coronal restoration (if provided optimally) can improve the coronal seal while also structurally protecting the underlying tooth tissue. Due to endodontic treatment, resulting in reduction of tissue bulk and stiffness the risk of fracture increases. Where both mesial and distal margins have not been breached and the access cavity is confined to the occlusal surface, a crown restoration may not be required. Once a margin is breached the tooth is more likely to flex and result in cracks or fractures. A commonly asked question, “When should the crown be provided?” Soon after the root canal treatment or when the treatment has proven to be successful? If the success of endodontic treatment is significantly in doubt then this should be communicated to the patient and a well compacted direct restoration may be the best option, otherwise an onlay or if tooth tissue is significantly reduced, a crown should be provided soon after completion.

Conclusion

Bacteria are public enemy number one in dentistry. Disinfecting the root canal system by irrigating in combination with mechanical instrumentation is key to success in root canal therapy. Preventing further re-infection or persistence of residual bacteria after the formal stages of treatment through dressing initially and a quality coronal seal subsequently is as important as the root canal therapy.

Editorial note: Aws Alani is leading a two-year postgraduate diploma in operative dentistry at King’s College London Dental Institute www.restorativedentistry.org More information is available online at www.kcl.ac.uk/study/postgraduate/taught-courses/operative-dentistry-pgdip.aspx.
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Irrigating the root canal: A case report

By Dr Vittorio Franco, UK and Italy

The 22-year-old male patient had a history of trauma to his maxillary incisors and arrived at my practice with symptoms related to tooth #21. The tooth, opened in an emergency by the patient's mother, was tender when prodded, with a moderate level of sensitivity on the respective buccal gingiva. Sensitivity tests were negative for the other central incisor (tooth #12 was positive), and a periapical radiograph showed radiolucency in the periapical areas of both of the central incisors. The apices of these teeth were quite wide and the length of teeth appeared to exceed 25 mm.

My treatment plan was as follows: root canal therapy with two apical plugs with a calcium silicate-based bioactive cement. The patient provided his consent for the treatment of the affected tooth and asked to have the other treated in a subsequent visit.

After isolating with a rubber dam, I removed the temporary filling, and then the entire pulp chamber roof with a low-speed round drill. The working length was immediately evaluated using an electronic apex locator and a 31 mm K-type file. The working length was determined to be 28 mm.

As can be seen in the photographs, the canal was actually quite wide, so I decided to only use an irrigating solution and not a shaping instrument. Root canals are usually shaped so that there will be enough space for proper irrigation and a proper shape for obturation. This usually means giving these canals a tapered shape to ensure good control when obturating. With open apices, a conical shape is not needed, and often there is enough space for placing the irrigating solution deep and close to the apex.

I decided to use only some syringes containing 5 per cent sodium hypochlorite and EDDY, a sonic tip produced by VDW, for delivery of the cleaning solution and to promote turbulence in the endodontic space and shear stress on the canal walls in order to remove the necrotic tissue faster and more effectively. After a rinse with sodium hypochlorite, the sonic tip was moved to and from the working length of the canal for 30 seconds. This procedure was repeated until the sodium hypochlorite seemed to become ineffective, was clear and had no bubbles. I did not use EDTA, as no debris or smear layer was produced.

I suctioned the sodium hypochlorite, checked the working length with a paper point and then obturated the canal with a 3 mm in thickness plug of bioactive cement. I then took a radiograph before obturating the rest of the canal with warm gutta-percha. I used a compomer as a temporary filling material.

The symptoms resolved, so I conducted the second treatment only after some months, when the tooth #11 became tender. Tooth #21 had healed. I performed the same procedure and obtained the same outcome (the four-month follow-up radiograph showed healing).

Dr Vittorio Franco is an endodontist who runs an endodontic referral practice in Rome and a practice in London. An active member of the European Society of Endodontology, Franco is also the President-elect of the Italian Society of Endodontics.
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I graduated Summa Cum Laude from the University of Texas Health Science Center in San Antonio in 1996. I am a general dentist in Waxahachie, Texas, and have been in my current location for 20 years.

What do you like best about practicing dentistry?

I enjoy the science, the biology and having a front-row seat in and around the ability to interact with, affect and watch the human body function and heal. I appreciate the ability to solve problems and the ability to work on problems that are yet to be solved. I like being a part of a “past, present and future” continuum that is the overall profession of dentistry. I enjoy having the ability to affect an individual person, from patient to fellow practitioner to dental student, all the way up to having the ability to have a positive effect on humanity across the globe.

Who influenced you most in your career?

First, I would thank Dr Joel B. Alexander. He was an endodontic professor when I was in dental school who encouraged and taught the value of recalling your cases in order to assess your treatment outcomes.

Secondly, I would thank Dr Terry Pannkuk. After much awareness, pursuit of and concentration on the topic of mentorship, I certainly believe he is the best doctor alive today. He has done much for our profession from a philosophically critical standpoint to the actualities of clinical healthcare. He sees the value in this tooth clearing and diaphonization project I am involved in and consistently has provided more support and encouragement than anyone else. He has kept me motivated even if it is just by simply saying “wow, that result is amazing.” I can’t say enough about what he has done for me personally or in my career as my friend and mentor. I continue to learn from him daily and I hope that somewhere along the way, I reciprocate some of the support he has given me over the years.

You have become known for your high-definition photography of the root canal anatomy. How did you become interested in this area?

That too goes back to Dr Alexander and Dr Pannkuk. Both of these doctors influenced me to recall my work in endodontics and truly take a scientific approach to the question of whether endodontics actually works and whether it actually works in my hands. After recalling many of my own cases, I started to see failures and problems that I was not satisfied with. I started to postoperatively evaluate my own cases and found that there were clinical aspects I could change to improve my outcomes. It was via the internet that I met Dr Aldo Castellucci. After the interactions we had, I saw the cover of his textbook.

The tooth on the cover put me in awe. This was the first “cleared tooth” I had ever seen. It is from there that my interest in clearing teeth originated. I just had to figure out what was going on and how and why it worked. Fifteen years later, I am still manipulating processes in the diaphonization of human teeth in search of the “answers.” I have a patent pending in the clearing process, and the knowledge it has provided has become one of the most valuable tools in pre-operative and postoperative evaluation of the internal anatomy of human teeth.

Can you tell our readers a little bit about how you go about capturing these images? It must take some technical skill.

The photography is actually not difficult. It is oil immersion oblique illumination light microscopy, which has been done in histology labs for years. It is, however, a new realisation in this area for dentistry. In dentistry, we are familiar with the study of microscopic histologic sections. Teeth, on the other hand, are gross histologic specimens that can understandably be seen via the naked eye; however, viewing of the internal anatomical structures is greatly enhanced with microscopic evaluation. Any photographs of the teeth I work with are simply obtained through my “artistic” approach and in you finding significance in this work of mine. Thank you!

Dr Craig Barrington

I am respectfully honored by this opportunity, your questions would or could be considered in you finding significance in this work of mine. Thank you!

Editorial note: This interview originally appeared in Roots magazine, No 1/2017.
ROOTS SUMMIT: Registration open for 2018 edition

By DTI

BERLIN, Germany: Seats for the next ROOTS SUMMIT, the premier global discussion forum dedicated to endodontic dentistry, are still available. The event, featuring lectures and workshops, will be held at the European School of Management and Technology (ESMT) in Berlin from 28 June to 1 July 2018. Approximately 500 visitors are expected at the international meeting, which is again being organised in collaboration with Dental Tribune International.

Although the 2018 ROOTS SUMMIT will mainly feature presentations on the latest techniques and technologies in endodontics, the organisers are inviting dental professionals in all fields, as well as manufacturers in the industry, suppliers of endodontic products and anyone involved in the practice of endodontic treatment, to attend.

It has been announced that foremost opinion leaders, including Drs Steve Buchanan, Frederic Barnett, Gergely Benyecs and Elisabetta Cotti, will be speaking at the conference next year. There will also be the opportunity to participate in hands-on workshops, speak to industry professionals on-site and engage with new equipment, procedures and protocols in endodontic dentistry. A number of dental companies specialising in endodontics, including META BIOMED and FKG Dentaire, have already confirmed their participation.

The ROOTS SUMMIT, which started as a mailing list of a large group of endodontic enthusiasts in the 1990s, has grown significantly over the last few years. With currently more than 24,000 members from over 100 countries, it evolved into one of the most prominent global learning forums in the dental industry.

Previous conferences have been held in Canada, the US, Mexico, Spain, the Netherlands, Brazil and India. The 2016 ROOTS SUMMIT took place in the UAE and was one of the most significant events in endodontics that year, drawing over 300 dental professionals to Dubai. These meetings have been known for their strong scientific programmes. An early bird discount of 20 per cent is being offered and dental students too will be granted a 20 per cent discount. Additional information and online registration can be found at www.roots-summit.com.

The 11th International Federation of Endodontic Associations
IFEA World Endodontic Congress 2018 Seoul
October 4th-7th, 2018 Coex, Seoul, Korea
Endodontics: The Utmest Values in Dentistry

Confirmed Speakers [As of July, 2017]

Paul Abbott
Australia
Filippo Cardinali
Italy
Gustavo De-Deus
Brazil

Samuel O. Dorn
USA
Gianluca Gambarini
Italy
Nick Grande
Italy

M K. Kang
USA
Syngcuk Kim
USA
Sergio Kuttler
USA

Zvi Metzger
Israel
Ove Peters
USA
Gianluca Plotino
Italy

Clifford J. Ruddle
USA
Frank Setzer
USA
Hagay Shemesh
The Netherlands

Yoshi Terauchi
Japan
Martin Trope
USA
Ghassan Yared
Canada

*More speakers will be announced later
*Last names in alphabetical order