The only constant is unforeseen change

Minister for dentistry looks to the future in keynote speech

The minister for dentistry took the stage to urge dentists to embrace change in a keynote address to Foundation Dentists and trainers.

Earl Howe (pictured), Parliamentary Under-Secretary of State for Health and, made the speech at the Career Opportunities for UK Dentists Conference, held in London earlier this month.

Addressing a packed auditorium, Earl Howe gave a rallying call for dentists to be involved in the political process surrounding the latest wave of changes in dentistry: "You are the future of the dental profession and all of you need to understand and be engaged in the development of policy in the area for which you have been trained.

"I am aware that there has been lots of change in dentistry in the last few years, and I’m sure many of you must be wondering what sort of opportunities there are for you once you had graduated from your dental schools. Looking around the room I see a few more mature heads scattered about, and I’m sure that they will tell you that paradoxically one of the few constants in life is unforeseen change. It is how you respond to those changes that it is crucial – some people see it as an opportunity, others see it as a threat – but it is a constant feature in the world of medicine and dentistry as it is throughout the world of work.

"Discussing the proposed reforms to the current dental contract Earl Howe said: “As dentists you will be dealing with dental conditions that are varied, changing in nature and changing in prevalence. To a way you provide services and patient management has to constantly evolve to align with changes in people’s health and improvements in methods of treatment and technology.

"We know that the currency of any contract has significant impact on the nature of services delivered. Historically, dentists pay was based on an item of service methodology. At a time when we know that the prevalence of active dental caring is decreasing most reasonable people would agree that it would be perverse to continue to relate remuneration to activity. But it’s vital that not only do patients gain the most appropriate treatment and dentists are appropriately rewarded; but also that taxpayers get value for money for their investment.

"The coalition government is committed to introducing a new dental contract based on the three elements of registration, capitulation and quality. We are keen to develop quality indicators for use in monitoring services and crucially for the first time outcomes for primary care dental services. We are very grateful for the cooperation we have been receiving from the dental associations and clinicians from all fields in dentistry in developing high quality indicators.

"It’s complex and challenging work but I’m sure that there will be a need for indicators to evolve with experience. It’s vital to the morale of the profession and the satisfaction of your careers that we get them right and we keep their roles under review.“

Earl Howe added: "The world you are entering is now significantly changing – and changing for the better. As minister I am committed to both sustaining that change and making sure that the direction of that change is correct and positive."
Free toothpaste for families, experts say

D
tal health experts are calling for radical plans to be implemented to halt rising rates of child tooth decay. Dr Gill Davies and Dr Deolite Bridgman, dental public health specialists who work for Manchester’s NHS primary care trust, want a new approach to tackle the growing number of children, some as young as three, who have to undergo painful extractions.

Writing in the British Dental Journal, they demanded that parents play the key role in getting their offspring into good dental hygiene habits from soon after they are born by not giving them high-sugar foods and drinks, ensuring they have regular check-ups and cleaning their teeth regularly.

They also want schools to stop rewarding students who do well with chocolate; child-minders play the key role in getting children to brush and cleaning their teeth twice a day; and a big increase in the number of children receiving fluoride varnish.

To halt the rising rates of child tooth decay, dentists are saying that not only should families receive free toothpaste and toothbrushes and parents told not to sweeten babies’ feeding bottles, but pupils should also be banned from sharing birthday cakes with friends at school.

“It is the parents who have influence over food and diet choices, purchasing and use of toothpaste and the making of appointments for dental care,” they wrote. “How many children are likely to insist that no more biscuits or sugary drinks be bought for a household?”

Given that only 10 per cent of the UK has fluoridated water, the authors want other steps taken, such as:
• Children using family fluoride toothpaste, not children’s toothpaste, which is low in fluoride
• Schools and nurseries to stop giving children fruit squash at snack times
• Every schoolchild to have fluoride varnish painted on their teeth at least twice a year. Currently less than 15 per cent do so
• “Meet the dentist” sessions at primary schools
• An end to the practice of sharing birthday cakes at schools

Their recommendations draw on the success of the Manchester Smiles dental health campaign which began last year. Under it, 6,000 pupils at 80 primary schools have supervised brushing sessions twice daily and dental practices are “buddied” with schools. Under a different scheme, 200,000 families in Manchester have received free toothpaste and toothbrushes since 1999, a plan that Davies and Bridgman believe should be extended nationally.

The Department of Health said: “The government has wasted no time in setting its plans to improve dental services. At their heart is improving preventative care for children. They need a service that helps them maintain good oral health and prevents decay, rather than one that is based solely on treatment.”

Dentist removed after diagnosis concerns

T
e chairman of the Assembly’s health committee has said Health Minister Michael McGimpsey will face “difficult questions” after the removal of a senior dental consultant from his job at Belfast’s Royal School of Dentistry.

After a review of senior dental consultant Professor Philip Lamey’s work, the Belfast Trust has recalled 117 people as a “precautionary measure” following concern about the late diagnosis of cancer found in some patients.

Four patients have since died; however the Belfast Trust will not confirm whether a late cancer diagnosis may have contributed to their deaths.

Health Minister Michael McGimpsey is expected to make a statement to the Assembly in relation to the dentist’s work and he is also due to meet with the chair of the health committee, Jim Wells.

Mr Wells said the 117 patients involved “deserve serious answers from the Belfast Trust.”

“This simply isn’t good enough. The committee will be asking very searching and difficult questions,” he said.

Dr Lamey is due before a hearing of the General Dental Council in London on 9 July.

One of the patients recalled by the trust told BBC reporters how the situation was affecting him. Reports said that the patient, who remains anonymous, said it was “very worrying.”

“Until Monday morning when I go to my appointment and the follow-up, I’ll not know for sure. This condition hasn’t gone away, it’s very upsetting not only for me but for my family,” reports stated him saying.

According to reports, Trust Medical Director Dr Tony Stevens said problems with the care administered by the dentist came to light in late 2009; however he was not removed from his post until the end of last year. Even though he is no longer treating patients he is still employed by the trust. Dr Stevens said anyone who needs to be contacted has already been sent a letter.

The trust is also providing a helpline, which received between 40 and 50 calls at the weekend. The telephone number is 028 9665 0350.

Training centre opens at Portsmouth University

A
ew £9 million purpose-designed facility to train dental care professionals and final-year undergraduate dentists was officially opened by Health Minister, Earl Howe at the University of Portsmouth’s Dental Academy.

Supervised by tutors, dental students will work with hygiene therapists and dental nurses, as they would in practice and provide free treatment for 2,000 local people every year.

The new centre has 20 additional dental chairs, radiography facilities, a state-of-the-art instrument decontamination centre as well as seminar rooms.

Each year, 80 final year students from King’s College London Dental Institute will be trained alongside dental nursing students from Portsmouth.

Development of the new building has been enabled by capital funding support from the Department of Health, the local NHS and the Higher Education Funding Council for England (HEFCE).

Earl Howe, who is the Minister with lead responsibility for Dentistry, said: “I was delighted to see the high quality hands-on training provided at Portsmouth Dental Academy today.

“As set out in the NHS White Paper, we are committed to improving oral health for adults and children as well as increasing access to NHS dental services across the country. The University of Portsmouth Dental Academy has an important role to play in delivering on this agenda. They are providing first-class training and education for our future dentists and dental care professionals and excellent services to patients in the area.”

Director of the Dental Academy, Sara Holmes MBE, said: “Today marks the culmination of over two years of planning and represents a unique partnership between the University and the NHS. The entire staff and student body are thrilled to be working and studying, alongside colleagues from Kings, in such a dynamic and progressive institution right the heart of Portsmouth.”

Nairs Wilson, Dean and head of KCLDI, said: “King’s College London Dental Institute is delighted to have joined forces with the University of Portsmouth to create the Dental Academy, with a focus on innovation in the education of the dental team and the student experience.

The event was attended by over a hundred members of the local dental community, representatives from the local NHS and from KCLDI who was joined by University Chancellor, actor Sheila Hancock.
Editorial comment

Here at Dental Tribune UK we are committed to providing our readers with insightful articles, practical help from specialists in their fields and a mix of news and opinion which helps to keep all members of the dental team up to date.

As part of this commitment we have been looking to see how we can provide more to UK dental professionals with regards to specialised material related to a particular interest.

Now, to the point – in March we are bringing to the UK three titles of international renown with particular interest.

These quarterly titles, presented in a glossy, high quality format, will deliver superior articles from both international and UK clinicians focusing on a wide range of issues surrounding each particular topic. We do not want these magazines to be all things to all readers. We want highly focused titles related to your interests.

To celebrate the launch of roots, implants, and cosmetic dentistry, we are currently making these titles available at very special prices for a year’s subscription.

Call my colleague Joe Aspis on 02074008960 or email him joe@dentaltribuneuk.com to get the latest.

All under one roof

Thirty members of the dental press gathered at London’s World famous department store for this year’s Showcase press launch.

The launch was held in Harrods’s Georgian Restaurant and gave the gathering of dental editors and reporters the opportunity to hear what’s in store at this year’s event.

BDTA Dental Showcase provides members of the dental team with the chance to see, hear, learn and buy everything they need to do their job, all under one roof. From the latest products and most appealing special offers to the highest quality services, Showcase is really ‘four one stop dental shop’!

The dental press were also informed that the Dental Lab @ Showcase would be returning by popular demand in 2011. A programme of lectures and seminars would also take place at the event supported by other learning opportunities in the Show Guide and in the exhibition hall.


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Visit www.colgateprofessional.co.uk to learn more about how instant relief from dentine hypersensitivity can benefit your patients.
BDA calls for piloting overdue NI contracts

Pilot of new contractual dental arrangements for Northern Ireland is overdue and must begin promptly, the British Association of Dentistry (BDA) argued.

Submitting its response to the Health and Social Care Board’s consultation on piloting new dental contracts, the BDA said that it believed the proposed personal dental contracts scheme would meet the objective of testing the proposed arrangements for dentistry and pressed for progress.

The BDA response also stresses the importance of pilots being allowed to produce a clear picture of both positive and negative implications of the new arrangements against a difficult financial position, and emphasises the need to understand the effect of elements of the contract including payments for patient care and items of service. BDA also welcomes the Health and Social Care Board’s acknowledgement that it will be important to pilot revised patient charges prior to the implementation of the definitive new contracts.

Whilst the BDA response also signals its agreement with the proposal to have separate contracts for primary dental care, orthodontics and oral surgery, it highlights that changes in one area of dentistry will impact on another. The ability of practitioners with enhanced training and skills to deliver treatments that might otherwise be unavailable to patients in certain areas is particularly important, the BDA argues.

Peter Crooks, Chair of the BDA’s Northern Ireland Dental Practice Committee, said: “It’s nearly five years since reform was louted. Progress is well overdue. These pilots will take place against a backdrop of financial pressures and will need to take account of the difficult circumstances facing practitioners. “Nonetheless, Northern Ireland Dental Practice Committee endorses the proposed scheme and looks forward to continuing constructive and meaningful engagement as pilots progress. It is important that these pilots are given the time and resources they need so that their effects can be properly understood and a better future delivered for health service dentistry in Northern Ireland.”

Time running out for ‘early bird’ discount

AOG and Smile-On, in conjunction with the Dental Directory and the Faculty of General Dental Practice (UK), will again be hosting the 2011 Clinical Innovations Conference (CIC). Now in its eighth year, the CIC promises to be bigger and better than ever, with a wealth of top speakers, including the AOG’s President, Pomi Datta, who said: “Last year’s conference and the dinner brought together innova- tors and thinkers of this millennia- um. We are going to build on that with a full programme of talks. We want to make this the most excit- ing annual event in Europe.”

Taking place on the 6th and 7th of May 2011 in the iconic set- ting of the Royal College of Physi- cians, (pictured), situated in the heart of London, the CIC promi- ses to offer all members of the dental team some unmissable learning opportunities and the chance to gain up to 14 hours of verifiable CPD.

With innovation once again the main theme, dental profes- sionals can expect to learn more about the latest developments within the field of endodontics from the likes of Julian Webber, the occlusion from Raj Bayan OBE and an opportunity to discover the benefits of practising mini- mally invasive orthodontics with speakers such as Yil Qureshi and James Russell.

Confirmed speakers include:

- The internationally acclaimed Nasser Barghi, Joe Omar, Peet van der Vayer, Eddie Lynch, Bob McElrath and Wyman Chan, amongst many others. On the Friday, attendees will also have the opportunity of attending the Conference Charity Ball, which will be held at the fashionable Millennium Mayfair Hotel. Last year’s proceeds went to the AOG-sponsored project in Chirakoot to repair cleft lips and palates and provide dental treatment for 500 villages in one of the most rural parts of India.

- Secretary of the AOG, Dr Nic- han Dixit, is thrilled to once again be involved with this dynamic gathering: “As one of the UK’s fastest growing organisations, we are a body that not only values professional standards but also understands the need for innovation within dentistry, as well as the vital role that continuing education plays within the profession. We also hope that CIC delegates will join us in striv- ing towards ‘the greater good’, our organisation’s motto, at the Conference Charity Ball, which promises to be a really fun and glamorous occasion, all in aid of a good cause.”

Given the record attendance rates at the 2010 event, delegates are advised to book early to avoid disappointment. The deadline for early bird registration, which entitles those who book before 7th March 2011 to a 15 per cent concession, is fast approaching! Members and clients of affiliated sponsors and organisers may also be entitled to special rates, so get in touch with the organisers to find out more.

Why not use this opportunity to keep in touch with innovations in this dynamic and fast-grow- ing area of dentistry and help your practice reach its most profitable potential?

For more information, visit www.aoguk.org - For early bird offers, or to book, please visit: http://www.clinicalinnovations. co.uk or call 0207 400 8956.
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BDTA surveys raise B2A cash

The British Dental Trade Association (BDTA) is pleased to announce the donation of nearly £1000 to Bridge2Aid following the submission of completed membership questionnaires and technology surveys sent out last year.

In order to assess how well the Association is meeting the needs of its members, questionnaires were sent out to each member company, and the BDTA offered to donate £5 to the Bridge2Aid charity for every questionnaire returned. 47 member surveys were filled in and submitted which represented an exceptionally high response rate.

The BDTA also conducted research amongst dentists to investigate their attitudes towards new technologies and training courses. Again, an excellent response rate was received and £2.50 was donated to Bridge2Aid for each of the 285 surveys completed and returned.

Executive Director of the BDTA, Tony Reed, stated; “It is important for us to understand the needs of our members in order to continue to serve them effectively and introduce new benefits. It is vital for our members to understand how members of the dental team respond to new technologies and the mix of training preferred. We were extremely pleased with the response achieved from the questionnaires and to be able to donate funds to Bridge2Aid made the research worthwhile on a number of levels. Thank you to all those who participated.”

Mark Topley, Chief Executive at Bridge2Aid, commented: “The BDTA has been a great support to us over the past six years and helped us to achieve so much – restoring tens of thousands of smiles and changing many lives in Tanzania. This donation will go a long way to helping us relieve the pain of thousands more people in the coming year and extend our work to new areas desperate for basic dental services and training. Our thanks go to the BDTA for thinking of us in this way, and to all the members of the dental industry for completing their questionnaires.”

For further information on the BDTA visit www.bdt.org.uk

Osseointegrated Implantology Courses

If you are interested in implantology then the Osseointegrated Implantology Courses, which are being held on Sunday 27th March – Friday 1st April 2011 could be the right choice.

Delivering 36 hours of CPD accreditation, the fee for the course is £2,200 and is ideal for delegates who wish to participate in a course over six consecutive days.

Topics covered include:
• examination and treatment planning • dealing with the patient within the practice • anatomy, physiology, • biomaterials • sterility • surgical templates • surgical techniques (to include bone augmentation and advanced surgical techniques) • implant impression techniques • jaw registration • articulation • periodontal consideration (to include maintenance protocol and guided tissue regeneration) • connecting teeth to implants • detailed literature review.

There will be guest speakers on the following subjects:
• Dr Joe Omar on “Medical Emergencies”
• Dr Alan Cohen on “Medico - Legal Aspects”
• Mr Sean Goldner on “CT Scanning”

• Mr Keith Rowe on “Laboratory Techniques”

There will also be hands-on session on the surgical, prosthetic and laboratory phases and delegates will attend a CT scan appointment with one of the patients on the course.

This course is suitable for the application of all different osseointegrated implant systems and delegates who complete the course are eligible for the ICOI Fellowship, without further examination.

For more details or to book your place please call 020 7584 9855 / 020 7584 7740 or email reception@walpolestreetdental.co.uk

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V+B scheme ‘to be scrapped’

According to reports, the government is preparing to announce that a scheme for vetting people who work with children is to be scrapped.

Set up by the Independent Safeguarding Authority (ISA), the original Vetting and Barring Scheme system was designed to prevent unsuitable people working with children and vulnerable adults, with employers facing prosecution for breaches. Approximately nine million adults who came into contact with children once a week or more had been subject to checks.

Home Secretary Theresa May suspended it last June so a review could be held. A Home Office spokesman said an official announcement - which affects England, Wales and Northern Ireland - would be made shortly.

It has also been reported that the government will also announce that criminal record checks are to be sent to individuals first to allow them to challenge any mistakes.
As you read this, GDPUK forum members will have been discussing the new Health Bill, as well as proposals from the GDC for revalidation, the next bête noire.

A major topic was when a colleague asked for opinions from others about a request from a patient with chronic leukemia to have her amalgam fillings removed and replaced with composit. The reaction of many dentists is to immediately worry that the patient will not recover, and health will not improve if this is done. On the other hand, if the same patient had attended and asked for replacement of the same silver fillings with tooth-coloured ones for aesthetic reasons, how many of us would hesitate?

This led to a heated debate with more than 50 replies. Does the metal in her mouth have an effect on her disease? There are tests which can investigate these matters. Another writer asked us to consider whether changing the fillings would give the patient a positive mental lift. And so the debate swung from “don’t touch with a bargepole” to treat like an aesthetic request. Concepts of professionalism were brought in, aspects of “do no harm”. Another poster suggested making the change slowly to see if there was any benefit to her health.

Modern amalgam alloys have more copper in them and latest research links exposure to copper as a factor in chronic leukemia. Another turn and there was a mention of seriously ill patients clinging onto illogical hopes and being willing to undergo unproven medical treatments, in the hope of success. If a dentist is investigated by the GDC for this type of claim to treat other diseases, the dentist loses the case and their career. This poster says we must ensure we do not give patients any false hope, and ensure there are no more high profile cases showing lack of professionalism by dental colleagues.

Two notes of caution, regarding emergency drug kits, one report that buccal midazolam is now £274 for a 5ml bottle. Will you be stocking it? Plus a practice inspector was perturbed that a practice’s emergency drugs kit was visible to the public. The principals explained the box had to be easily accessible by the team in an emergency, the inspector insisted it must be locked. A solution was found using a tamper-evident displaying plastic tag, as used on fire extinguishers.

On the same vein, one PCT wrote to dentists insisting that their infection control advice, due to aerosols generated, was that dentists and teams must now wear long sleeves in surgeries. If implemented, this would mean removing clothing too, between patients. This is contrary to advice in HTM 0105. Advice from the forum – ask the PCT which regulation should be ignored, HTM or theirs, or ... wear one short sleeve and one long!

APPENDIX

Approximately 6,000 people in the UK annually are diagnosed with oral cancer - with an estimated 2,000 deaths every year
(Source: British Dental Health Foundation, www.mouthcancer.org)

Oral Cancer prevention • examination • referral

Oral Cancer – prevention, examination, referral has been designed to support all health professionals by updating their knowledge, highlighting the importance of oral cancer screening, and providing practical tools for communicating with patients and colleagues

The programme comprises four topics:
1: The facts - Providing a background into the incidence, causes and development of oral cancer
2: Team Approach - Looking at all aspects of communication both within the team and with patients
3: Screening Examination - Practical advice on improving the opportunistic screening procedure in practice
4: Case Studies - Providing first hand experiences of examining, making referrals and living with oral cancer

For more information call us on 020 7400 8989 or log on to www.smile-on.com
‘We are all worms. But I believe that I am a glow-worm’

Sharon Holmes provides some advice on understanding the Medical Device Directive

I am sure there are many dental practices and laboratories out there scratching their heads in wonderment with regards to the Medical Device Directives, which has been a legal requirement for dentists since March 2010, and covers a vast amount of dental and medical materials used on patients. A statement of manufacture is a prescription of the device that has been prescribed, who it was prescribed by, and what the product is. It informs the patient of the manufacturer and the materials used. It also states standard after care advice of how to care for the device that has been prescribed and issued.

Barrage of questions

Our group dental arts studio is made up of six practices and we use many different laboratories so when this task was set before me I knew it would take some organisation, however I was unprepared for the barrage of questions that came flowing in from many of the labs.

Due to my frustration at what should have been a simple task I did some research and made a couple of phone calls to find out that I was not the only person who was struggling to make some sense of the Medical Device Directive.

As this is a legal requirement it concerned me, and I wanted to implement it as soon as possible to avoid any future repercussions. What I understood was that it was the dentist’s responsibility to liaise with their lab with regards to the statement of manufacture, which must be supplied with all laboratory work that gets placed into our patient’s mouths.

All dentists were notified about the directive requirement and made aware of their

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responsibilities to comply with the directive.

I created and implement-ed a group policy as well as a practice procedure as to what is required to fulfill our legal obligations to our patients. I am currently creating tool box talks during training sessions to talk about it further and what it means to the patient and the risk we take if we do not comply.

The process
In our practice procedure I have outlined to the whole dental team as to what the process should be from the prescribing of the appliance to dispatching thereof. The outline of our practice procedure is as such:

• All laboratories are to supply each patient with a statement of manufacture for all laboratory work manufactured.
• As and when the lab work is delivered to the practice, the dentist and the nurse should make sure that a copy is available for the patient.
• If a statement of manufacture is not accompanied by the laboratory work, then the nurse must inform the practice manager who in turn must call the laboratory and request a faxed copy with immediate effect. A lab doc that states it is compliant is not a statement of manufacture.
• The dentists and the practice managers are responsible for liaising with the laboratories and on guiding those on the necessary requirements as the Department of Health have made it the responsibility of the treating dentist to inform their labs of the statement of manufacture.
• If the patient declines to take a copy away with them then this should be noted in the patient's medical notes and the practice must file it away for safe keeping for the life-span of the appliance should the patient request a copy later on.
• If the patient chooses to take the statement of manufacture then, a copy must be made and

To protect the practice as well as the patients it is vitally important that you cover all bases when dealing with implementing new policies or procedures into the practice. Only when the whole team understands what is being asked of them will they be able to comply.

As Winston Churchill once said: “We are all worms. But I believe that I am a glow-worm.”

Good Practice
To assist the labs I instructed my practice managers to direct the dental labs and technicians to the article in the Summer 2010 GDC magazine written by David Smith, who is a dental technician as well as a GDC member. We also shared good practice from elsewhere. The process, though stressful during the implementation phase, helped us build stronger working relationships with our labs.

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References

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Winston Churchill said: “I believe that I am a glow-worm.”

About the author

Originaly from South Africa, Sharan Holmes has worked in the field of dental practice management since 1992. In 2003, she moved to London City Dental Practice where after 18 months, was responsible for managing four practices in the group. The London City Dental Practice is now part of a mini co-operative group called the Dental Arts Studio, of which she has been instrumental in its creation.
Aesthetic management of a single dental implant

Dr Michael Sonick details a case involving both form and function in the aesthetic zone

A medially and periodontally stable 57-year-old man presented with coronally fractured tooth #9, which had a history of endodontic treatment (Fig 1). The tooth was deemed restoratively hopeless.

Treatment Plan
1. Extraction of tooth #9 and socket preservation
2. Three-month healing period
3. Placement of implant #9 and connective tissue graft
4. Three-month healing period
5. Implant #9 exposure, placement of healing abutment and connective tissue graft
6. Three-month healing period
7. Final implant #9 crown restoration

Extraction and Socket Preservation of Tooth #9
After oral sedation with 0.25mg triazolam and local anesthetic induction using two per cent lidocaine with 1:100,000 epinephrine and 0.5 per cent buccapavacaine with 1:200,000 epinephrine, a flared incision was made circumferentially around tooth #9. The remaining root was extracted atraumatically using a piezoelectric periodontal device (Fig 2). Thoracic degranulation of the extraction site with a pear-shaped carbide finishing bur and Prichard curette proceeded. No dehiscence or fenestration was detected. Freeze-dried bone allograft (FDBA) was used to obturate the extraction socket. A bioabsorbable collagen plug (Colla-Plug®; Zimmer Dental, Carlsbad, CA) was used to cover the graft. The area was secured using 4-0 expanded polytetrafluoroethylene (ePTFE) suture (Fig 5). The restorative dentist temporised space #9 with an interim removable partial denture.

After three months of uneventful healing (Fig 4), Stage 1 implant placement was initiated.

#9 Fixture Placement and Connective Tissue Graft
After oral sedation with 0.25mg triazolam and local anesthetic induction using two per cent lidocaine with 1:100,000 epinephrine and 0.5 per cent buccapavacaine with 1:200,000 epinephrine, a flap was created using a trapezoidal papilla-sparing incision design that involved a palatally-oriented crestal incision over the #9 site with two vertical releasing incisions made on the buccal, both avoiding the mesial and distal papillae. A full-thickness flap was raised past the mucogingival junction. Degranulation of the site with a pear-shaped carbide finishing bur and Neumayr revealed adequate apico-coronal, buccal-lingual and mesio-distal dimensions for implant placement. After osteotomy preparation, a rough-surfaced, internal hex 4mm (diameter) x 15mm (length) implant was placed into the filled site (Nano-Tite® Parallel Walled Certain® Implant, Biomet 3i, Palm Beach Gardens, FL) (Fig 5). Primary stability was achieved, and a cover screw was placed.

In order to form an aesthetic soft tissue profile by expanding mucosal dimensions, a connective tissue graft was harvested from the palate and placed on the buccal aspect of the ridge overlying the implant. The graft was stabilised using 5-0 chromic gut sutures (Fig 6). After periosteal release via lateral alveolar incisions, the flap was primarily closed with 4-0 ePTFE sutures in an interrupted and horizontal mattress fashion (Fig 7). The area was re-temporised with a resin-bonded fixed partial denture.

Implant Exposure with Connective Tissue Graft
The #9 site healed well and without incident after three months (Fig 8). After using a tissue punch technique to remove the mucosa immediately coronal to the fixture (Fig 9), a one-piece 4.1mm (platform) x 7mm (emergence profile) x 4mm (height) healing abutment (Certain® EP® Healing Abutment, Biomet 3i, Palm Beach Gardens, FL) was placed on the #9 implant. To further augment the buccal ridge dimension, another connective tissue graft was harvested from the palate. A pouch-like envelope flap was raised over the labial ridge aspect into which the connective tissue graft was transplanted and fixed using 5-0 chromic gut suture (Fig 10). The healing abutment remained exposed. A periapical radiograph revealed sufficient bone height around the fixture (Fig 11). The resin-bonded fixed partial denture was replaced.

Final Prosthetics
Final restoration of the #9 implant was performed three months post-exposure (Fig 12). The marginal height and contour of the #9 implant crown matched that of adjacent tooth #8, and a periapical radiograph showed suitable peri-implant bone height (Fig 13). The patient was satisfied with the functional and esthetic result (Fig 14).

Post-Operative Instructions
After each surgical procedure, the patient was instructed to take ibuprofen 600mg every 4-6 hours, hydrocodone 7.5mg/acetaminophen 750 mg every 4-6 hours as needed for pain, and doxycycline 100 mg every day for 10 days. The patient was instructed not to brush at or near the surgical site but instead to rinse with 0.12 per cent chlorhexidine or warm saline twice daily. The patient was also directed not to chew in the affected area for at least two weeks. Suture removal occurred at 10-14 days post-surgery.

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Implant Tribune
A case of FPD
Narrowing and Aiming provide implant information, pages 13-15

The ultimate challenge
Richard Brookshaw discusses anterior implants, pages 16-19

Aesthetic management
A second case study presented by Dr Michael Sonick, pages 20-22
New product introduction: ShortCut

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NEW!
The choice between cement and screw-retained implant-supported prosthesis may be a matter of clinicians’ preference or dictated by particular clinical situations. This case describes a clinical situation and the guidelines that led to the ultimate prosthetic treatment decision based on implant angulations, interocclusal relationship and arch position. The clinical considerations are presented to aid the clinicians in determining the most appropriate method of retention for a screw-retained implant-supported fixed partial denture (FPD).

A screw-retained implant-supported fixed partial denture (FPD) has certain physical advantages. However, according to several studies they require precise positioning of the implant for optimal location of the screw access hole. Also, obtaining passivity of frameworks that are screw-retained is difficult due to dimensional discrepancies inherent in the fabrication process.

Anchoraged of prosthetic fixed partial dentures to implants can be achieved in two ways: some clinicians cementally have screw access openings, which can compromise aesthetics, weaken the porcelain around the openings and at cusp tips, and establish unstable occlusal contacts.

Cementation of implant restorations eliminates unesthetic screw access holes. Cemented restorations also have the potential to compensate for any minor dimensional discrepancies in the fit of restorations to abutments, which can contribute to lack of passivity. It has the potential to reduce stress to splinted implants, since screw-retained implant-supported fixed partial denture (FPD) Michael Nawrocki and Dov M Almog provide implant information and a case report

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the effects of minor misfit of the framework are not transferred directly to the implants, as is the case with prostesis-retaining screws. In addition, the exposure of screw access holes in esthetic areas of the mouth can be avoided. On the other hand, any excess retained cement extruding from the prosthesis/abutment interface, especially when located sub-gingivally, can cause inflammation, infection, and periodontal complications.

As more and more dental practitioners are focusing on implant-supported fixed partial dentures (FPD) restoring dentists need to understand the restorative options they may have to deal with. Many dental practitioners and labs will persistently use a screw-retained implant-supported fixed partial denture, and thereby promote the utmost choices of serviceability, cosmetic result and maintenance of optimised bite possible.

At the same time, in recent years the utilisation of adjunctive state of the art Cone Beam CT and technologies and 3-D derived virtual planning software solutions altered the manner in which we pull together diagnostic data, plan and execute both simple and complex implant cases. As a result, more and more implant trajectories are consistent with the planned prosthetic trajectories. Yet, some cases are still driven by the residual bone trajectories and are left to the restoring dentists’ decision as far as the final restorative option. In other words, when the implant trajectories are inconsistent with the planned prosthetic trajectories, the screw-retained implant-supported fixed partial denture systems offer an opportunity to minimise any controversy between the surgeons, restorative dentists and laboratories, creating greater understanding, appreciation and professional camaraderie.

Case Report

Patient presented for implant supported FPD after having teeth #8, 9, 10 extracted with socket preservation. A CBCT study was performed with the iCAT CBCT machine (Imaging Sciences International, Hatfield, Pa) and revealed reasonable alveolar dimensions, both vertical and horizontal. However, by utilising ImplantMaster™ software (iDent Imaging, Inc., Foster City, CA, 94404-1294), it was discovered that the residual bone trajectory (RBT) and the planned prosthetic trajectory (PPT) were in conflict, that is, projecting a compromised restorative trajectory lingually in implant site #9 and buccally in implant site #11 (Fig 1). Nevertheless, following a treatment planning conference, rather than considering bone grafting, a decision was made to proceed with these angulations and a 3-D reconstruction of a patient’s anatomy was attained and a virtual surgical guidance template was designed and computer manufactured with precise drilling holes’ distribution and trajectory for implants #9 and 11.

The palatal trajectory of the implant in tooth position #9, the patient’s deep bite which resulted in severely limited space for prosthetic components, dictated a screw-retained prosthetic FPD construction solution for the case. The extremely buccal angulation of the implant replacing tooth #11 resulted in a buccally located screw access opening, which compromised aesthetics, and potentially weakened the porcelain around the screw opening in the proposed screw-retained three units FPD. The aesthetic dilemma could be solved by either gold plating of the metal portion of the screw chamber, which can reduce the need for opaque composite material, or by metal cut back to hide the non-aesthetic metal. We chose to overcome this aesthetic and structural obstacle by using a separate telescopic crown design to cover the metal sub-

![Figures 1a & 1b: Figure 1: CBCT study was performed with the iCAT CBCT machine (Imaging Sciences International, Hatfield, Pa). By utilizing ImplantMaster™ software (iDent Imaging, Inc., Foster City, CA, it was noted in the 3DVR (a) and Virtual surgical template (b) that the residual bone trajectory and the planned prosthetic trajectory were in conflict, projecting compromised restorative trajectory lingually in implant site #9 and buccally in implant site #11.](image-url)
Figures 2a, 2b & 2c: Figure 2: The screw-retained restoration was made by CQC at DTI Dental Lab in Rochester, N.Y. Different views of final screw-retained restoration emphasize the extreme lingual trajectory of implant #9 (a) and extreme buccal trajectory of implant #11 (b). Note telescopic design crown on #11 (b & c).

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Dov M. Almog, DMD, Prosthodontist, Chief of the Dental Service, VA New Jersey Health Care System (VANJHCS).

Figures 3a & 3b: Figure 3: Intraoral views of the screw-retained restoration. Note the implants’ prosthetic platforms (a) emphasizing the actual trajectories of implants #9 & 11 at the patient’s maxillary ridge. Note telescopic design crown on #11 (b).

Conclusions
As more and more dental practitioners are focusing on implant-supported fixed restorations, restoring dentists need to understand the restorative options they may have to deal with. Dental practitioners and dental labs need to be prepared to use a screw-retained implant-supported fixed partial denture, and thereby promote the utmost choices of serviceability, cosmetic result and maintenance of optimised bite possible.

References

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Single tooth anterior implant, the ultimate aesthetic challenge

Dr Richard Brookshaw discusses an interesting case presentation, placing a single tooth anterior implant in a young female patient

The patient, a 56-year-old female office worker, was initially referred for implant therapy (via one of my implant course delegates) for replacement of the missing upper right central incisor. The upper central incisor had been lost following accidental trauma when she was 17 years old; the resultant space had been initially restored with a removable denture, but more recently with an adhesive bridge.

The patient was strongly opposed to keeping her denture having tolerated it for almost 20 years; and afraid that the adhesive bridge would fall out, she now wanted a fixed solution. Understandably she did not want a conventional bridge as she was afraid of “cutting down” the adjacent healthy teeth. The rest of her dentition was largely un-restored.

At the time of the trauma, the patient had asked her dentist if she was able to have a dental implant, but was told that there was insufficient bone and that such treatment was impossible.

Intra orally, the patient had signs of widespread gingival recession, oral hygiene was excellent, with no deposits and BPE codes healthy in all sextants.

The patient presented with a composite occlusal restoration (UL6, LL6) and an adhesive “Maryland” bridge restoring UR1 with retainer wings UR2 UL1. There was Class 1 occlusion with general overcrowding, no interferences and canine guidance.

Radiographic assessment of UR2, UL2, revealed absence of periapical pathology, non-convergence of roots in adjacent teeth with good bone height. The missing upper right central incisor had healthy adja-cent teeth and a healthy, bony site. The edentulous area had reduced volume with respect to soft and hard tissue.

Following a formal discussion of her treatment options and advantages / disadvantages of each, a treatment plan was formalised in a detailed written patient report and verbal and written consent to treatment was obtained.

Treatment Plan

1. Two stage implant surgery was planned: Under LA, full flap elevation, implant placement (16mm NP NobelReplace tapered groovy) with hard and possibly soft tissue augmentation either simultaneously or at second stage surgery.
2. Second stage surgery; uncovering of implant +/- soft tissue augmentation and attachment of under contoured modified healing abutment.
3. Fixture head impression for lab construction of ideal design screw retained composite prototype crown.
4. Fit prototype implant crown with negatively contoured sub- gingival emergence profile
5. Pick up impression using modified impression coping
6. Fit definitive under contoured zirconium abutment and all ceramic proceram crown
7. Maintenance of implant restoration and remaining dentition by GDP. Including continued hygiene support.

The treatment was carried out over a period of seven months.
months with visits.

Reflection
The patient had an optimal result at the end of treatment, which she was extremely delighted with. Her management throughout was planned and executed with the utmost detail to attempt to deliver the most comfortable experience possible considering the nature of the treatment involved. She was offered a denture, which she had endured for the past 20 years and refused; a conventional bridge, which would have been destructive to the adjacent virgin teeth; or an adhesive bridge which she preferred to her denture but did not instil her with confidence. The patient was determined to undergo implant therapy if possible, and she had sought advice as to the feasibility 10 years ago but was dissuaded. She was willing to undergo any necessary treatment to augment the site ready for optimal implant therapy and was consented for the potential treatment sequence which may even involve block bone grafting and repeated soft tissue procedures.

As it was, she responded extremely well to treatment and her treatment was more simplified than expected. The utilisation of a laboratory made prototype restoration was a good policy which greatly improved the final result, although the patient’s finances were limited and it was carried out free of charge. The under-contoured adjustment of the standard healing abutment at the minimally invasive second stage procedure encouraged more soft tissue growth, which also helped the final result. The patient was very amenable to the philosophy employed and never complained about the extra visits involved. Her focus was trying to gain the best possible final outcome. Translation of all of the information worked so hard to achieve in the prototype was also communicated to the laboratory in as accurate a way as possible, which helped ensure the final result.

The use of a narrow platform implant (3.5mm diameter) helped to keep the hard and soft tissue dimensions to a maximum and therefore perhaps allow greater long-term aesthetic success, which is why these implants are often utilised in the aesthetic zone.

Lengthy discussion was also had regarding root coverage procedures on the other recessions, which the patient is now considering following the good result achieved with the adjacent UR 2.
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*References available upon request.

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Fig 16: Pickup impression coping screwed to implant analogue and composite flowline injected and cured to customise impression coping.

Fig 17: Customised impression coping in situ to copy soft tissue architecture more accurately for lab.

Fig 18: Undercontoured zirconium abutment and Procera all ceramic crown.

Fig 19: Fit of zirconium abutment and screw access seal with provisional after torquing screw to 30 Ncm showing excellent soft tissue.

Fig 20: Procera crown fit UR 1 showing optimal aesthetics.
A medically and periodontally stable 50-year-old woman presented with failing #8 and #9 teeth that exhibit asymmetry, lack of interdental papilla and a history of failing root-canal therapy and apicoectomy (Fig 1).

Treatment Plan
1. Extraction of teeth #8 and #9, immediate implantation of #8 and #9 and immediate non-functional provisionalisation of #8 and #9
2. Three-month healing period
3. Gingivectomy to create mucosal symmetry
4. Six-month healing period, during which contour adjustments to interim restoration will be made to manipulate papillary regeneration
5. Placement of final single PFM crowns on implants #8 and #9

Treatment Plan Rationale
Implant rehabilitation for sites #8 and #9 boosts long-term prosthetic success, which diminishes future costs and permits more future restorability options. The patient is an ideal candidate for immediate implant placement and temporisation due to her thick biotype, which resists recession, as well as the inherent coronal positioning of the gingival drape around #8 and #9 compared to the adjacent teeth, which allows any minor recession post-treatment to remain within aesthetically-pleasing bounds.

Extraction of Teeth #8 and #9, Immediate Placement of Implants #8 and #9, and Immediate Non-Functional Provisionalisation of Implants #8 and #9
After oral sedation with 0.25mg triazolam and local anaesthetic induction using two percent lidocaine with 1:100,000 epinephrine and 0.5 per cent bupivacaine with 1:200,000 epinephrine, sulcular incisions were made circumferentially around teeth #8 and #9. To create room for extraction instructions, the crowns on teeth #8 and #9 were reduced (Fig 2a). Teeth #8 and #9 were extracted atraumatically using a piezosurgical insert and serrated universal maxillary forceps (Figs 2b-2c). Degranulation of the sockets was performed using a carbide finishing bur and Neumeyer bur. A surgical guide was used to prepare the implant osteotomies, and proper positioning was attained (Fig 3). After finalisation of the osteotomy sites, rough-surfaced, internal hex 4 mm (diameter) x 13mm (length) implants were placed into the #8 and #9 sites (NanoTite® Tapered Certain® Implant, BIOMET 3i, Palm Beach Gardens, Fla.) (Fig 4).

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and the fixtures exited from the sockets at the cingulum positions (Fig 5a). Primary stability was achieved. Radiographic review of the implants revealed a peak distance of 2mm (Fig 5b). To bridge the circumferential gap between the socket walls and the implant surfaces, freeze-dried bone allograft (FDBA) was used as graft material (LifeNet Health, Virginia Beach, Va.).

Temporary cylinders (Per-F ormance® Temporary Cylinders, Certain® Internal Connection, 4.1 mm platform, hexed) were placed on the implants to check the restorative position (Fig 6). These were removed, and an implant-level pick-up impression was taken. After chair side creation of a cast with implant analogs, the hexed temporary cylinders were connected to the analogs and acrylic resin interim crowns were fabricated using a vacuum-formed template made over ideally-shaped central incisors. The resin interim crowns were seated and screwed onto the implants using hexed titanium screws with 20Ncm torque. Cotton pellets were placed over the screw heads, and the access holes were sealed with composite resin. Occlusal adjustment prevented functional contact upon excursions. The interim restorations did not fill the palatal space between #8 and #9 (Fig 7). A radiograph taken following completion of provisionalisation demonstrated satisfactory positioning and seating (Fig 8).

Gingivectomy Over Implants Healing of the implant sites proceeded without incident. At one week post-surgery, the buccal marginal tissue remained coronally-oriented and encroachment of the papilla into the unfilled interdental space began (Fig 9). Three months after initial surgery, further coronal displacement and papilla fill occurred (Fig 10). Minor gingivectomy was performed to create mucosal symmetry between the maxillary central incisors. The contact point and contour of the interim crowns were also adjusted to create a fuller papilla.

Final restoration of Implants Six months after gingivectomy and provisional contour modification, the implants were ready for final prostheses (Fig 11). Single final FPM crowns were placed on implants #8 and #9. Clinical analysis demonstrated resolution of inflammation, idealisation of the soft tissue drape and papillary reformation demonstrated satisfactory positional and seating (Fig 8).

Final restoration of Implants Six months after gingivectomy and provisional contour modification, the implants were ready for final prostheses (Fig 11). Single final FPM crowns were placed on implants #8 and #9. Clinical analysis demonstrated resolution of inflammation, idealisation of the soft tissue drape and papillary reformation demonstrated satisfactory positional and seating (Fig 8).

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Dr. Stephen L. Wheeler, USA
Dr. David M. Stanford, USA

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Combined Team Programme for Hygienists, Nurses, Practice Managers and Therapists

The team approach to implant dentistry: a blueprint for success

Mr. Anika D. Daniels, USA

DENTAL IMPLANT TEAM PROGRAMME - (Afternoon)

Implantation/Therapeutic Programme

The role of the dental hygienists in implant treatment

Ms. Anita H. Daniels, USA

Practice Manager Programme

Ringing the changes: turn every patient enquiry into an appointment

Mr. Anthony Lahiri, UK

Nurse Programme

Anxiety for dental implants; Effective communication with patients; Advanced surgical techniques, instruments & preparation; Medical emergencies in implant surgery; HTM0105

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About the author

Dr. Michael Sonick is a Full-time practicing periododontist and implant surgeon in Fairfield CT. A renowned educator, author, and clinical researcher, he is a Guest Lecturer for the International Dental Program at New York University School of Dentistry, a former Clinical Assistant Professor in the Department of Surgery at Yale University School of Medicine and University of Connecticut School of Dental Medicine, and a frequent lecturer on periodontics, dental implants and practice management for educational programs around the world. Locally, he is the founder and director of the Fairfield County Dental Club, an advanced continuing education organisation that provides courses on the latest developments in dentistry to clinicians and their staff. Dr. Sonick is also founder and director of Sonick Seminars, LLC, a multidisciplinary teaching institute located in his clinical office and teaching center. Courses are given on all surgical aspects of periodontics and implant dentistry. Unique to this program is the three part continuous dentists to observe live surgery participate during the Hands-On portion and attend lectures. Interested participants can contact Carole at 203 254-2006 or visit the website at www.sonicdmd.com.
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I have always attended CPD courses ever since I qualified as a hygienist. I often worked as the only assistant and enjoyed the interaction with my peers initially, using it as a reunion with my college buddies. Clinically I felt it refreshed my basic skills, added new thinking and research into my work ethos and allowed me to attempt to keep my patient care at a consistently good standard. Recently, I have been looking at trying to improve my customer care and business sense to help with my practice life and my role as director at CPD for DCPs.

I have just attended my first totally non-clinical dental conference. Run by the uniquely named Marketing Pirates of Dentistry, I was privileged enough to be one of their guest speakers. This was with the promise, by me, of not going all clinical. That was a lot tougher than I thought.

To name but a few there was a blend of speakers; the brilliant and “not vanilla” Tony Gedge on the marketing strategy used in dental practice; Paul Howe on selling, which was extremely useful, and a superb motivational speaker called Clive Gott. I was sad to miss hearing Nadim Majid talking on website development for the dental practice. But, being technically minded, he has recorded it so I can watch it at my leisure.

From this event, I have a full mind that keeps throwing up ideas, about 12 pages of notes to write up, and a very new perspective on the business of dentistry. I am still mainly a clinician in my job, and was trained to do just that. I then spent a lot of years attending lectures and courses on how to develop and hone those clinical skills. Now I can see the importance of the team understanding the business of dentistry, understanding the forecasts and targets and knowing what a HNW patient is and how to recognise one.

Most of my customer service skills come from being a waitress when I was at school back home in Troon a few years ago now! By working in different environments I have tried to learn from the things that work and also the things that don’t. Being self-employed I am used to having to justify costs and am coming to terms with ROI and its importance. (That is return on investment and it is ok if you didn’t know that).

What impressed me most was the number of teams that were attending this event. There were only two principals that had attended on their own. I can understand how they feel. As principal and sole owner, they feel the running of the business is down to them. And in a way it is. It is how I felt for a long time about my little training business. But if the team can’t see what your vision is how can they begin to implement the changes you want? Also, after attending experience has shown me, you can take the horse to the water but they have to be thirsty. Then you can be sure that this will give the best result. In this situation the principal is instigating the change and development in the team and therefore you are part of something ready to action change.

Route two is you feel that you would like more business training and your principal may not be seeing the value just at this moment. There are many courses you can attend independently and perhaps your principal will see the benefit of a work based qualification, such as an NVQ. It gives you the skills independently, with out the support of your principal.

A great toe in the water solution would be to sign up to the dentistry show in Birmingham on March 4th and 5th. They have two whole days of business sessions that the whole team can attend. And, best of all, it is free to attend most speakers sessions. To register you and your team visit www.thedentistryshow.co.uk.

I look forward to seeing all those with their finger on the pulse of modern dentistry there; I will be the one in the front row making notes furiously! AN.

'Dental Tribune' United Kingdom Edition - February 14-20, 2011

It is not all about mouths you know

Mhari Coxon discusses a new perspective to consider on the business of dentistry

Please excuse the scattered thoughts I have tried to learn from the things that work and also the busy one or two-day event do you feel you can pass on the information in a suitable way to your team? Could you have taught someone to drive after one driving lesson?

I remember saying in a column last January that we needed to work together to keep our businesses fresh at the beginning of 2010. Well 2011 will be another year of finding solutions and building service to keep your businesses improving and succeeding.

It could be really beneficial for teams to define their roles, do a swot analysis and make a training plan purely based on their business skills. Once you have decided who needs to improve what then you can implement a training programme with a definite “done by” date.

There are two routes you could go down that I can see, or use a blend of the two perhaps.

Route one is to take the team through coaching and support of a well known and proven business advisor in dentistry, such as Chris Barrow, Kevin Rose and of course Tony Gedge and his pirates. The really important bit of this is that the principal is the leader and instigator of this; as then this is commendable. This will also almost certainly lead to you moving on if the circumstances do not change. I am learning slowly that work satisfaction has to be a team experience. So get out there and develop your skills.

About the author

Mhari Coxon is a dental hygienist practicing in Central London. She is chairman of the London British Society of Dental Hygiene and Therapy (BSDHT) regional committee and is on the publications committee of the journal, Dental Health. She is also clinical director of CPD-FortiSC, which provides CPD courses for all DCPs. To contact her, email mhari.coxon@yggdrasil.co.uk.
The main categories of techniques for microinvasive preparation (MIP) include chemo-mechanical cleaning with Carisolv gel, air abrasion and dental lasers. The trends for the replacement of the conventional method of preparation led to focus the attention of researchers on the impact of alternative techniques for MIP on hard dental tissues and underlying dental pulp. MIP techniques claim for controlled removal of infected and softened dentin while preserve healthy hard dental tissues and do it with minimal discomfort for the patient. However, currently available data provide contradictory the impact of alternative techniques of MIP on hard dental tissues compared to conventional preparation. Possible reasons for this are the variety of experimental studies and difficulties to standardise the results of clinical researches. It is striking that researchers who give the most positive evaluation of alternative methods of preparation are using mainly clinical criteria for evaluation (perception and tolerance of the patient, noise, atraumatic work, colour and texture of the dentine when probing etc) which are some subjective.

Opposite, the SEM and histologic evaluations are not unanimous for its benefits and advantages. On the dental market new improved versions of alternative systems for preparation are available claiming for clinical efficiency, but scientific data are still scarce (these are generally the multi-frequency high-energy lasers and air abrasion devices). For that reason periodic updates of researches in this rapidly developing and promising field of dentistry are needed. The purpose of this in vitro study was to evaluate by SEM the ultrastructural changes in the hard dental tissues prepared by Er:YAG laser and conventional preparation with diamond burs/air turbine and steel burs/micromotor according to manufacturer’s instructions for service.

Preparations are made strictly according to manufacturer’s instructions for service. The removal of caries is proved by clinical methods – observation and probing. After preparation the teeth are immersed for one hour in four per cent buffered fixative solution of glutaraldehyde (0.075 M, pH 7.5). Then rinsed with distilled water and placed for 90min in cold buffer solution of sodium cacodylate (0.02M, pH 7.2, 660 mOsm) for fixation of organic matter. Subsequent dehydration is carried out in ethanol in ascending series of 50, 50, 70, 80, 95 and 100 per cent in one hour in each series, such as drying of the teeth is based on CPD (Critical Point Drier) method in SEM evaluation of morphological changes

Georgi Tomov discusses tissues prepared by Er:YAG laser and rotary instruments

Methods
Experimental design: the study used 30 human teeth freshly extracted due to advanced periodontal disease. The preparation involved natural carious lesions on tooth surface.

According to the preparation technique the teeth were divided into three groups of 10 teeth (n=10):

Group 1: Laser preparation by Er: YAG laser (LiteTouch, Syneron, Israel) (Fig 1 a, b)
Group 2: Mechanical rotary preparation by diamond burs/air turbine
Group 3: Mechanical rotary preparation by steel burs/micromotor

Preparations are made strictly according to manufacturer’s instructions for service. The removal of caries is proved by clinical methods – observation and probing. After preparation the teeth are immersed for one hour in four per cent buffered fixative solution of glutaraldehyde (0.075 M, pH 7.5). Then rinsed with distilled water and placed for 90min in cold buffer solution of sodium cacodylate (0.02M, pH 7.2, 660 mOsm) for fixation of organic matter. Subsequent dehydration is carried out in ethanol in ascending series of 50, 50, 70, 80, 95 and 100 per cent in one hour in each series, such as drying of the teeth is based on CPD (Critical Point Drier) method in

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a dessicator. Dried specimens are fixed on metal stand and covered with gold layer (200–250nm) by cathode atomisation under vacuum. Scanning microscopy is performed with the electron microscope of Philips (Holland) 515 model SEM with accelerating voltage of 25kV in secondary emission mode. On each specimen were made respectively five pictures with the same magnification (×2000) of randomly chosen areas and different numbers of photos with other magnification.

On SEM photos are rated, described and compared morphological findings and differences in enamel and dentin tissues after treating with alternative methods for cartes removal and cavity preparation.

Results

Cavity forms prepared with Er:YAG laser (Group 1) are characterised by a lack of definite and precise geometric configuration and outlined cavity elements. There is rough and irregular surface without presence of smear layer (Fig 2 a). Dentinal tubules orifices are clearly exposed. Intertubular dentin is ablated more than peritubular dentin and that made dentinal tubules appearance more prominent (Fig 3 b). Laser ablation changes enamel and the surfaces appeared strong retentive (Fig 2 c).

In Group 2 (preparation with diamond burs, air turbine and water cooling) a thin, smooth surface suitable for adhesive bonding is observed (Fig 5 a). In the area of water turbulence marked dentinal tubules orifices can be seen, but without having a clear outline of both tubules lumens and peri- and intertubular dentin (Fig 3 b). The boundary between enamel and dentin is unclear and the cavity forms here smooth contours.

When analysing the SEM photomicrographs of the specimens examined, it is found that the conventional method of cavity preparation with steel burs and micromotor at low speed without water cooling (Group 3) leaves contaminated surface covered with smear layer of dentin debris without visible dentinal tubules orifices. (Fig 4 a, b). Thick smear layer covers all treated surfaces. The walls of the cavities are smooth and rounded and the border between enamel and dentin is not perceptible.

Discussion

The philosophy of minimally invasive cavity preparation approach is based on several main principles – to remove only irreversibly damaged dental tissues and to avoid macroretention preparation in healthy tissues.

Additionally these techniques should protect the underlying pulp and to leave the treated radiation creating high internal pressure and subsequent microexplosions. In this interaction of laser radiation with tissue if inadequate water cooling occurred, that will lead to undesirable thermal effects.

Depending on parameters such as pulse energy and frequency CO2 lasers, Nd: YAG and Er: YAG lasers cause changes in enamel and dentin as roughing, cracking, slicing, carbonisation, melting and recrystallisation described in many previous studies.

These changes depend on the laser type, mode of operation, system for water cooling and proper operation. Additionally, the opportunities to ablate various dentin and enamel strongly vary according to different experimental studies.

For argon-fluoride laser (ARF) and the excimer laser there are data on their ability to remove dental caries, which is not of sufficient efficiency. Krypton fluoro-ride excimer laser emitting in ultraviolet range has been shown to remove dentin, but enamel resists the attempt for ablation.

Used in this experimental study, LiteTouch Er:YAG laser incorporates special software, which allows for the broadest range of energy and frequency settings. The unique LiteTouch optical system incorporated in the ergonomic hand piece prevents loss of energy and along with the precision control over pulse duration, pulse energy and repetition rate optimise, allows for a wide range of hard tissues procedures. Another characteristic of this laser is the wavelength (2940nm) which is absorbed mostly by the water and also sapphire tips, showing stability in providing focused energy of laser radiation.

The mechanism of LiteTouch action is based on interaction between laser radiation and hard tissues incorporated water that results in microexplosions. It is believed that this process is the mechanism of ablating particles from dental tissues without overheating, and without smear layer formation.

This combination allows precise microinvasive cavity preparation with minimal heating and optimal rate of radiation absorption by the hydroxypatite incorporated water.

The program “hard tissue mode” removes enamel, dentin and dental caries effectively and without visible carbonisation or disturbance of the dental microstructure. Evaluated under SEM the dental tissues treated with Er: YAG laser showed rough and irregular surface without presence of smear layer, open dentinal tubules orifices were found as well. Intertubular dentin is ablated more than peritubular giving a characteristic appearance of the dental surface with mild prominent dentinal tubules. Enamel shows preserved prismatic structure, but also strong retentions due to microexplosions on its surface. Overall the cavity form is irregular, devoid of strict geometry and dotted with microretentions, but with out presence of contaminants or smear layer. The observed changes correspond to changes in hard dental tissues reported by other authors in previous studies.
on Er:YAG lasers 1, 3, but with- out thermic degenerated surface- es, areas of extensive recrystall- ization, melted surfaces or cracks in the dentin, as described in some in vitro studies.2,3,4 It is also reported for better opportunities for adhesive bonding,3,5 faster ablation of enamel and dentin compared with rotating burs 12 and an increase in dentinal mi- crohardness after treatment with Er:YAG pulsed laser irradiation, as a gener- al statement is not confirmed by other studies. The marked surface irregularities and lack of smear layer observed in the recent study, noted also in other researches 14, 15 provide a solid evidence for the physical mecha- nism of bonding with composite materials after laser treatment.13 This fact is not yet fully explored as a possible opportunity to elim- inate acid etching of hard dental tissues and its related adverse effects on the underlying dentin and pulp.

The results of some contem- porary studies showed that de- spite of the differences between individual authors, generally the amount of smear layer after treatment with Er:YAG laser in all cases is less than that after conventional rotating instru- ments, and surface changes are characterised by markedly rug- ged topography.2, 5, 6, 11

The morphological fea- tures of hard dental tissues ob- served in our study suggested us to generalise that cavity prepa- ration with Er:YAG laser is consistent with the principles of minimally invasive prepara- tion, leaving clean surfaces and strong microretentions suit- able for adhesive restorations. These assumptions about the benefits of alternative techniques for minimally invasive prepara- tion of dental tissues for adhe- sive restorations should be con- firmed in future clinical studies.

Conclusion

SEM analysis of hard dental tis- sues treated with steel and dia- mond burs showed surfaces cov- ered with a thick layer of debris, which could compromise the ad- hesion of filling materials. Den- tal tubules orifices are obturated with debris, with exception the areas under water turbulence where the debris is partially re- moved. All laser-treated samples showed no evidence of thermal damage or recrystallization and melting. The SEM exami- nation revealed characteristic micro-irregularities of the lased dentin surface without apparent smear layer, and opened dentinal tu- bules. Interstitial dentin is ablated more than peritubu- lar dentin and that made the dentinal tubules appearance more prominent. Er:YAG laser ablated enamel effectively and remained exposed enamel prisms without debris. The sur- faces are very retentive.

The author declares not hav- ing any financial interest in a company (or its competitor) that makes a product discussed in the article or any conflicts of interest.

References:

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Fig 2 a, b: Enamel treated with Er:YAG laser revealed characteristic surface which is very retentive and free from contaminants and smear layer (Magnification x 2000).

Fig 3 a, b: Smooth and thin smear layer covers tooth surfaces prepared with diamond burs. The surface is irregular, rough, which creates strong retentions. A greater magnification more effective removal of intertubular dentin is seen, and that makes dentinal tubules orifices to appear convex (Magnification x 500, 2000).

Fig 4 a, b: SEM photomicrographs of tooth surfaces prepared with steel burs. The sur- face is covered with a layer of debris, dentinal tubules orifices are not visible (Magnifica- tion x 2000)

Fig 5 a, b: Laser-treated dentin. The surface is clean and free from debris, all dentinal tubules are rendered open. The surface is irregular, rough, which creates strong retentions. A greater magnification more effective removal of intertubular dentin is seen, and that makes dentinal tubules orifices to appear convex (Magnification x 2000, 4000).
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ADT Team Congress - Manchester

The Association of Dental Implantology Team Congress is taking place at the Manchester Central Convention Complex on the 14 & 15 April 2011.

ADI President Stephen Jacobs along with Michael Norton, the ADI’s Scientific Chairman, have put together a two-day programme that should appeal to all members of the dental implant team. To quote Stephen: “The congress has now become the leading dental implant meeting in the United Kingdom and one of the foremost in Europe, with the unique combination of a plenary programme with internationally renowned speakers, parallel sessions for all dental care professionals, a large technical exhibition and a fantastic party.”

The plenary session, for both Clinicians and Technicians, takes place over the two days, with speakers such as: Michel Magné (USA) “Aesthetic dentistry today – a distinctive approach to nature”, Professor Maurício Araújo (Brazil) “Management of the alveolar socket”, Dr Stephen S Wallace (USA) “Latest strategies and techniques for maxillary sinus augmentation”, Associate Professor Tara Aghaloo (USA) “Bone grafts for site development – the past, the present and the future”.

A combined team programme, followed by dedicated sessions for Nurses, Hygienists/Therapists and Practice Managers is offered on Thursday 14 April. Anita Daniels will be speaking in the morning on “The team approach to implant dentistry: a blueprint for success”. In the afternoon she will continue with the Hygienists/Therapists on: “The role of the dental hygienist in implant treatment”.

Ashley Latter will take to the podium to speak to Practice Managers on “Ringing the changes: turn every patient enquiry into an appointment”.

The dedicated Nurses programme sees ADI Nurse members take to the podium to present papers, and offers a choice of three optional interactive workshops. Topics to be covered include: “Asepsis for dental implants: the theory & the practical”, “Effective communication with patients”, “Advanced surgical techniques, instruments & preparation”, “Medical emergencies in implant surgery”, “HTM0105 and implant dentistry” and “Sinus lifts”.

Congress Exhibition
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