Children's oral health remains of concern

By DTI

HONG KONG: Over the past 50 years, dental public health measures and policies have been implemented by the government in Hong Kong to help improve the oral health of the population and children in particular. A historical analysis has now shown that these efforts have led to a general improvement in the oral health of schoolchildren. However, dental disease is still prevalent among children, especially preschoolers, in the country.

In order to provide a historical and epidemiological overview of the oral health of Hong Kong children, dental researchers at the University of Hong Kong reviewed all available oral health epidemiological data and information from published literature before 2004 through electronic database searches, supplemented with information obtained from government-archived oral health reports.

The researchers concluded that no substantial changes in the caries status among preschool children have been observed. The caries incidence in preschool children remains similar, with a reported prevalence of 35 to 51 per cent, they stated.

In 1961, water fluoridation was implemented in Hong Kong and remarkably reduced the prevalence of dental caries. The researchers found that caries experience and severity among schoolchildren and over-coming many social barriers to dental care access. Education changed children’s lifestyles and changed children’s lifestyles and oral health education were positively associated with decreases in the caries experience and frequency.

In the past two decades, no substantial changes in the caries status among preschool children have been observed. The caries incidence in preschool children remains remarkably reduced from approximately 50 per cent in the 1960s to 35 to 51 per cent, they stated.

The researchers concluded that new policies have to be drafted on dental care protocols to ensure evidence-based standards of care and to promote regular access to dental care and preventative services, especially to improve the oral health of preschool children in HK.

The review article, titled “Oral health of Hong Kong children: A historical and epidemiological perspective”, was published in the August issue of the Hong Kong Medical Journal.

Moreover, the researchers observed that the overall periodontal health of Hong Kong children remains unsatisfactory, although there is evidence of improvement.

In addition, a decrease in the prevalence and severity of enamel defects among Hong Kong children was observed, but there has recently been a slight increase.

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Asia Pacific region sees significant shift in attitudes towards braces

By DTI

HONG KONG/PHNOM PENH, Cambodia/SYDNEY, Australia: From the thriving fake braces business in South East Asian countries such as Thailand, Indonesia and Cambodia to being disappointed when being told they do not need braces—in the last decade, attitudes towards orthodontic treatment have seen an incredible shift in the Asia-Pacific region from being a hardship of adolescence to making a fashion statement.

Whether because of advances in technology that have made today’s fixed orthodontic appliances smaller and more comfortable to wear than ever or the vast array of colours orthodontic brackets and components are available in, dental braces are enjoying surprising popularity as a fashion craze in parts of Asia. The phenomenon of fashion braces serves no medical purpose first appeared in Thailand in 2006. From there, the trend quickly spread to neighbouring countries Indonesia, Malaysia and, most recently, Cambodia. As reported by the Phnom Penh Post, fake braces are easily available online and through local suppliers in these countries, with material kits starting from as low as US$20 (£17.91).

After purchasing the necessary components, customers are referred to local dentists for impressions and attachment. However, even if the braces are fitted by a trained professional—which is not always the case, seeing as many dentists are simply refus-

Aussie kids excited about fixed orthodontic appliances

Further to the south, in Aus-

tralia, braces may not be con-

sidered a fashion statement yet; however, attitudes towards ortho-
dontic treatment have shifted similarly over the past several years. A recent study conducted by the Australian Society of Orthodontists has found that seven in ten children responded with happiness or excitement upon hearing that they needed treatment with fixed orthodontic appliances. Moreover, nine in ten of the specialist orthodontists surveyed said that they had witnessed a child become visibly upset when told he or she did not need such treatment.

According to society spokes-

person and practising ortho-
dontist Dr David Mastroianni, these findings reflect patients’ shifting attitudes towards braces and orthodontic treatment first hand. We now have children coming in for consultations, not because they’ve been referred by their dentist, but because the child wants braces, he remarked. ‘With advances in tech-

ology, braces today are not only small and comfortable, but offer coloured or glow-in-the-dark options. Teens across the country are beginning to do so, given the lack of medical purpose—the trend is a dangerous one to follow, experts caution. For example, the use of unsterilised equipment or sub-standard adhesives could cause infections and illness. Further-

more, fake braces expose their wearers to the same risks as that of actual fixed orthodontic appli-
cances. According to Dr Hok Sim Kor, Vice Dean of the Faculty of Dentistry at Phnom Penh Inter-
national University, wearers with poor oral hygiene run the risk of demineralisation of the teeth, tooth decay or periodontal disease. Moreover, just like actual fixed orthodontic appliances, fashion braces may move well-

aligned teeth into the wrong posi-
tion without regular adjustment or check-ups.

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― braces are enjoying surprising popularity as a fashion craze...‖

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W&H introduces next Implantmed generation

By DTI

BUERMOOS, Austria: In addition to its tried-and-tested functions, the new generation of Implantmed offers its users a unique system for assessing the stability of an implant, customisable features that can be retrofitted if required, as well as a high-tech, intuitive user interface and an even more powerful motor.

Even difficult procedures can be performed with less effort, and great precision, thanks to a motor torque of 6.2 Ncm and a speed of 200 to 40,000 rpm. The new device also has the shortest surgical motor on the market. The ergonomically shaped and perfectly balanced combination of motor and W&H contra-angle handpiece allows the user to work for extended periods without fatigue affecting the hands. In addition, the five new straight and contra-angle surgical handpieces with LEDs now fully illuminate the surgical site regardless of the motor speed. The high-quality stainless steel with its scratch-resistant coating mean that the surgical straight and contra-angle handpieces have a particularly long service life and are very sturdy.

The optional W&H Osstell ISQ (Implant Stability Quotient) module for the new Implantmed makes assessing the success of the treatment safer and more reliable. The stability value measured by the device helps improve the success rate and is a form of quality assurance, according to W&H. The module is an optional extra and can also be easily retrofitted to the new Implantmed, the company also said.

When the documentation function is enabled, all implant insertion values, such as defined device parameters, the implant insertion curve, the Osstell ISQ measurement and basic data such as the documentation ID and tooth position, can be saved to a USB stick. Furthermore, the new Implantmed’s user interface helps the dental practice team to streamline the treatment steps as they are simpler, take less time and are more efficient. Important information for a particular step of the procedure is clearly visible on a large touch screen.

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Shower of awards for AMD LASERS

Now in its eighth year, the Cellerant “Best of Class” Technology Award (formerly the Pride “Best of Class” Technology Award) continues to lead the profession’s evolving conversation about dental technology through its recognition of and education around excellence in dental innovation. AMD LASERS, a global leader in dental lasers and the associated education, announced recent accolades again as the number one choice of dentists with its Picasso Plus, Picasso Lite Plus and LiteTouch dental lasers. The last has also received the internationally recognised Red Dot Award in Product Design.

This most recent award adds to a growing list of industry honours earned by AMD LASERS, including Dentaltown’s Townie Choice, Orthotown’s Townie Choice, Dentistry Today’s Top 100 Products and Dental Products Report’s Top 100. In addition, AMD LASERS and its Picasso and LiteTouch dental lasers have been recognised by non-dental associations for innovation, design, technology and company growth.

“To be honored as ‘Best of Class’ is a sign that a product has revolutionized, simplified or advanced its category in a distinctive way. Our foundation for success in bringing attention to these products remains simple: technology leadership in dentistry, as well as an unbiassed, rigorous and transparent selection process which is not for profit,” remarked “Best of Class” Founder, Dr Lou Shuman.

Dr Marty Jablow, another panelist, said: “One of the things I appreciate most about being part of the ‘Best of Class’ process is that it represents more than just a thought exercise on what technology should do or what seems cool. We are all dentists still active in clinical practice and when we decide that a product should be honoured, it is because we see the value it brings to dentists and patients in a real-world context, and that matters to the dental professionals who use lists such as this one in their research and purchasing decisions.”

“We are truly honored to have our products recognized year after year as the best,” remarked Alan Miller, Founder and CEO of AMD LASERS, expressing the company’s appreciation of the awards. “I always have believed that people want products designed with passion that is beautiful both functionally and aesthetically. Worldwide dentists and patients love Picasso and LiteTouch dental lasers. I am so proud of the entire AMD LASERS’ team of professionals in giving our customers the client-oriented culture of kindness and respect they deserve.”

“This recognition is very special as it solidifies Picasso dental lasers’ leadership position. I am so proud of our products and the amazing people at AMD LASERS and grateful of the dentists who have supported us every step of the way. We take pride in providing great products, comprehensive education and world-class customer service that dentists can feel good endorsing to their peers,” he added.

“As other dental laser companies come and go and others try to launch or re-launch their lasers, AMD LASERS’ Picasso dental lasers continue to set the benchmark in quality, value, and reliability,” Miller further said. “Picasso dental lasers are number one for a reason. We combine world-class dental lasers with our world-class service. The cool culture at AMD LASERS keeps dentists coming back year after year. They want the confidence in making the right dental laser purchase and this means AMD LASERS. We are thankful to the dental community for supporting us year after year. Picasso dental lasers may have won the award, but the true winners are the doctors and patients.”

The Implantmed can be customised for up to six users, making it ideal for improved efficiency in group practices. The redesigned coolant pump also helps make the surgical device especially easy to operate and prep times are even faster. The irrigation tubing can be inserted very easily, quickly and above all safely even under sterile conditions with the new design.

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Amalgam phase-out discussed at London meeting

By DTI

LONDON, UK: Limiting the use of amalgam in dentistry is a task that needs a combined effort by various actors in and outside of the health care sector, the organisers of a meeting of 50 senior oral leaders in London have agreed. However, by phasing down the material, the profession will have a rare opportunity for more prevention-focused oral health care in the future, they said.

“I was very impressed by the commitment of the major dental community stakeholder to a measurable, equitable and sustainable phase-down of dental amalgam use, as well as the recognition that ‘dentistry can’t do this alone’. This will need the engagement of other actors such as other health professions, the industry and most importantly civil society,” commented Julian Fisher, resource person for the United Nations Environment Programme Global Mercury Partnership Area on Waste Management.

At the meeting, senior oral health leaders from around the globe came together to discuss pathways for reducing the use of amalgam not only in the UK but also on an international level. The conference took place in mid-July at King’s College London Dental Institute in cooperation with Newcastle University’s School of Dental Sciences and the University of Leeds’s School of Dentistry. In addition to presentations on phase-down case studies, such as the UNEP–WHO East Africa project, the multi-day event provided an overview of minimally invasive dentistry programmes. A particular focus was on improved and newly developed materials and the impact the transition to these materials could have on the dental profession in the long run.

“The complexity of something seemingly as simple as changing a material is remarkable,” said the Dental Institute’s Executive Dean, Prof Dianne Rekow. “Indeed, this ‘simple’ change has ripple effects that change the philosophy and practice of dentistry, as well as the economies of health care.”

“One of the most impressive features of the symposium was the willingness of the participants to explore the implications and interdependencies of the ripples and assertively work toward finding ways to improve both the environment and health,” she stated further.

Various initiatives have been implemented worldwide since representatives of over 190 countries signed the Minamata Convention on Mercury in Japan three years ago, which agreed on a mercury ban in a variety of products, as well as a phase-out of amalgam. While its use in developing countries is declining, the mercury-containing restorative remains the material of choice in developing countries around the world.

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The flossing debate and what to make of it

By DTI

LONDON, UK/LEIPZIG, Germany: Last month, a story by the Associated Press (AP) claiming that the benefits of flossing have never been properly researched went viral. The resulting extensive media reports have taken one message from this: flossing is overrated. Is it really that simple though? This article attempts to summarise recent reporting on the topic and reactions by the dental community around the globe.

There’s no solid evidence that flossing actually works” – this statement by his son’s orthodontist gave US reporter Jeff Donn the impetus that started the entire debate. Investigating this issue further, the AP national writer found out that since 1979 the US federal government has recommended flossing, first in a surgeon general’s report and later in the Dietary Guidelines for Americans issued every five years. “A combined approach of reducing the amount of time sugars and starches are in the mouth, drinking fluoridated water, and brushing and flossing teeth, is the most effective way to reduce dental caries,” the 2010 guidelines state.

Because these national recommendations must be based on scientific evidence under the law, Donn asked the US departments of Health and Human Services and Agriculture for their evidence under the Freedom of Information Act. In their response to the AP, the government acknowledged that the effectiveness of flossing had never been sufficiently researched. The flossing recommendations were consequently excluded from the 2015-2020 dietary guidelines. However, the same applies to the advice to drink fluoridated water and brush one’s teeth, which were both removed from the latest guidelines—yet nobody has concluded from this that toothbrushing is a negligible part of oral hygiene.

To be objective, existing research about the effects of flossing is weak, of low quality or has a moderate to large potential for bias having been conducted mainly on behalf of companies that manufacture floss. Several review studies have found. As one of the many dental professionals commenting on this fact, Dr Wayne Aldredge, President of the American Academy of Periodontology, acknowledged the weak scientific evidence and the brief duration of many studies. However, he still urged his patients to continue to floss in order to help avoid periodontal disease. “It’s like building a house and not painting two sides of it,” he explained in an interview. “Ultimately those two sides are going to rot away quicker.”

Just like Aldredge, dentists and dental associations around the globe have issued statements—for the most part vigorously defending flossing as an effective way to help remove plaque and food build-up between the teeth and thereby lower the risk of developing gingivitis, periodontitis and tooth decay. For example, the American Dental Association (ADA) stated that “a lack of strong evidence doesn’t equate to a lack of effectiveness”. Moreover, the ADA stressed that the Department of Health and Human Services reaffirmed the importance of flossing in a statement to the ADA on 4 August, stating that “professional cleaning, tooth brushing, and cleaning between teeth (flossing and the use of other tools such as interdental brushes) have been shown to disrupt and remove plaque”.

The German Dental Association stated that flossing remains an important means of cleaning interdental spaces, especially the narrow spaces of the anterior teeth. According to the organisation, current studies have neither demonstrated nor disproved the effectiveness of flossing. Nevertheless, patients should not conclude that less thorough dental care is advised.

Dr Øyvind Asmyhr, head of the Norwegian Dental Association, acknowledged in his statement: “There is much we do in medicine and dentistry that is not evidence-based, but that does not mean it does not work. All sense and clinical experience suggests that daily brushing combined with flossing helps to reduce the amount of biofilm (bacteria coating) on all tooth surfaces, which prevents the development of caries, gum problems and bad breath.” Moreover, Asmyhr remarked that until research conducted over longer periods proves the contrary, the dental association will continue to recommend flossing and sees no reason for people to change their oral health routine.

Commenting on the debate as well, the British Society of Periodontology backed the evidence supports the use of small interdental brushes for cleaning between the teeth, where there is space to do so, in preference to flossing. In addition, the organisation referred to the official recommendation to patients agreed on during the 1st European Workshop in Periodontology on the prevention of periodontal disease in 2015. “Daily cleaning between your teeth using special interdental brushes is essential for treating and preventing gum disease. Floss is of little value unless the spaces between your teeth are too tight for the interdental brushes to fit without hurting or causing harm.”

Taking all these opinions into account, what is it that patients and dentists can take away from the current discussion? Regardless of different study designs, inconclusive results or media sensationalism that picked up on only a tiny part of the underlying facts, there are at least two statements regarding flossing that can be acknowledged universally: First, flossing can cause harm if performed incorrectly. For example, careless flossing can damage the gingivae, teeth and dental work. Moreover, there is evidence that floss can dislodge bacteria that may invade the bloodstream and cause dangerous infections, which is especially of concern in people with a weak immune system. Second, common sense suggests that common oral problems such as caries and inflammation in the interdental spaces can be avoided solely by removing debris between the teeth, which makes flossing beneficial for one’s oral health regardless.

Maybe the entire debate is best summarised with the words of Dr Tim Iafolla from the US National Institutes of Health, who said that, if the highest standards of science were applied in keeping with the flossing reviews of the past decade, then it would be appropriate to drop the flossing guidelines. However, he continued: “It’s low risk, low cost. We know there’s a possibility that it works, so we feel comfortable telling people to go ahead and do it.”
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Manager versus clinician

How to manage expectations of the management role and turn it into success

By Lina Craven, UK

Practitioners’ expectations of the kind of manager they want for their practice vary considerably in terms of experience and skills. How guilty are you of promoting a nurse or receptionist to a management role without determining the skills gap and providing the necessary training? It is a common scenario in our industry.

Practitioners have a responsibility to their teams and to the financial success of their practices to appoint someone who either has the necessary skills or has the capacity to learn them in the appropriate time frame. How realistic are your expectations and how can you ensure your management role results in success?

Creating and managing realistic expectations

Expectations are difficult to control and impossible to turn off. According to Brazos Consulting, ‘Expectations are deeper and broader than ‘requirements’. Expectation is your vision of a future state or action, usually unstated but which is critical to your success.’ By learning to identify and influence what you expect, and by ensuring it is clearly communicated, understood and agreed with your manager, you can dramatically improve the quality, impact and effectiveness of your business.

Expectations are created by many different circumstances. It may be something you said or the way that you said it, something you or someone else did, or an expectation of your prospective manager based on his or her previous experience. The vital point here is that expectations, whether right or wrong, rational or otherwise, are not developed in a vacuum. You should consider instances when you were let down by your manager and ask yourself how that expectation was derived. Was it based on an agreement with your manager after a discussion or was it based on something you said or thought in passing? In retrospect, you may wonder how realistic that expectation was and why you thought your manager was in the strongest possible position to fulfil it.

In my experience, the following scenarios are typical of how unrealistic expectations are created:

• The practitioner is busy and needs someone to take charge. He or she chooses the “best of the bunch”, hoping he or she will learn on the job.
• The new manager has his or her expectations of the job and these are often unrealistic.
• No detailed job description or objectives are ever provided. No on-the-job or any other type of training is provided; the practitioner simply assumes the manager will learn as he or she goes along.

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Both practitioner and manager are reticent to discuss what is not working and often brush the issues under the carpet until it is too late.

Resentment grows and what is at stake—the patients, the practice and the staff—outweighs the actual issue, which is poorly managed expectations.

One of my aims is to facilitate management teams to assess where they are at present, to plan for appropriate change and to implement that change. The outcome is that a weight is lifted from your shoulders and focus moves to a united partnership working towards the success of the practice. In order to move forward, however, you must recognise where you are now.

**Drive your success**

Expectations always exist, even if we do not know what they are and despite them often being unrealistic. Managers have expectations of their roles and their employers have expectations of the person given responsibility for managing the practice. The problem is that mismatched expectations can lead to misunderstanding, frayed nerves and ruffled feathers. More seriously, they often lead to flawed systems, failed projects and a drain on resources.

There is nothing wrong with having expectations; the trick is to communicate them and to agree how they might be satisfied over time and with the right support. Managed expectations drive your success.

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The manager is excited about the new position. For some, the empowerment, the title and the kudos mean a great deal; for others, the challenge and the task at hand mean more. When reality hits, so does the realization that the original motivating factors are no longer as important.

Both practitioner and manager are reticent to discuss what is not working and often brush the issues under the carpet until it is too late.

Resentment grows and what is at stake—the patients, the practice and the staff—outweighs the actual issue, which is poorly managed expectations.

Of course, there are many practices managed by very capable staff members. However, for all the well-functioning practitioner–manager relationships, there are more people in these roles who prefer not to talk about the problems inherent within and who are only too glad for someone else to address the issues.

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**An alternative approach**

The first step towards achieving a successful management partnership is to honestly appraise your current situation. If anything I have said so far has touched a nerve, it is that you need to discuss the problems inherent within and who are only too glad for someone else to address the issues.

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Long-term documentation of an 11-year old restoration

A case of complex aesthetic and functional rehabilitation using glass-ceramic materials

By Prof. Daniel Edelhoff and Oliver Brix, Germany

Resin-bonded single-tooth glass-ceramic restorations such as veneers and onlays have been routinely used for many years in dentistry. Nonetheless, their use for complex rehabilitations such as in patients with generalised hard-tissue defects, for example, is still much debated. These concerns are increasingly being resolved in view of the beneficial preliminary results reported in controlled clinical studies and the experiences gained in specialist practices.

It is essential for the long-term and reliable application of this method to accurately coordinate the stages between the dentist and technician and allow the patient to be actively involved. These stages consist of a careful treatment planning process, including a study wax-up/mock-up (aesthetic evaluation), an adequate pretreatment phase, including a functional evaluation, selection of the correct materials, combined with a preparation and placement technique appropriate for the materials selected, and implementation of an adequate occlusal design. This case report first describes the use of glass-ceramic restorations for the complex rehabilitation of a patient with extensive loss of tooth structure and then evaluates the restorations after they have been in situ for more than 11 years.

Clinical situation and treatment

A 40-year-old female presented at the practice requesting restoration of her dentition, which was severely worn. She said that she had become aware of an untoward change in her anterior teeth and in the fullness of her lips, particularly evident in photographs of herself.

The clinical findings and dental history showed large and, at times, extensive destruction of her tooth structure, as well as extensive changes in the proportions of her teeth. These changes were primarily caused by abrasive processes and had resulted in a reduction of the vertical dimension of occlusion (VDO).

When we recorded her dental history, she told us that she had become aware of an untoward change in her anterior teeth and in the fullness of her lips, particularly evident in photographs of herself.

A functional analysis of the dentition did not reveal anything unusual. However, the loss of canine guidance and the emergence of anterior and posterior group guidance were conspicuous (Figs. 2a & b). The particular challenges we had to overcome in her case were the high complexity of the rehabilitation, the patient’s request for a prompt and minimally invasive improvement of her situation, the need for creating an appropriate tooth morphology and therefore for reconstructing the VDO, as well as the permanent placement of the restorations on damaged tooth structure.

Fig. 1: Pre-op situation shows a severely affected aesthetic appearance owing to a loss of the VDO and the formation of a reverse smile line resulting from an extensive loss of tooth structure.—Fig. 2a: Lateral view from the left during dynamic occlusion: traumatic contacts during functional movements had led to extensive loss of enamel and exposure of dentine.—Fig. 2b: Lateral view from the right during dynamic occlusion: loss of canine guidance and severe destruction of maxillary and mandibular anterior teeth.—Fig. 3a: Frontal view at protrusion: traumatic contacts had led to substantial changes in the morphology of the teeth.—Fig. 3b: Frontal view at protrusion after the restoration: the function and aesthetics of the dental morphology had been restored.—Fig. 4: Onlays made of leucite-reinforced glass-ceramic (IPS Empress Esthetic). The minimum layer thickness of the occlusal surface was 1.5 mm.

Fig. 5: Adhesive placement of the restorations in the mandible using the total-etch technique and rubber dam isolation.—Fig. 6a: Onlays on teeth #14–17 after adhesive cementation 2004 (cf. Fig. 4).—Fig. 6b: Onlays on teeth #14–17. The photographs were taken in the summer of 2015 after having been in situ for 11 years (cf. Fig. 6a).—Fig. 7a: Pre-op situation: mandibular anterior teeth showing substantial changes in proportion and exposure of dentine owing to a reduction in VDO.—Fig. 7b: Layered veneers (IPS d.SIGN) in the mandibular anterior region after adhesive cementation.—Fig. 7c: Layered veneers in 2015. A severe wear facet had formed on tooth #43 over the course of the 11 years since the veneers were placed (cf. Fig. 8b).
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Fillings were placed on the teeth, some of which were severely damaged, with the help of an adhesive composite system (Syntac and Tetric EvoCeram, both Ivoclar Vivadent) prior to planning of the permanent restoration. This way, we were able to better assess the severity of the destruction and obtain a better idea of where the potential preparation margins would be located. In order to achieve an aesthetic and functional rehabilitation, we had to create an adequate tooth morphology on the basis of a suitable width–length relationship of the teeth, establish an anterior canine-protected dynamic occlusion and rebuild the VDO.

The destructive processes to which the damaged teeth had been exposed had to be stopped and a stable occlusion had to be created. The patient wanted a long-lasting rehabilitation based on a minimally invasive procedure and tooth-coloured restorations. The final restoration would include adhesively bonded glass-ceramic veneers and onlays. Glass-ceramic crowns would be used for those teeth that were severely damaged (teeth #13–23).

In view of the fact that these extensive aesthetic and functional modifications had to be combined with a re-adjustment of the VDO, the clinical team decided on the following treatment plan:
1. Fabrication of a study wax-up to assist in the creation of an adequate aesthetic and functional tooth morphology
2. Intra-oral evaluation of the wax-up (mock-up) by the patient with the help of a diagnostic matrix
3. Transfer of the increase in the VDO as determined with the wax-up to a stabilisation splint for functional evaluation
4. Tooth preparation guided by the diagnostic matrices and reciprocal determination of the maxillomandibular relationship with a split stabilisation splint
5. Trial of the direct temporaries on the basis of the outer contours established in the wax-up
6. Impression taking and prompt fabrication of the permanent glass-ceramic restorations in the laboratory
7. Try-in and permanent adhesive placement of the glass-ceramic restorations.

Clinical implementation and long-term evaluation
Crowns made of lithium disilicate ceramic in the layering technique (IPS e.max Press and IPS e.max Ceram, both Ivoclar Vivadent) were used for the maxillary anterior region, which showed a high degree of tooth destruction (large composite fillings, Figs. 3a).

In the mandibular anterior region, glass-ceramic veneers layered on refractory dies (IPS d.SIGN, Ivoclar Vivadent) were placed (Fig. 3b). Full-contour onlays pressed from leucite-reinforced glass-ceramic material, similar to the other veneers, this area was in direct contact with the lithium disilicate crowns on the maxillary anterior antagonists during dynamic occlusion.

Conclusion
Given the enamel-like properties of the glass-ceramic material, the minimally invasive methods used for this case provided a long-lasting approach to restoring the function, aesthetics and biomechanics of the dentition while minimising the damage to the biological structures...

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Conclusion
Given the enamel-like properties of the glass-ceramic material, the minimally invasive methods used for this case provided a long-lasting approach to restoring the function, aesthetics and biomechanics of the dentition while minimising the damage to the biological structures (Figs. 8a–f).

Cementation was achieved with a multicomponent adhesive system in conjunction with the total-etch technique (Syntac) and a dual-curing, low-viscosity luting composite, using rubber dam isolation where possible (Fig. 4).

At a follow-up examination conducted more than 11 years after the restorations had been placed, it was found that the 15 posterior onlays showed no damage (Figs. 6a & b). However, we had noticed a cracking on the glass-ceramic onlay of tooth #14 after more than six years of clinical performance. For this reason, the onlay had subsequently been replaced. Close inspection of the mandibular anterior veneers revealed a severe wear facet on veneer #13 (Figs. 7a–c).

IPS e.max Press and and customised using the staining technique were placed in the posterior region (IPS Empress Esthetic, Ivoclar Vivadent). The onlays exhibited a minimum occlusal thickness of 1.5 mm (Fig. 4).

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Beneficial clinical long-term results have been described and confirmed in several studies. Parafunctions, endodontically treated teeth and an adequate amount of enamel, among other factors, have been flagged as risk factors influencing the success of these restorations. Against such a background, the additive wax-up technique used in this case proved to be beneficial.

Combined with a diagnostic matrix, this technique allows for a conservative approach to tooth preparation and helps to preserve the remaining enamel during preparation. In addition, an in vitro investigation has shown encouraging data regarding the stress distribution in ceramic onlay restorations. It is, however, important to note that preparations should have soft and rounded transitions to prevent stress peaks from occurring.

In recent years, we have mainly used glass-ceramic onlays based on lithium disilicate in conjunction with the staining technique. Given its increased strength, this material allows the minimum thickness to be reduced by one-third to just over 1 mm, further increasing the amount of tooth structure that can be preserved during preparation.

Owing to their extremely high strength and optimal marginal integrity, glass-ceramic onlays appear to be ideally suited for restoring the function, aesthetics and biomechanical properties of abraded and eroded posterior teeth. They offer an opportunity to circumvent traditional prosthetic measures that are more invasive and involve higher biological costs.

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Taiwan: 098.2.2196.8855
A 47-year-old female patient presented to our clinic with a radiograph that showed an extensive iatrogenic perforation of the furcation area at tooth #36 (Figs. 1 & 2) that was associated with radiographic bone loss, a vestibular fistula and pain on palpation. The patient had previously received urgent intervention concerning this tooth by another clinician owing to acute pain from pulpitis. The case was subsequently recommended for endodontic therapy.

After an initial discussion with the patient, anaesthetic was administered and the tooth was isolated. After creating a coronal access, we clinically verified the presence of pulp necrosis and perforation. The root canal was disinfected (crown-down) with an irrigation agent (5% NaOCl) and ultrasonic activation using straight tips (Erisonic, Helse). The working length was then determined with the help of a foramen locator. The final preparation of the canal was performed with the RECIPROC system (VDW).

The prepared area was cleaned and refined with an ultrasonic diamond tip (EFD, Helse). In addition to the intra-canal disinfection process, calcium hydroxide (Ultradent) placed in the furcation area was exchanged every two weeks, during which time the symptoms were alleviated.

The obturation was performed according to the thermomechanical Tagger hybrid technique (Fig. 3) using the GuttaConsensor (Maillefer), TP gutta-percha cones (DENTSPLY) and the MTA-based sealer MTA-Vilappe (Angelus). After the thermomechanical compaction, the gutta-percha was cut and vertical condensation was performed using a cold plugger. The area of the perforation was then cleaned and refilled with calcium hydroxide.

After 15 days, we began to seal the prepared area and initially verified that the area had dried properly. The prepared area was filled with MTA Repair HP according to the manufacturer’s instructions, applied with the MTA Applicator (both Angelus). Clinical and radiographic criteria were used to determine correct filling with the material (Figs. 4 & 5), and a glass ionomer cement (3M) was applied to seal and protect the area (Fig. 6).

After temporary restoration, we observed the tooth radiographically and found proper sealing of the furcation area with MTA Repair HP. No postoperative complications were reported.

At the two-month follow-up visit, bone formation in the furcation area was detected. No further symptoms were reported (Fig. 7).

Dr Fábio Duarte da Costa Aznar is a specialist in endodontics at the Hospital for Rehabilitation of Craniofacial Anomalies at the University of São Paulo in São Paulo in Brazil. He can be contacted at fabio@aznar.com.br.
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Peri-implantitis treatment with the Picasso diode laser

A five-year case follow-up

Drs Gregori M. Kurtzman, Markus Weitz, Ron Kaminer and Daniel D. Gober, US

The prevalence of peri-implant complications is significantly rising clinically as implant treatment increases in the US. Peri-implantitis is a frequent enough occurrence in the dental practice that treatment needs to be accomplished to prevent loss of the implant. As with periodontitis associated with natural teeth, periodontal disease can affect implants. This can range from gingival inflammation in the absence of bone loss to significant bone loss when the disease process is not identified early in the process or a wait and see attitude is taken that leads to significant bone loss and then mobility of the fixture.

Treatment has traditionally involved elevating a flap at the site and mechanical debridement with surgical hand instruments to remove any granulation tissue present on the implant threads. Owing to the limitations of the surgical tools, this might require removal of additional bone to attempt to reach areas not visible. Success depends on debriding and sterilizing all exposed threads, with success diminishing as more surface area is left untreated.

Owing to the small diameter of their flexible glass fibres, diode lasers offer several benefits for peri-implantitis treatment. This includes easier access to areas with limited access without the need to remove as much bone as may be required when only surgical instruments are utilised. Furthermore, the diode laser has the ability to stabilise the implant’s contaminated surface, eliminating any bacteria that caused the disease to prevent their hampering healing after treatment. An added benefit is biostimulation of the periodontal stem cells in the surrounding bone and soft tissue. This is important for regenerative therapy to enhance engineering to provide better healing. Thus, the diode laser is a good adjunct in the treatment of peri-implantitis, improving the clinical results observed with conventional methods.1

Case presentation

A 64-year-old male patient presented in June 2010 with a fistula draining on the bucal aspect of the maxillary right canine. The fistula pointed distal to the canine midline in close proximity to the gingival margin (Fig. 1). A gutta-percha cone was inserted into the fistula to trace the origination of the clinical issue identified and the options available, which included removal of the ailing implant and grafting the site. After the integration of the graft, a new implant could be placed and then restored after an appropriate healing period. The other option would be elevating a flap in the area, cleaning out any granulation tissue and treating the site with a diode laser and graft to re-place any lost bone. The patient was also informed that, should the diode laser is a good adjunct in the treatment of peri-implantitis, improving the clinical results observed with conventional methods.2

The patient was informed of the options available, which included removal of the ailing implant and grafting the site. After the integration of the graft, a new implant could be placed and then restored after an appropriate healing period. The other option would be elevating a flap in the area, cleaning out any granulation tissue and treating the site with a diode laser and graft to re-place any lost bone. The patient was also informed that, should the diode laser is a good adjunct in the treatment of peri-implantitis, improving the clinical results observed with conventional methods.2

The latter option be selected, the site would need to be evaluated once entered and there was the possibility that the implant would need to be explanted should it be found to demonstrate mobility after the area had been debrided. The patient chose to attempt peri-implantitis repair and the necessary consent forms were signed. An antibiotic (2 g amoxicillin) was administered orally 1 hour prior to the initiation of treatment. A local anesthetic (Septo-caine with epinephrine 1:100,000, Septodont) was administered for local infiltration at the bucal and palatal aspects of the treated area. A horizontal incision was made from the distal aspect of the first premolar to the mesial aspect of the lateral incisor several millimetres apical to the gingival margin in order to limit potential postoperative recession. A vertical releasing incision was made at the mesial and distal extents of the horizontal incision and a full-thickness flap was elevated. Upon flap reflection, it was observed that a large de-hiscence was present on implant #13, from the crest to several millimetres past the apex of the implant. Additionally, some de-hiscence was noted on the buccal aspect of implant #14, with the peri-implantitis, leaving clean threads.

After debridement and sterilisation, bleeding points in the osseous walls were created. Geistlich Bio-Oss (Geistlich Pharma North America), a biocompatible porous bovine bone mineral substitute, was packed into the defect around the implant and allowed to absorb blood from the surrounding tissue to form a coagulated mass. The osseous graft was built out buccally to create a new buccal plate covering the entire implant below the crestal level (Fig. 4). A piece of OSSEX PLUS (OraPharma), a resorbable membrane, was trimmed to overlay the osseous graft and end on native bone and was placed over the graft under the flap. The flap was repositioned and secured with nine interrupted sutures using 5-0 silk to achieve primary closure.

A radiograph was taken to document the bone fill of the osseous graft (Fig. 5). Haemostasis was confirmed and the patient dismissed. A prescription was given for a Z-Pak (ZITHROMAX, Pfizer) with the instructions to use as directed until finished, as well as for Doxylate 500 mg (Merck) to be taken b.i.d. for pain for the initial three days postoperatively. The patient returned after one week for suture removal and indicated that no significant postoperative discomfort had been felt. The site appeared to be healing normally and he was scheduled for a follow up to check healing.

At the next postoperative visit, the site appeared healed with a lack of inflammation and the patient was placed on periodontal recall, alternating with visits to his general dentist. At a five-year postoperative visit, a CBCT scan was taken to evaluate the long-term status of the repaired area. The cross-sectional slice at the right maxillary
canine demonstrated that the grafted buccal plate had remained in position, completely covering the implant. No signs of further infection were visible (Figs. 6a & b).

Discussion

Peri-implantitis can be a challenge to manage. As this case illustrates, bone loss may have been progressing for an extended period before the clinician becomes aware of it. In order to achieve any success, treatment requires a surgical approach to remove any granulation tissue that has replaced bone overlying the implant. The benefit of the Picasso diode laser is that the fibre can be extended into areas around the implant that are difficult to reach in order to achieve better sterilisation and debridement without the need to remove additional bone for access, as would be necessary were only debridement with surgical hand instruments performed. The diode tip ensures better removal of the granulation tissue and site sterilisation to increase treatment success.

Conventional methods have reported mixed results regarding the ability to remove all of the granulation tissue from the exposed implant threads without altering the implant surface. The diode laser has been reported not to cause any visible surface alterations of either polished or coated implant surfaces. In contrast, surface alterations have been reported when irradiated with the pulsed Er:YAG laser.16

Scanning electron microscopy analysis has demonstrated no damage or alteration of titanium surfaces when in contact with a diode laser, regardless of the power setting. No visible difference between laser and non-lased titanium surfaces after irradiation has been reported. The result yields the best surface for guided tissue regeneration compared with either mechanical debridement, which can alter the surface by gouging the titanium or coating, or use of an Er:YAG laser.

Success in peri-implantitis treatment is strongly linked to the ability to eliminate the bacteria in the site that could hamper regeneration. This becomes more critical with implants that have been surface treated during manufacture to provide a better surface for integration. These manufacturer-treated implant surfaces yield a micro-roughness that bone responds well to during the initial integration, but that will harbour bacteria when peri-implantitis has occurred. Their removal in these micro-irregularities is difficult to achieve by mechanical means. The diode laser has the ability to decontaminate the exposed surface and threads without any negative effects.

Once the site has been prepared, with the granulation tissue removed and all exposed surfaces decontaminated, osseous grafting is required to ensure the best healing long term. Without placement of osseous graft material to fill the osseous defects that resulted from the peri-implantitis, the site will most likely not achieve bone fill via organisation of a host clot in the void. Membranes too are recommended to allow the body to organise the osseous graft material before soft-tissue ingrowth can occur from the overlying flap, as soft tissue grows and heals at a much faster rate than hard tissue does. The membrane gives the hard tissue an advantage to overcome the soft tissue’s potential to invade the early osseous graft material. Placement of osseous graft material and barrier membranes has resulted in greater probing depth reduction and radiographic bone fill when either material is not used.14

The authors recommend avoiding probing these sites during the healing phase and thereafter because of the arrangement of connective tissue fibres found around implants. Implants, when viewed via a scanning electronic microscope, have the fibres in the gingival aspect where it connects with the implant surface running parallel to the long axis of the implant. This does not provide a physical barrier to the probe, allowing it to push bacteria deeper into the tissue, which may lead to inflammatory changes in the tissue. The fibre orientation around natural teeth is perpendicular to the tooth’s long axis, providing a physical barrier to the probe.

Conclusion

The key to successful peri-implantitis treatment is early identification to limit bone loss due to the inflammation and infection. The diode laser is a powerful adjunct in treating peri-implantitis, allowing better access to eliminate more granulation tissue than when only mechanical means are employed. It also provides the additional benefits of sterilisation of the area and bio-stimulation of the bone and soft tissue to improve tissue regeneration. This case illustrated that the protocol presented can provide long-term predictable results, showing five-year maintenance of the grafted area and an absence of inflammation over that time.

Acknowledgement

The case was treated by Dr Markus Weitz.

Editorial note: A list of references is available from the publisher.
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