First dental vaccine may help combating chronic periodontitis soon

By DTI

MELBOURNE, Australia: After researching the development of a vaccine for chronic periodontitis for the past 15 years, a team of scientists from the Oral Health CRC at the University of Melbourne has published their latest findings.

Trials could potentially begin on periodontitis patients in 2018. "Periodontitis is widespread and destructive. We hold high hopes for this vaccine to improve the quality of life of millions of people," said Prof. Eric Reynolds, CEO of the Oral Health CRC.

Currently, periodontitis is treated by manually removing toxic plaque that builds up between the tooth and the gingivae, which sometimes involves surgery and antibiotic regimes. Although these measures are helpful, in many cases the bacterium re-establishes itself in the dental plaque, which causes a microbiological imbalance, so the disease continues, Reynolds said.

Epidemiological surveys indicate that moderate to severe forms of periodontitis affect about one in three adults worldwide. Left untreated, the condition can result in the destruction of gingival tissue and ultimately in tooth loss.

Several studies have further linked the disease to an increased risk of various health conditions, including cardiovascular diseases, certain cancers, preterm birth and dementia. If implemented in clinical practise, an effective vaccine for chronic periodontitis could therefore help combat the global burden of these widespread diseases as well.

The results of the study were published in the NPJ Vaccines journal on 1 December in an article titled "A therapeutic Porphyromonas gingivalis gingipain vaccine induces neutralising IgG1 antibodies that protect against experimental periodontitis".

Flow cytometry is used to measure changing levels of oral bacteria. The results thus far show promising prospects that the vaccine may reduce the need for surgery and antibiotics for patients with severe periodontal disease. According to the researchers, clinical trials could potentially begin on periodontitis patients in 2018. "Periodontitis is widespread and destructive. We hold high hopes for this vaccine to improve the quality of life of millions of people," said Prof. Eric Reynolds, CEO of the Oral Health CRC.

Developed in collaboration with Australian biopharmaceutical company CSL, the vaccine targets enzymes produced by the bacterium Porphyromonas gingivalis, one of the main periodontal pathogens, triggering an immune response. According to the researchers, this response produces antibodies that neutralise the pathogen’s destructive toxins.

Current periodontitis is treated by manually removing toxic plaque that builds up between the tooth and the gingivae, which sometimes involves surgery and antibiotic regimes. Although these measures are helpful, in many cases the bacterium re-establishes itself in the dental plaque, which causes a microbiological imbalance, so the disease continues, Reynolds said.

Epidemiological surveys indicate that moderate to severe forms of periodontitis affect about one in three adults worldwide. Left untreated, the condition can result in the destruction of gingival tissue and ultimately in tooth loss.

Several studies have further linked the disease to an increased risk of various health conditions, including cardiovascular diseases, certain cancers, preterm birth and dementia. If implemented in clinical practise, an effective vaccine for chronic periodontitis could therefore help combat the global burden of these widespread diseases as well.

The results of the study were published in the NPJ Vaccines journal on 1 December in an article titled "A therapeutic Porphyromonas gingivalis gingipain vaccine induces neutralising IgG1 antibodies that protect against experimental periodontitis".
Barriers to cleft lip and palate surgery persist in Vietnam

By DTI

LOS ANGELES, USA: Charitable organisations perform more than 80 per cent of cleft lip and palate surgeries in Vietnam, a new study by US researchers has found. According to the scientists, this reflects the complex and persistent barriers to surgical care in low- to middle-income countries (LMICs) and shows that charitable missions remain a critical source of access to surgical care for these states.

Cleft lip and palate are the most common craniofacial birth defects, occurring in between one in 1000 to one in 2,500 infants worldwide. “The defect not only results in physical obstacles to feeding and language development, but patients are often subjected to significant social stigma,” the researchers stated.

They surveyed approximately 450 Vietnamese families seeking cleft lip and/or palate repair surgery for their affected child. Some of the children had already undergone surgery for their condition previously (34 per cent) and 46 per cent of them were seeking surgical care for the first time. The families were seen at four medical missions sponsored by the international charity Operation Smile. Parents were asked in-depth questions about their perceptions of the barriers to surgical and medical care for their child’s condition.

Facing structural, financial, and cultural barriers to cleft lip and palate surgery, patients in LMICs rely on charitable care outside the centralised health care system, the study reported. “As a result, surgical treatment of cleft lip and palate is delayed beyond the standard optimal window to more developed countries,” the researchers wrote. At the time of initial cleft surgery, the children’s average age was 3.25 years. By comparison, in developed countries, the recommended age for cleft lip and palate repair surgery is between 3 and 18 months of age.

Neatly three-quarters of the families had health insurance coverage. Nevertheless, 83 per cent had their surgery performed by a charitable organisation outside the national health care system. While most parents had a local hospital that was more accessible than the charitable mission was, many said that they could not obtain cleft treatment there, mainly owing to cost. About 40 per cent stated that, without the charitable mission, they would not have had access to any surgical or medical treatment for their child’s condition.

Improving access to surgical care has become a major global health priority, the researchers said. However, the current knowledge gap on providing surgery in resource-poor countries—especially for conditions that require multiple operations, such as cleft lip and palate—has only begun to be studied. Thus, even in countries with near-universal health care, patients are often subjected to significant social stigma…”

Barriers to cleft lip and palate surgery persist in Vietnam

The survey found a wide range of structural, financial and cultural barriers to cleft care. Structural barriers included lack of trained medical staff, equipment and medicine. Financial barriers were identified as not only the cost of the surgery, but also the cost of travel to obtain care. Cultural barriers included family members’ opinions and permission, as well as lack of trust in the medical system and staff.

According to the researchers, these barriers need to be better understood in order to design more effective programmes for both missions-based and locally sustainable surgical care in LMICs. On the basis of their findings, they proposed a new surgical LMIC model that accounts for the unique barriers and specific challenges to accessing surgery in resource-poor countries—for example, for conditions that require multiple operations, such as cleft lip and palate.

For their child affected by cleft lip and/or palate, more than 80 per cent of Vietnamese families surveyed in a study sought surgical care in a charitable mission—although 73 per cent of them had health insurance.
“Antibiotic resistance is a serious health issue”

By Brendan Day, DTI

The use of antibiotics is essential in modern medical treatments, yet frequent misuse has reduced their effectiveness. This year’s World Antibiotic Awareness Week (WAAW), held from 14 to 20 November, sought to increase public understanding of the issue. Dental Tribune spoke with Dr Paul Sambrook, Chairman of the Dental Therapeutics Committee of the Australian Dental Association (ADA), about WAAW’s purpose and what dental professionals can do to combat antimicrobial resistance.

Dental Tribune: What is the primary goal of WAAW?

Dr Paul Sambrook: The aim of WAAW is to increase awareness of global antibiotic resistance and to encourage best practices among the general public, prescribers and policymakers to avoid the further emergence and spread of antibiotic resistance.

How widespread of a problem is misuse or overuse of antibiotics in Australia?

Dentists prescribe less than 3 per cent of all antibiotics prescribed in Australia. However, information from NPS MedicineWise states that Australia has one of the highest prescription rates globally, with around 29 million prescriptions issued each year—more than one per person on average.

Antibiotic resistance is a serious health issue already present in our community. Without antibiotics, infections that were once easily treated may once again kill.

If we do not address antibiotic resistance, by 2050 up to ten million people may die every year from untreatable infections.

How did the ADA encourage involvement during WAAW?

The continuing theme of “Antibiotics: Handle with care” for this year’s WAAW is highly relevant for dentistry. People with dental problems sometimes think that popping a painkiller or seeing their doctor for antibiotics is the best response rather than having a proper examination by their dentist.

The ADA has been doing its part to address the problem of antibiotic resistance by advising members through informational articles in its regular publications and website. ADA members have access to a highly experienced clinical pharmacist, Dr Geraldine Moses, from whom they can seek expert advice on prescribing. We also provide members with a copy of the dental and oral therapeutic guidelines, which provide reliable and independent therapeutic information to assist in making the best decisions for patients in a dental setting.

How can dental professionals help minimise the risk of increasing antimicrobial resistance?

The first response to dental problems must always be accurate assessment by a dentist who can deal with the cause, not just the symptoms. That is our message to patients.

We urge dental professionals to use the opportunity to educate their patients about how to address dental problems they have pre- and post-treatment and where antibiotics do or do not fit in their particular case.

To ensure that dental professionals are prescribing antibiotics in line with best practice, ADA members can use services such as PharmaAdvice and the aforementioned therapeutic guidelines.

Thank you very much for the interview.
Foreign studies show e-cigarettes harmful to oral health

By DTI

ROCHESTER, USA/QUEBEC CITY, Canada: In the Western world, electronic cigarettes continue to grow in popularity among young adults and current and former smokers because they are often perceived as a healthier alternative to conventional cigarettes. However, two recent studies conducted by scientists in the US and Canada have found that regular exposure to e-cigarette vapours causes damage to the gingival tissue, which may lead to infection, inflammation and periodontal disease.

Both studies investigated the effect of e-cigarettes on oral health on cellular and molecular levels through in vitro experiments. The team of Prof. Mahmoud Rouabhia from the Faculty of Dentistry at Université Laval in Quebec City exposed gingival epithelial cells to e-cigarette vapour, finding that a large number of these cells died within a few days. “Mouth epithelium is the body’s first line of defence against microbial infection,” Rouabhia explained. “This epithelium protects us against several microorganisms living in our mouths.”

To simulate what happens in a person’s mouth while inhaling, the Canadian researchers placed human epithelial cells into a small chamber containing a saliva-like liquid. E-cigarette vapor was pumped into the chamber at a rate of two 5-second “inhalations” per minute for 15 minutes a day. Observations under the microscope showed that the percentage of dead or dying cells, which is about 2 per cent in unexposed cell cultures, rose to 18, 40 and 53 per cent after one, two and three days of exposure to e-cigarette vapour, respectively.

“Contrary to what one might think, e-cigarette vapour isn’t just water,” Rouabhia stated. “Although it doesn’t contain tar compounds like regular cigarette smoke, it exposes mouth tissues and the respiratory tract to compounds produced by heating the vegetable glycerine, propylene glycol, and nicotine aromas in e-cigarette liquid.”

The cumulative effects of this cell damage have not yet been documented, but they are worrying, according to Rouabhia. “Damage to the defensive barrier in the mouth can increase the risk of infection, inflammation, and gum disease. Over the longer term, it may also increase the risk of cancer. This is what we will be investigating in the future,” he concluded.

Researchers at the University of Rochester Medical Center in the US came to similar conclusions. Dr Irfan Rahman, Professor of Environmental Medicine at the university’s School of Medicine and Dentistry, and his colleagues exposed cell cultures of human gingival epithelial cells and periodontal ligament fibroblasts to e-cigarette vapours. “We showed that when the vapours from an e-cigarette are burned, it causes cells to release inflammatory proteins, which in turn aggravate stress within cells, resulting in damage that could lead to various oral diseases,” he explained.

Most e-cigarettes feature a battery, a heating device and a cartridge to hold liquid, which typically contains nicotine, flavourings and other chemicals. The US researchers found that the flavouring chemicals negatively affect gingival cells too. “We learned that the flavourings—some more than others—made the damage to the cells even worse,” said study author Fawad Javed, a postdoctoral resident at Eastman Institute for Oral Health, part of the university’s medical centre.
W&H and Planmeca approach the Indian market together

By DTI

BANGALORE, India: European dental manufacturers W&H Dentalwerk and Planmeca have joined forces on the dental market in India. Comprising a shared office centre in Bangalore and a specialised customer service network, the collaboration between the two companies is aimed at exploiting synergies in offering a comprehensive and unique product portfolio to dental professionals in the country.

According to the companies, Bangalore was chosen in order to create a strong base for sustainable growth in the high-potential Indian market. Equipped with a state-of-the-art showroom and facilities for local customer support and service, the office centre, which began operating in November, will be an important contact point for Indian customers.

"With the local presence of our sales and service team we can establish a direct link to the Indian customers. This is an important basis to build up a good reputation and create confidence of our Indian users with the W&H and Planmeca products we sell," said Raghavan Radhakrishnan, General Manager of W&H India and Planmeca India.

In addition to the institutional sector, particular focus will be directed towards the private sector, as the demand for innovative, high-tech solutions for efficient patient care is currently growing in India. "This is a terrific new dawn for Planmeca in India," commented Planmeca Vice President of Sales Isokko Nykänen. "We are extremely excited about the country's growing dental market and will utilise this new kind of grassroots partnership and partner support model to provide increasingly better customer experiences in India," he added.

Commenting on the cooperation, W&H Managing Director Peter Malata remarked: "The collaboration with Planmeca, also a family-run enterprise with advanced technology, allows for synergies of two strong brands. The purpose of establishing a subsidiary in India is to be able to learn first hand the needs of dentistry in India. The sharing of office space and infrastructure by Planmeca and W&H will allow us to offer perfect solutions for dental clinics in India. This is what we strive for."

GC celebrates 95th anniversary at fourth International Dental Symposium

By DTI

TOKYO, Japan: On 12 and 13 November, Japanese dental manufacturer GC Corporation hosted the fourth International Dental Symposium in Tokyo to commemorate the 95th anniversary of the company’s establishment and the 60th anniversary of the GC Membership Society. The two-day event, which included scientific sessions for dentists, dental technicians and dental hygienists, as well as hands-on courses, was attended by 6,951 participants.

Held under the theme “Advanced technology and knowledge will change the dental practice—Dentistry that supports and improves people’s lives”, the symposium comprised 23 sessions, which were presented by 85 prominent researchers and clinicians from various fields of dentistry. The scientific programme was complemented by four international sessions with lectures by 14 distinguished speakers, including Dr Javier Tapia Guadix (Spain), Dr Gianfranco Politano (Italy), Dr David Garcia Baeza (Spain), Dr Sreenivas Koka (US), Prof. Bart Van Meerbeek (Belgium) and Prof. Mark A. Latta (US).

At the opening ceremony, FDI World Dental Federation President Dr Patrick Hescot, Prof. Jukka World Dental Federation President Mark A. Latta (US), Prof. Jukka Heft delivered congratulatory speeches.

In conjunction with the scientific programme, a dental show was held on an underground level of the Tokyo International Forum. Featuring product experience booths and various seminars, the show was crowded with visitors throughout the weekend.

At the event, the company presented the GC Membership Society’s fourth International Dental Symposium Lab Work Award, a contest for dental technicians.

Next year, GC will once again celebrate both anniversaries with the MI World Symposium, which is to be held in Tokyo at the JP Tower Hall and Conference centre on 5 February 2017. The focus of the event will be future applications of MI Paste Plus, the company’s water-based, sugar-free dental topical crème containing RECALDENT and fluoride, in clinical dentistry.

---

**PROMEDICA**

Highest quality made in Germany

- Light-curing micro-hybrid composite
  - applicable for various indications and all cavity classes
  - high translucency and a perfect colour adaption
  - Polishable to a high gloss
  - excellent physical properties for durable fillings
  - high filler content
  - packable consistency (also available as Composan LCM flow)
Despite advances in good oral health care, many patients and dental professionals remain uncertain about oral physiopathology and the concept of disruption of interdental biofilm. Although patients may have bought more oral care products and become more interested in their dental hygiene, many still do not know how to use them correctly. A previous article published in Dental Tribune Asia-Pacific in 2016 introduced to the outstanding research done by Prof. Denis Bourgeois, Dean of the University of Lyon’s dental faculty in France. In his presentation at the FDI Annual World Dental Congress in Poznan in Poland, he presented scientific evidence that interdental brushes, in particular CURAPROX CPS interdental brushes, are efficient tools to interrupt the interdental biofilm. However, questions remain about the level of individual training that the dental staff should provide for their patients.

Naturally, dental professionals agree that, despite clinical evidence that supports the importance of interdental biofilm management, effective daily cleaning of interdental spaces remains a challenge among their patients. Removal of interproximal plaque is considered important for the maintenance of gingival health, prevention of periodontal diseases and the reduction of caries, as well as the prevention of systemic diseases. However, dentistry still argues whether today’s interdental cleaning tools are sufficient to interrupt biofilm developed or trauma. An interdental brush that is sized correctly for each interdental space is easy to handle andatraumatic, yet effective.

Individual instruction important for good interdental health

One major problem with interdental cleaning has always been patient ability and motivation. “Interdental cleaning does not readily become an established part of daily oral hygiene,” said Bourgeois throughout his presentation. Damaged and regular cleaning can reduce the risk of bleeding and oral bacteria,” said Bourgeois. “From a clinical point of view, the oral prophylactic goal of achieving thorough cleaning with minimal damage, due to the misuse of interdental brushes, is important. It is necessary to emphasize individual instruction and selection of oral hygiene means with a view to attaining a high level of cleanliness with little or no harm to either soft or hard tissue.”

Oral prophylaxis should therefore be taught individually and not in lectures. By correcting and repeating the right cleaning technique, prevention of oral and systemic disease can be achieved. Currently, Bourgeois offers prophylaxis training courses for dental students. In these, they are taught the correct use of oral hygiene tools such as interdental brushes, cleaning techniques, and the importance of motivation and repetition. As observed by the course presenter, 95 per cent of the dental students continue to use interdental brushes after two years of completing the training. “In interdental cleaning needs to become an established part of daily oral hygiene for the reduction of interproximal plaque, the control of gingivitis and improvement of patient motivation. If you use a toothbrush twice a day, you have to use interdental brushes once a day. If not, you will risk your health,” Bourgeois said.

A probe as key to successful interdental cleaning

As an effective and predictable tool to objectively measure the size of the interdental spaces, interdental probes are now increasingly used by some dental hygienists to help choose the right access diameter defined by the thickness of the wire core. Bourgeois et al. titled “A colorimetric interdental probe as a standard method to evaluate interdental efficiency of interdental brushes,” emphasised the need for choosing the right diameter so that the interdental brush can easily fit the interdental space. Apart from the individual anatomy, interproximal spaces can change with age, periodontal health or dental treatment. While under-sizing of the interdental brush will affect its efficiency, oversizing might influence acceptability, comfort and could cause gingival trauma.

Essentially, Bourgeois and his colleagues suggested that the use of a colorimetric probe and interdental brushes is more beneficial to both the patient and the practitioner than merely choosing interdental brushes based on the reference technique of trial and error alone. By using the IAP/CURAPROX colorimetric probe, a clinical professional instrument with a rounded tip, dental professionals were able to measure the interdental space and choose the most suitable interdental brush for their patients. The study found that the brushes chosen had a diameter larger than that indicated by the probe in 25.54 per cent of cases and a diameter smaller than the probe value in 35 per cent of cases. According to the study, the colorimetric interdental probe can be considered as a newly developed in-clinic professional procedure that will make interdental cleaning easier and more predictable and help improve patient motivation.

By measuring the interproximal space correctly, Bourgeois and his team concluded that the latest generation of interdental brushes was able to access 99 per cent of interdental spaces. Over 60 per cent of the sites required a small-diameter interdental brush (0.6 to 0.7 mm) of the Curaprox CPS Prime Series, and differences occurred between anterior and posterior sites. Participants were able to use the interdental brush easily following instructions. As a result, most interdental sites can be cleaned using interdental brushes, but accessibility of interdental spaces would need to be established in the dental practice with the use of the CURAPROX IAP Probe. More information can be found at www.curaprox.com.
Introducing Innovative and High-Quality Restorative Solutions

Industry-standard Internal Hex Connection

Industry-compatible Prosthetics

PROSTHETIC COMPONENTS

Industry-standard Conical Connection

NEW!

HAHN™
TAPERED IMPLANT

Industry-compatible Prosthetics

Glidewell Direct is actively seeking distribution channels.

For more information
glidewelldirect.com
mail@glidewelldirect.com
Almost 20 international companies exhibited their latest endodontic products.

ROOTS SUMMITs have been held since the late 1990s. Over the past two decades, Stephen Jones, Drs. David E. Jaramillo and Freddy Belliard have been part of the meeting that regularly attracts endodontists from all over the world. At the 2016 event, which was organized in close collaboration with Dental Tribune International, the publisher sat down with the three endodontic experts to learn more about the mission of the ROOTS community.

Dental Tribune International: How did each of you become involved in the ROOTS SUMMIT?

Stephen Jones: Late in 1999, I received a promotion in endodontic product management as a sales representative at SybronEndo. However, I had no knowledge of rotary instruments. When I was researching for information on the Internet, I came across the ROOTS group. I became a fan right away because it brought my knowledge of the procedures up to speed very quickly. I soon noticed that there is nothing comparable to the ROOTS community, especially with regards to an open discussion among specialists from many different areas.

Dr. Freddy Belliard: In 1999, I had just graduated from my endodontic Masters’ program in Mexico City and I was looking for an endodontic forum on the Internet. Although it was only a small group at the time, this unique forum, to which a couple of friends from the Dominican Republic drew my attention, convinced me right away.

Dr. David E. Jaramillo: It started several years ago when Freddy invited me to participate in this community. I have been a very active member ever since.

What has changed since then?

Belliard: In the early phases of ROOTS, not many people had full-time Internet access. After we decided to take the community to full-time Internet access. After we...
Dubai Clinical Masters™ Program in Esthetic and Restorative Dentistry
7 days of intensive live training with the Masters in Dubai (UAE)

2 sessions, hands-on in each session, plus online learning and mentoring.

Learn from the Masters of Esthetic and Restorative Dentistry:

Dr. Angelo Putignano
Dr. Francesco Mangani
Dr. Ed McLaron

Registration information:
7 days of live training with the Masters in Dubai (UAE) + self study
Curriculum fee: €6,350
(Based on your schedule, you can register for this program one session at a time.)

Details on www.TribuneCME.com
contact us at tel.: +49-341-484-74134
email: request@tribunecme.com

100 C.E. Credits
Certificates will be awarded upon completion

Tribune Group GmbH is an ADA CERP provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

Tribune Group GmbH is designated as an Approved PACE Program Provider by the Academy of General Dentistry. The formal continuing dental education programs of this program provider are accepted by AGD for Fellowship, Mastership and membership maintenance credit. Approval does not imply acceptance by a state or provincial board of dentistry or AGD endorsement. The current term of approval extends from 7/1/2014 to 6/30/2016. (Provider ID 695101.)
Pedonomics: lasers in paediatric dentistry

By Dr Immeet Madan, UAE

We live in an era in which time is the basis for many decisions: what saves time is what gets chosen. Introducing better technology helps to work with time economics in paediatric dentistry. The recent term coined for this perspective of expanded thinking is “Pedonomics”. Pedonomics refers to the impact of the changing world of paediatric dentistry in the dental practice.

Time economics goes hand in hand with pedonomics. The selective niches of dentistry are expanding far more today than in the past years. Two reasons that account for the need of this level of advanced healthcare are:

1. Some parents who have their children later in life are referred to as drone parents. These parents self-educate a lot via social networks and extensive internet research. With less inherent trust in healthcare providers, they generally form a strong opinion about the dental care of their children and are most demanding of their paediatric dentist.

2. This category of parents are often techno-savvy and are quite updated with latest technologies. They appreciate a “no pain, no drill, no memory” dentistry.

3. Caries rate in dentistry is ever-increasing, with a heightened frequency of cariogenic diet and a decline in caries prevention.

4. There are more and more general dentists that would “do the job” and only if it is mismanaged, would they refer the child to the specialist. Increased availability of advanced technology can put an end to this trial practice.

Lasers as game changers

Lasers are introduced as excellent instruments in everyday dentistry. However, the idea of dentistry is generally connected to discomfort and pain in children’s minds. Any treatment trend that can help out practice to remove this connection by the use of contemporary technologies can increase patient referrals and treatment acceptance.

Although the hand piece does remove the dental decay, it may also cause abrasion of the tooth structure and a significant amount of discomfort that may not be taken very well by the children. In addition, the vibration and noise of the drill could be unpleasant to young ears, thereby lasers can prove a better tool as they do overcome all these fears of drill dentistry. Additional benefits must far surpass the costs and investment when it comes to completing the laser requirements of any practice.

Marketing protocols help us to see a larger number of patients per day, but to have these patients accept the proposed treatments better, it is advisable to introduce them tools that can truly help. As applicable in any field, an experience that exceeds the expectations will motivate the patients to keep appointments, accept recommended care and hence allow to build up positive clientele.

Patients’ perception of laser dentistry

Generally, the treatment approach in paediatric dentistry is much different from adults. With Lasers bringing in additional benefits of no contact, no pressure, no drill, no anaesthesia and thereby a less negative perception of dentistry, higher success rates are likely to be seen. This is certainly because of an increased degree of satisfaction of the patients.

Lasers and profits in dentistry

Lasers allow the dental practice to balance well between business and dentistry. Offices that in corporate lasers in their practice have a unique psychological and promotional advantage over those who fail short to offer such services. Lasers are definitely the foundation of creating a referral-based practice.

Benefits that add to the practice are always important, but how actually does one convince oneself to accept the resulting expenses for the practice. Usually, lasers are considered high investments and any high investment must prove reasonable enough to be accommodated in the practice. Return on investments with lasers can be easily pre-calculated. In general, laser treatments can cost 35 to 40 per cent more than the usual appliance, this calculation done for a return period of two to three years can yield on the investment.

Mathematics in pedonomics

The introduction of lasers into the practice should be made in an orderly and precalculated manner. Proper financial planning will help ensure the successful introduction of laser and help to yield its benefits better. Calculation of economics used in paediatric dentistry and thus making decisions in favour of economic benefits to the practice are the basis of pedonomics. The concept of pedonomics and the time-economics model are based upon the profitability per unit of chair time which is the most important factor in determining the financial future of the practice. Pedonomics work on the presumption that the profit matters, not the income.

Laser costs

Cost is the primary determinant in any acquisition. In the most common manner, it is defined as the amount of money paid or charged for something. It is termed as price in the economic language. Another important factor here is the opportunity cost. It is the added cost of using resources (as for production or speculative investment) forms the difference between the actual value resulting of using this opportunity and that of its alternative.

Opportunity costs is a major determinant as it describes the following:

1. Cost of the acquisition of a laser
2. Costs incurred when not having the laser, which include: loss of

<table>
<thead>
<tr>
<th>Laser Cost, Conventional Cost</th>
<th>Laser Filling</th>
<th>Conventional Filling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Laser and Treatment</td>
<td>785</td>
<td>577</td>
</tr>
<tr>
<td>Cost of Laser and Treatment</td>
<td>895</td>
<td>706</td>
</tr>
<tr>
<td>Cost of Laser and Treatment</td>
<td>976</td>
<td>784</td>
</tr>
<tr>
<td>Cost of Laser and Treatment</td>
<td>1,082</td>
<td>847</td>
</tr>
</tbody>
</table>

Table 1: Number of patients treated with laser vs. conventional approach.

Table 2: Cost comparison in UAE Dirhams between laser and conventional treatment.

Lasers indications in dentistry

Medicine began to integrate lasers in the mid-1970s for soft tissue procedures. The first laser specifically for dental use was a neodymium-doped yttrium alumininum garnet developed in 1987 and approved by the Food and Drug Administration in 1990.

Benefits

- Less thermal necrosis of adjacent tissues is produced with lasers than with electrosurgical instruments.
- Hemostasis can be obtained without the need for sutures, in most cases.
- Little or no local anaesthesia is required for most soft tissue treatments.
- Reduced operator chair time has been observed when soft tissue procedures have been completed using lasers.
- Lasers feature decontaminating and bactericidal properties on tissue, requiring less prescriptions of antibiotics post operatively.
- Lasers provide relief from pain and inflammation associated with aphthous ulcers and herpetic lesions without pharmacological intervention.
- Erbium lasers can remove caries effectively with minimal involvement of the surrounding tooth structure, because caries-affected tissue has a higher water content than healthy tissue.
- As erbium lasers have no direct contact with hard tissue, the vaso-vascular effects of conventional high speed handpieces are eliminated, allowing tooth preparations to be comfortable.
- As a consequence, anxiety in both children and adolescents is reduced.

Lasers in allergic reactions

Although the hand piece does remove the dental decay, it may also cause abrasion of the tooth structure and a significant amount of discomfort that may not be taken very well by the children. In addition, the vibration and noise of the drill could be unpleasant to young ears, thereby lasers can prove a better tool as they do overcome all these fears of drill dentistry. Additional benefits must far surpass the costs and investments when it comes to completing the laser requirements of any practice.
income due to loss of high-end, cutting edge dentistry, loss of referrals.

The final decision to purchase is worked out after looking at both financial and the opportunity costs. 

Laser as a profit centre

There are many ways that can help us calculate the profits based on Laser procedures. In any private practice, time is money. This can be best determined on the basis of the average hourly income. There should be a certain specific amount that needs to be earned per hour that can keep the practice flourishing. Apart from this basic income, any additional ability to perform the procedure more efficiently means extra income. The average amount of one hour chair time should be able to yield approximately 500 to 750 US Dollars. This is not the fixed amount but an approximate average that can keep the practice on profitable ends.

The procedures that can be effectively and efficiently performed by using laser in the paediatric dental office are:
1. Restorative laser dentistry
2. Laser-assisted endodontics
3. Frenectomy
4. Sealants
5. Minor surgical procedures
6. Tooth desensitisation
7. Lingual fraenum removal
8. Exposure of unerupted teeth
9. Laser tooth whitening
10. Treatment of orthodontic or drug-induced hypertrophy.

return on investment

Once the laser is bought, pedonomics suggests that there should be a fair return on the investment made. Just to break even, the income generated by laser must include covering the price of the laser, maintenance, supplies as well as an additional amount to cover the income lost from the money used to purchase the equipment and not otherwise generating its own income. The profit that exceeds the break-even point is called the return on investment (ROI).

Some of the items that should be included in ROI would entail the profit from the following:
1. Novelty of procedures with lasers.
2. Reduced out-referrals, caused by the new laser procedures.
3. In-referrals due to the uniqueness of laser-assisted paediatric dentistry.

Tracking

To actually calculate the accurate financial return of introducing the laser to the practice, the

If KPIs seem to increase or even remain at a good level, this indicates that break even and the much awaited ROI will not be far off.

Unique selling proposition

The USP is the unique cutting edge of any practice. When it comes to paediatric dentistry, lasers are indeed a unique selling proposition due to their contemporary benefits. In the field of marketing and management, USP is defined as the factor or consideration presented by a seller as the reason that the product or service is different from and better than that of the competition. The USP of lasers are as follows:
- Non-surgical minor procedures.
- No drill.
- No anaesthesia.
- No pressure on or contact with the tooth.
- Laser healing.
- Less need of analgesics and antibiotics.

Six Sigma approach of pedonomics

Six Sigma is defined as the set of techniques and tools for process improvement. It was intro-
A Six Sigma process is one in which 99.99966% per cent of all opportunities to produce some feature of a part are statistically expected to be free of defects (3.4 defective features per million opportunities). When applied to medical or healthcare systems, the most important dimensions of the quality of the medical act are:

- Safety
- Professional competence
- Acceptability
- Efficacy and Relevance
- Efficiency
- Continuity
- Interpersonal relations
- The patient’s satisfaction
- Patient compliance.

Lasers as the Six Sigma in pedonomics

To make the delivery of the treatment best accepted by the family, it must be fit to comply with the level of patient acceptance. The average amount that can be generated by laser treatment quite exceeds the amount generated by conventional treatments.

The approximate amounts ranging in our practice which runs its costs parallel to the costs in the United States can be seen from table 1 and 2 and the following numbers:

- The average amount spent on purchasing as laser: 350,000 AED.
- Equated monthly instalments calculated with interest: the purchase of laser was made with complete down payment.
- Average cost per month over three years period: 10,000 AED.
- Average increase in treatments with laser vs conventional approach: about 200 per type of treatment.
- Fillings: approximately 500 more with laser than Conventional way; average 45 per month.
- Pulpectomy: only lasers. Average 30 per month.
- Laser sealants: average 20 per month.
- Laser frenectomy: 15 per month.
- Laser pulpotomy: 15 per month.

Based on the above numbers, the approximate profit earned on laser vs conventional approach:

- Fillings: 50 x 300 = 15,000 AED.
- Pulpectomy: 30 x 300 = 9,000 AED.
- Frenectomy: 30 x 500 = 15,000 AED.
- Seals: 20 x 200 = 4,000 AED.
- Pulpotomy: 15 x 300 = 4,500 AED.

Based on the above figures, the average amount gained from laser approach of treatment: 41,000 AED.

- Net profit: 41,000 to 10,000 (monthly investment on laser over three years period) = 31,000 AED per month.

Break even was tentatively achieved at the end of 14 months. Profit started roughly after this period.

Conclusion

The Six Sigma approach with lasers teaches us to apply the zero-defects principal. This degree of excellence is not just in a word, but there is a realistic possibility of making it happen. It is an approach that can actually accelerate the rhythm of development and of the distribution of new ideas within an organisation. Laser is a tool that helps in the application of the Six Sigma principle in the dental office. In conclusion, it is statistically proven that laser with all its attributes is quite efficient in bringing “more dentistry” to a dental office.

Editorial note: A complete list of references is available from the publisher.
BEAUTIFIL II ENAMEL & GINGIVA
are the latest line extension that complement
BEAUTIFIL II series by enlivening the final restoration and restoring RED-WHITE aesthetic balance.

For more information, simply contact your nearest Shofu Dealer TODAY!

SHOFU DENTAL ASIA-PACIFIC PTE. LTD.
www.shofu.com.sg
Enhanced gingival aesthetics

Optimising conventional dentures with an innovative veneering material

By Dr Jiro Abe & Kyoko Kokubo, Japan

Stability, function and aesthetics— in fabricating complete dentures, optimum results can only be achieved if the individual details are successfully combined. In addition to the rehabilitation of functional aspects, the aesthetic reconstruction of the teeth and soft oral tissue can considerably enhance a patient’s self-confidence.

Treating edentulous patients using conventional complete dentures continues to be a frequently applied therapy option. Yet, restoring the edentulous jaw with denture teeth to achieve a functional and aesthetic rehabilitation poses a tough challenge to the treatment team. Biomechanical, physiological and geriatric concerns must be considered. True-to-nature replication of teeth and soft oral tissue is fundamental too. The objective is to restore patients’ appearance and confidence by providing them with natural-looking dentures.

Initial situation

A 58-year-old female patient presented with an edentulous upper jaw. She requires a complete denture in the maxillary arch and defective metal-ceramic restorations in the mandibular arch. Her existing teeth were damaged and could not be used as abutments for new restorations. They had to be extracted. The patient was diagnosed with Angle Class III malocclusion. There was a severe anteroposterior discrepancy between the upper and lower arches. In profile, the patient showed a prominently jutting chin and a protruding lower lip (Fig. 1). Her aesthetic appearance was impaired. In addition, the patient complained about the poor function and high mobility of the maxillary denture. A flabby ridge and severe bone resorption were present in the anterior part of the maxilla (Fig. 2). The alveolar ridge showed an asymmetrical progression in the mandibular arch (Fig. 3). After the initial assessment of the patient’s oral condition and consultation on the treatment options available to her, we decided to create new dentures for the maxilla and mandible. Conventional complete dentures were selected as the treatment option.

Model analysis

We began by taking a closed-mouth impression to create a primary record of the jaw relations. Accurate model analysis provided the important information in preparation for the individual functional impression. These steps established the basis for a statically and functionally correct design of the dentures. The median palatine raphe, incisive papilla, first large palatine rugae, tuber maxillae and crest of the alveolar ridge were marked on the maxillary model. On the mandibular model, the crest of the alveolar ridge, Pound’s line and the tuberosal alveolar mandibular were marked as landmarks. The maxillofacial fold was determined on both models. The Angle Class III malocclusion can be clearly seen on the articulated models (Fig. 4).

High demands are placed on custom trays, because the functional impression is pivotal in achieving precisely fitting dentures. The objective is to maximise the supporting area of the denture base while taking into account the movements of the muscles. A suction effect must be established between the mucous membrane and denture base. For this purpose, the functional margin needs to be fully contoured. The area of the flabby ridge was marked on the model and covered with a spacer to ease the pressure. Subsequently, customised trays were fabricated. In order to prevent the denture shifting upwards and forwards, a wide labial rim was created in the maxillary anterior vestibule. Dorsally, the tray ended at the vibrating line. The custom tray should also provide a suction effect in the mandible. Relatively voluminous margins were created to achieve this. A sufficient tongue space was provided and the anterior area was given a slightly concave contour. The retromolar pad was only thinly covered and a concave buccal shelf was created. A rim was placed on the crest of the alveolar ridge to provide a support surface for the bility and patient-specific characteristics were considered in the tooth setup. The patient was in the habit of chewing food with her anterior teeth because of her Angle Class III malocclusion. This was to be avoided in the new dentures by providing enough freeway space between the anterior maxillary and mandibular teeth at the set-up. A great deal of attention was given to faithfully mimicking the natural oral soft tissue, as we wished to provide a maximum level of aesthetics already at the try-in stage. Five different shades of wax were used for this purpose. By creating vestibular gingival portions that have a delicate, yet effective, appearance, the customised look can be accentuated. Aesthetics, phonetics, occlusal vertical dimension and centric relation were assessed at the try-in of the wax-up and rated as good.

Completion

The wax-up was converted to resin using a proven method. We focused particularly on creating natural-looking soft tissue to enable the dentures to integrate unobtrusively into the oral surroundings. Accurately designed as they were, the dentures and phonetic gingiva were converted to a PMMA resin (VitaBase High Impact, Ivoclar Vivadent) using the Ivoclear System. As polymorphisation shrinkage was fully compensated for, one-to-one repetitions of the wax-ups were attained.

The denture wax-ups were finished and sprued (Fig. 8). Once the moulds had been created and the wax boiled out, the flabby ridge from allowing the vestibular gingival portions to move, the maxillary arch was provided enough freeway space by a suction effect in the mandible. Aesthetics, phonetics, occlusal vertical dimension and centric relation were assessed at the try-in of the wax-up and rated as good.

Set-up and try-in

Designed for classic occlusal schemes, the SR Phorones II moulds (Vitoclear Vivadent) are ideally suited for complete dentures. The facial meter (alabaster) integrated into the SR Phorones II FormSelect assisted in selecting the moulds that were best suited for our patient. The teeth were set up in line with the set-up criteria for the classic occlusion. In order to prevent the flabby ridge from allowing the denture to move, the maxillary premolars were positioned close to the centre of the alveolar ridge (Fig. 4). We decided to place premolars in the maxillary arch at the set-up position (Fig. 7).

The requirements of function and sta-
concave surfaces in the alveolar area, and subtle stipplings allowed us to achieve a 3-D depth effect quickly and easily (Fig. 10). The individual layers were light cured for 20 seconds each. Intermediate curing can, for instance, be performed with a Quick curing light (Ivoclar Vivadent). Prior to final polymerisation in a light furnace (Lumamat 100, Ivoclar Vivadent), a glycerine gel (SR Gel, Ivoclar Vivadent) was applied on to the denture base in a covering but not too thick a coating to minimise the formation of an inhibition layer. Only minor shape corrections were necessary before polishing the dentures. Tungsten carbide burs are best used for this step—the inhibition layer should be removed from the entire surface. Finishing was achieved by first smoothing the surfaces with rubber polishers, followed by mechanical high-gloss polishing at low rotational speed using a goat hair brush, leather buff and Universal Polishing Paste (Ivoclar Vivadent; Figs. 11 & 12).

Result

The patient attained a revived aesthetic appearance owing to the natural aesthetics of the maxillary and mandibular dentures. Her smile told us that she had her self-confidence back, which was the most satisfying reward for our work. The dentures were characterised by a dynamic interplay of shades and natural light reflections, nuanced gingival surfaces and strong, healthy-looking teeth (Fig. 13). They showed a stable fit and provided the desired suction effect. Assessment of the phonetic and functional criteria confirmed the success of the treatment. Compared with the preoperative situation, the new dentures imparted a clearly more youthful appearance to the face of the patient (Fig. 14).

Fig. 10: The interplay of different shades of laboratory composite (SR Nexco) resulted in a 3-D depth effect. Morphological aspects were also considered in the customisation of the soft tissue.—Fig. 11: View from the reverse side: the broad functional margin in the labial vestibule would prevent the denture from shifting.—Fig. 12: Customised denture in situ: it is hardly noticeable that the patient is wearing conventional complete dentures.—Fig. 13: Compared with the initial situation, the patient looks clearly younger and happier.
See what makes A-dec 500 the best-selling dental chair, year after year.*

Superior performance. Proven solution. No compromises. It’s all of these attributes that make dentists continually choose A-dec 500. Built to last and backed by a five-year warranty.

Call 1.800.547.1883 or visit a-dec.com to learn more.

* Based on research by Strategic Data Marketing.

© 2016 A-dec Inc.
All rights reserved.