Hypertension related to poor oral hygiene

By DTI

SEUL, South Korea: High blood pressure, or hypertension, is a common but dangerous condition. Untreated, it can lead to stroke, damage to the heart and arteries, and kidney defects. A recent South Korean study has suggested that the likelihood of developing hypertension may be linked to poor oral hygiene habits.

In the study, the researchers analysed clinical data from 39,560 participants, collected between 2008 and 2010 for the Korea National Health and Nutrition Examination Survey. High blood pressure was determined by use of antihypertensive medication or an average blood pressure greater than 140/90 mmHg. According to these criteria, hypertension was diagnosed in 5,921 persons.

In addition, oral hygiene habits were evaluated by daily frequency of toothbrushing, as well as the use of oral health products, such as dental floss, mouthwash, interdental brushes and electric toothbrushes. The analyses showed that frequent toothbrushing could be associated with a decreased prevalence of hypertension in individuals with and without periodontitis. Generally, participants with poor oral hygiene habits were found to have higher hypertension frequency. According to the researchers, this suggests that periodontitis and hypertension may be linked in that inflammation may lead to blood pressure elevation, which would allow for the conclusion that oral hygiene may be considered an independent risk factor for hypertension.

Hence, maintaining good oral health habits may prevent and control the condition.

‘Although this subject may require further study, the association between hypertension and periodontitis is reminiscent of the link periodontal disease shares with other systemic conditions, including diabetes and heart disease,’ remarked Dr Joan Otomo-Corgel, President of the American Academy of Periodontology, on the research findings.

The study, titled “Associations among oral hygiene behavior and hypertension prevalence and control,” was published in the July issue of the Journal of Periodontology.

Potential biomarkers for dental caries found

By DTI

ODENSE, Denmark/VALENCIA, Spain: In order to determine potential biomarkers for dental caries, an international team of researchers has taken a closer look at the human oral metaproteome, the most prevalent proteins found in oral biofilm. Their findings might enable scientists to develop a diagnostic caries test.

The researchers from the Department of Biochemistry and Molecular Biology at the University of Southern Denmark in Odense and from the FISABIO Foundation in Valencia aimed to determine a minimum set of proteins that allow for discrimination between healthy and caries-affected dental plaque samples. They identified 7,771 bacterial and 873 human proteins in 17 individuals.

The study’s metaproteomic analyses of the oral biofilm provided the first protein repertoire of human dental plaque, the researchers stated. Moreover, by using different mass spectrometry approaches, they were subsequently able to quantify individual peptides in healthy and caries-bearing individuals.

Their findings showed that healthy individuals appeared to have significantly higher amounts of enzymes associated with a high acid tolerance. Other proteins found to be at significantly higher levels in caries-free individuals were involved in exopolysaccharide synthesis, iron metabolism and immune response.

By interpreting the potential biomarkers collectively, the scientists were able to determine the oral health status of the individuals studied with an estimated specificity of over 96 per cent.

Although validation of the findings in larger sample size studies is necessary, the findings could be of use for developing future caries risk screenings, the researchers concluded.

The results of the study were published online ahead of print on 14 August in the PROTEOMICs journal in an article titled “The human oral metaproteome reveals potential biomarkers for caries disease.”
Coconut oil pulling reduces gingivitis

By DTI

KANNUR, India. A recent study has shown that oil pulling using coconut oil could be an effective method to reduce plaque formation and plaque-induced gingivitis. Coconut oil is an easily usable and safe substance with minimal side-effects and could thus become an alternative to conventional oral antimicrobial agents such as chlorhexidine, the findings suggested.

The pilot study included 60 adolescents aged 16–18 with plaque-induced gingivitis, half of whom performed coconut oil pulling in addition to their oral hygiene routine over the course of 7 days, while the remaining served as a control group. The researchers observed a steady reduction in both plaque and gingival index values already after one week of therapy. In addition, they noted a 50 per cent decrease in these values in four weeks, which is comparable to the decrease produced by chlorhexidine.

A number of studies have shown that oil pulling or swishing reduces gingivitis. In 2007, for example, oil pulling with sunflower oil was found to reduce plaque and gingival indices after 45 days. However, the current study is the first to investigate the benefits of coconut oil in this respect.

To date, the mechanism by which oil pulling works is not fully understood. According to the researchers, its plaque-decreasing effect could be attributed to mechanical shear forces that can reduce adhesions of plaque. Another possible explanation is the composition of coconut oil: it contains 92 per cent saturated acids, approximately 50 per cent of which is lauric acid, which has proven anti-inflammatory and antimicrobial effects.

Study recommends disinfecting toothbrushes regularly

By DTI

DANANGERE, India. Toothbrushes are prone to contamination by microorganisms originating not only from the oral cavity but also from the surroundings in which they are stored. Indian researchers have now investigated how different dental disinfectants affect bacterial colonisation.

In order to investigate the impact of disinfectants such as chlorhexidine gluconate, sodium hypochlorite and water on the presence of streptococcal microorganisms, the toothbrushes of 21 children aged 5–12 were evaluated after five consecutive days of twice daily toothbrushing.

Following the five-day trial, the brushes were immersed in Roberton’s cooked-meat broth for four to five hours before inoculating them in the different disinfectants in groups of seven toothbrushes. Group 1 was immersed in 0.2 per cent chlorhexidine, Group 2 in 2 per cent sodium hypochlorite, and Group 3 in water only. After 24 hours, all of the toothbrushes were placed in Roberton’s cooked-meat broth again and then cultured.

The final analyses showed that treatment with chlorhexidine resulted in a 100 per cent reduction of streptococci colonies, while sodium hypochlorite reduced the macro-organisms by 79 per cent. In contrast, the toothbrushes that were immersed in water only showed a 14 per cent reduction in streptococci colonies.

The results indicate that both chlorhexidine and sodium hypochlorite are effective disinfecting agents. According to the researchers, the significant increase in contamination of the toothbrushes in Group 3 suggests that rinsing one’s toothbrush only in water and air-drying could lead to toothbrush contamination.

In light of the findings, the researchers concluded that it is essential for every individual to disinfect his or her brush at regular intervals, hence preventing reinfection and helping maintain good oral and general well-being. Since the present approach did not consider all the various micro-organisms present in the oral cavity, future research should focus on the survival of other microorganisms, such as other bacteria, fungi and viruses, the scientists stressed. Moreover, they noted that other antimicrobial solutions such as products of the neem plant or salt, might be economical, non-toxic and easy-to-use alternatives worth testing for their disinfectant properties.

Contaminated toothbrushes are associated with various oral health problems, including dental caries, gingivitis and stomatitis. Health organisations, such as the America Dental Association, recommend changing toothbrushes every two to three months.

Asia-Pacific leads market growth

According to a recently published report by market research firm MarketsandMarkets, the global orthodontic supplies market is expected to reach more than US$9 billion by 2020, representing a compound annual growth rate of 6.9 per cent over the next five years. The Asia-Pacific region is expected to be the fastest growing market during the forecast period owing to constant health care expenditure and increasing awareness about orthodontic procedures, among other factors.

Overall, the growth in the orthodontic supplies market is primarily stimulated by the growing number of patients with malocclusion, jaw diseases and tooth loss, technological advances, the increasing popularity of orthodontic treatment among adolescents and adults, and rising disposable incomes in developing countries, such as India, China and Brazil. As reported by MarketsandMarkets, North America is estimated to hold the largest share of the orthodontic supplies market as of 2015, followed by Europe.
By DTI

LEICESTER, UK: In March 2005, a 38-year-old British soldier stationed in Germany lost his ability to form new memories after undergoing a regular root canal treatment. To this day, he is unable to remember anything for longer than 90 minutes, although his brain is completely intact and he suffered no trauma that could have caused the amnesia, according to his doctors.

“I remember getting into the chair and the dentist inserting the local anaesthetic,” the man, who wishes to remain anonymous, told the BBC. Since that moment, he remembers nothing. Every morning, he wakes up thinking that he is still a soldier stationed in Germany in 2005, waiting to visit the dentist for root canal surgery.

The German dentist only realised after the treatment, which was without complications, that something was wrong with the patient. He was pale, disoriented and struggled to stand up. As his condition did not improve, he was brought to hospital where he stayed for several days. In the beginning, he was not able to remember anything for longer than a few minutes.

The doctors’ first suspicion was that a bad reaction to the anaesthetic had caused a brain haemorrhage. However, they could not find any evidence of injury. Finally, the patient and his family returned to England, where Dr Gerald Burgess, a clinical psychologist from Leicester, took over the case.

According to Burgess, a form of anterograde amnesia would have been the most obvious explanation for the man’s condition. In this case, the hippocampi, the brain regions responsible for the consolidation of information from short-term memory to long-term memory, are damaged so that memories can no longer be formed and stored correctly. Yet, the man’s brain scans showed no abnormalities. Thus, another possible explanation would have been a psychogenic illness. Burgess conducted detailed psychiatric assessments in order to determine whether the man had suffered any trauma. However, Burgess found that his patient was emotionally healthy and his wife confirmed that there had not been any traumatic events in the man’s life prior to his dentist visit in 2005.

Burgess continues to research his patient’s rare case of amnesia, currently suspecting that the brain’s synapses might play an important role. Each time a memory is formed and transferred to long-term memory, the synapses are rebuilt, which involves the production of new proteins. This protein synthesis might be blocked in the case of Burgess’ patient, keeping him from generating any new long-term memories. In order to further research his hypothesis, Burgess is examining five similar cases of mysterious memory loss without brain damage from the medical literature. These cases might provide an answer to why the root canal treatment appears to have triggered the man’s memory loss. All five cases are in some way related to a period of psychological stress during a medical emergency. “It could be a genetic predisposition that needs a catalyst event to start the process,” Burgess told the BBC.

“One of our reasons for writing up this individual’s case was that we had never seen anything like this before in our assessment clinics, and we do not know what to make of it, but felt an honest reporting of the facts as we assessed them was warranted, that perhaps there will be other cases, or people who know more than we do about what might have caused the patient’s amnesia,” Burgess stated.

The case report by Burgess, titled “Profound anterograde amnesia following routine anesthetic and dental procedure: A new classification of amnesia characterized by intermediate-to-late-stage consolidation failure?”, was published online in the Neurocase journal on 15 May.
“I do not see how the situation can improve”

An interview with Dr Stefanos Morfis, Greece

Educated in Manchester and a dentist at heart, Dr Stefanos Morfis opened his first practice in Athens five years ago, right at the beginning of the debt crisis in Greece. Five years later, he is selling it owing to the economic circumstances and is planning to register with the General Dental Council in order to start working as a dentist in Britain. Dental Tribune had the opportunity to speak with him recently about the situation of dentists in his home country and the reasons he has chosen to leave.

Dental Tribune: Dr Morfis, with the recent referendum on the austerity measures proposed by the EU and the resignations of Minister of Finance Yanis Varoufakis, the debt crisis in Greece has heated up again. Can you describe what impact the crisis has had on dentistry in your country?

Dr Stefanos Morfis: When one looks back 10–15 years, dentistry actually used to be quite a prosperous business in Greece. Since many dentists received their education in countries like England, Germany or the Netherlands, the level of dentistry was quite high. What we have seen during the last ten years or so is that fewer people are visiting the dentist because of their financial situation and they only go when they are already in pain.

You have to know that, unlike in the UK or other European countries, most dental care here is private. Since many cannot afford treatment in Greece, they travel to other countries, like Macedonia, where they receive cheaper, but lower quality, treatment. Recently, heard of two patients who died after undergoing a tooth extraction there.

Owing to the lack of money for treatment, caries levels are very high and, although we are fully aware of its benefits, there is very little money for any kind of preventive dentistry. This is only done at university level.

Consumer prices in Greece are soaring owing to the strict regulations. Have prices for dental treatment also gone up?

In contrast to everything else in Greece, prices for dental treatment have actually gone down in the last five years. While one could charge €50 or more for a composite filling in 2009/2010, today there are quite a number of dentists who are performing fillings for just €20.

This trend is facilitated by the majority of patients, who are only looking at price and not at what kind of material is being put in their mouth. Do not ask even me what kind of fillings they use sometimes! But how can one work professionally and ensure quality for patients at these prices?

With having to compete at such low prices, can you actually live on your income as a dentist in Greece?

Ten years ago, our income was almost double what it is now and the cost of living, materials and education were much cheaper. Living in Athens now is like living in London, but with five times less income.

Recently, the economic circumstances and the cost of living, materials and education were much cheaper. Living in Athens now is like living in London, but with five times less income.

Would you go back if things start to improve?

I would like to, but I think it will be very difficult. I have a family to look after now and I want the best for my little son. At 35, I am at the best age to be productive and achieve things in my life. I have always felt a love for the dental profession and therefore want to dedicate my life to it.

Thank you very much for taking the time and all the best for your future.
European Commission alters opinion on dental amalgam

Update recommends use of alternative materials for dental fillings

By DTI

BRUSSELS, Belgium: Many countries around the world, European countries in particular, have seen a shift away from the use of dental amalgam in oral health care and an increase in the use of alternative materials over the past years. The European Commission recently acknowledged this trend and published an updated version of its opinion on the safety of dental amalgam and alternative restoration materials.

The new document is an update of the 2008 opinion and aims to assess the safety and effectiveness of dental amalgam and current alternative materials by evaluating the latest scientific evidence.

While in 2008 the European Commission and the Scientific Committee on Emerging and Newly Identified Health Risks concluded that both types of material are generally considered safe to use, they now recommend that the choice of material be based on patient characteristics. In accordance with the objectives of the Minamata Convention on Mercury, the committee now recommends using alternative materials in children and pregnant women.

The committee further stated that the systemic effects of elemental mercury are well documented and it has been identified as a neurotoxin, especially during early brain development by a number of studies. Mercury has also been associated with adverse health effects in the digestive and immune systems, and in the lungs, kidneys, skin and eyes. Nevertheless, the evidence for such effects due to dental amalgam is weak, according to the committee.

The new recommendation is also based on the findings that dental amalgam fillings may cause mercury poisoning in genetically susceptible populations. Some genetic variants appear to impart increased susceptibility to mercury toxicity from dental amalgam.

Studies involving dental health care personnel have indicated that mercury exposure from dental amalgam during placement and removal may cause or contribute to many chronic illnesses, as well as depression, anxiety and suicide. However, exposure of both patients and dental personnel could be minimized by the use of appropriate clinical techniques, the committee stated in its opinion report.

However, current evidence does not preclude the use of either amalgam or alternative materials in dental restorative treatment. The committee acknowledged that there is a need for further research, particularly with regard to neurotoxicity of mercury from dental amalgam and the effect of genetic polymorphisms on mercury toxicity. In addition, the committee concluded that there is a need for the development of new alternative materials with a high degree of biocompatibility. The full report, titled "The safety of dental amalgam and alternative dental restoration materials for patients and users," can be accessed on the website of the Scientific Committee on Emerging and Newly Identified Health Risks.
Treatment coordinator: The bridge to case acceptance

By Lina Craven, UK

You might think that in financially challenging times the last thing you need is a new member of staff. For a practice to thrive and prosper in a difficult financial climate, however, it has to become more efficient, more competitive and more profitable. One way to do that is to introduce a treatment coordinator (TC) into the team or if you already have one then to offer appropriate training. This is a relatively new role to the European market, but in the US, where the role is a central part of any practice, it has proven to dramatically add value to the patient experience, reduce in chair time and increase case acceptance.

The introduction of a well-trained TC will change your entire approach to new patient care, as well as increase profitability. While many practices know how to attract patients, their case acceptance ratio is low. The first contact, first visit and follow-up are the most important elements of the new patient process, yet they frequently represent a wasted opportunity because of a lack of skill, focus, time or all three.

In my experience, a major downfall of practices is the unwillingness of practitioners to delegate the new patient process to staff, and the financial implications of introducing the new role.

Relinquishing new patient management to well-trained staff is not a new trend, although its application has been limited in Europe. However, patients’ expectations, competition for private work and the team’s demand for career progression and job satisfaction are key drivers for introducing the TC role.

The TC concept

A TC is someone in your practice who, with the right skills and training, will facilitate the new patient process. He or she bridges the gap between the new patient, the practice and the staff. The TC promotes and sells the practice and its services by demonstrating their true value to prospective patients, frees up the practitioner’s time, increases case acceptance rates and, resolutely, increases practice profits.

Consider the time spent by the practitioner with the new patient and calculate how much of that time is non-diagnostic. A TC can often reduce up to 60 per cent of practitioner-patient time. Rather than this being a barrier to patients—which is indeed what many practitioners perceive to be the case—in my experience, patients actually feel much more at ease with the TC and therefore better informed. Doctor time is not always doctor time. As a typical example, if an new patient appointment is 30 minutes, but the clinical part is actually only 15 minutes, there is potentially 15 minutes still available. Think about the impact an additional 15 minutes for every new patient in the appointment diary could have.

A good TC will manage all aspects of the patient journey, from referral to case start, and potentially increase your case start. He or she is the first point of contact. People buy from people, so the development of a relationship and establishing of rapport between the TC and the new patient are crucial to the success of your conversion from referral to start of treatment. The TC informally chats to the new patient prior to consultation. This helps not only to foster rapport but also to gain a better idea of the patient’s needs and wants.

I recommend to all my TCs to be present at the consultation to listen and understand clinically what is and is not possible in order to allow the TC to determine how he or she will conduct a top-notch case presentation.

The TC carries out the case presentation, reiterates the treatment options available to the patient, discusses these, answers any questions the patient may have, and clarifies proposed treatment. He or she also discusses the informed consent, shows before and after photographs of similar cases, and addresses any barriers or concerns the patient may have. The TC also explains the financial options and determines the most suitable payment method for the patient’s needs, as well as prepares the walk-out pack. The value of a walk-out pack should not be underestimated and should reflect the values of the practice, including all information the patient needs, the finance agreement or contract, diagnostic report, photographs of the patient (an excellent marketing tool), informed consent and anything else the practitioner feels adds value to the consultation.

Too many new patients are lost due to lack of follow up. A good TC follows up and provides monthly information on patient conversions to assist with strategic planning. All practices should have a patient journey tracker.

Filling the role: An internal solution?

There are no hard and fast rules. It depends upon the size and aspirations of your practice and the qualities of existing members of your team. If you have a team member who fulfils the characteristics of a TC and he or she wants the challenge, then the answer is yes. Keep in mind that you may need to fill that person’s current position.

Some practices streamline job descriptions allowing them to create the new role without having to hire another staff member. Whether it is a full-time role or not depends upon various factors, including the size of the practice, the number of practitioners, chairs and patients, and the profit aspirations. Many practices implement the role and monitor its progress and impact. This often helps the team to accept the change and gives the practitioner the opportunity to assess any training needs of the TC and to access how remuneration will be affected.

The role of your TC should fit in with your practice’s culture and aspirations for patient care. However, you choose to implement the role, the only guarantee is that you will benefit enormously. Augmenting your team with a well-trained TC can reap tremendous rewards for you, the team and your patients. A TC’s tailored and personal approach to care, follow-up and communication patients fosters trust and increases patient satisfaction and retention.

Lina Craven is founder and Director of Dynamic Perceptions, an orthodontic information and education consultancy and training firm in Stone in the UK, and has many years of practice-based experience. She can be contacted at info@linacraven.com.
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“Patients tend to go to court more often nowadays”

An interview with Dr Andy Wolff, Israel

Be it a careless error or a case of misjudgement, even the most experienced practitioner can make a mistake. In fact, statistics indicate that it is likely that every general dentist will be involved in a malpractice suit at some point in his or her career. Israeli-based dentist Dr Andy Wolff has worked as a medical expert in dental malpractice litigation for many years and has seen almost everything, ranging from slight negligence to severe overtreatment. Dental Tribune had the opportunity to speak with him recently about the steady increase in litigation in the field and simple measures that can help prevent many malpractice incidents in the first place.

Dental Tribune: You have been a medical expert in dental malpractice litigation for many years now. Why is it so important to increase awareness of this topic?

Dr Andy Wolff: So much literature out there tells dentists how to do things—whether it is placing implants or improving efficacy with the newest technology—but there are no books on how not to do things or, more precisely, what can happen when something has gone wrong. This aspect is no less important, both for the patient affected and for the clinician, who might be facing legal consequences.

Many may think that it is not relevant to them, but every smart physician knows that things occasionally go wrong and no one is immune. By documenting dental malpractice incidents and by talking and writing about these, I aim to raise awareness and therefore help prevent future incidents.

In your experience, what types of malpractice are most common?

There are definitely many cases in the neurological field. As a medical expert, I am confronted with many instances of damaged nerves caused while placing an implant, during tooth extractions or through an injury. It is common and it happens quickly. Typically, it is an inadvertent mistake, because the clinician was either in hurry or impatient. However, the consequences for the patient are mostly very dramatic and often beyond repair.

Aside from nerve damage, is there an area where mistakes are more likely?

If I had to choose one, I would say it is implants. I recently had a very disconcerting case where an oral surgeon did all the preliminary examination work meticulously, the CT scan, the radiographs, everything. For that reason, he knew for certain that he was working with a bone structure of 12 mm, yet he used an implant that was 13 mm long in the treatment. Maybe he was just mistaken or the assistant handed him the wrong implant and he did not check it, but the result was that he hit a nerve.

In this particular case, the dentist was a specialist, an experienced surgeon. Without raising the question of guilt—although the surgeon was without a doubt responsible for the damage—cases like this show that mistakes really can happen to anybody.

I have seen many cases over the years, but nothing quite like that.

In another case, a dentist extracted a third molar without the requisite training. He should have referred the patient to a specialist, but he chose to do it himself—possibly because it earned him another US$200–500 ($300–$700) with the result that the patient now has to live with chronic pain for the rest of her life.

Can injured nerves regain normal function eventually?

Mostly, damage is irreversible. There are exceptions, of course, either if the damage was not too severe or if the nerve was inside a canal. Potentially, an injured nerve can regain function over time. However, if it is an exposed nerve, such as the lingual nerve, the damage is generally irreversible, although there are some microsurgery procedures that may improve the situation. Interventions like this, however, carry extremely high risks themselves and might even aggravate the situation.

So expertise does not preclude mistakes, but there are undoubtedly also cases that result from negligence and hubris. I certainly see many cases in which dentists have carried out a treatment for which they were not qualified. I remember an incident in which a general practitioner injured nerves on both sides of the mouth during an implant treatment. That is truly unbelievable losing your sense of smell completely owing to a defective bilateral sinus lift procedure—that would be a fairly serious impairment of a person’s quality of life.

Have malpractice incidents become more common over the last decades? I would say so. At least, litigation has increased. Of course, there have always been cases of malpractice, but patients tend to go to court more often nowadays. Perhaps you could call it an “Americanisation” phenomenon: almost every problem is a lawsuit today, with the result that dentists are paying increasingly higher insurance fees because the treatment risks are so high today.

How common is legal action in dentistry and what is the compensation amount paid compared with other medical disciplines?

It is perhaps comparable to plastic surgery. There are many complaints filed for cases in which the result was not what the patient expected it to be. Compensation payments range from US$10,000 to US$100,000, which is much lower than those in other medical disciplines.

Do more cases of overtreatment or cases of error on behalf of the dentist end up in court?

These cases have an almost equal occurrence. Of course, overtreatment leaves the dentist in a bad position. It raises the question of why he or she treated the patient unnecessarily in the first place and did so poorly in the second; it leaves him or her doubly guilty. If a mistake occurred after a reasonable treatment plan had been formulated, it is comparatively less bad. Sometimes, even if a patient dies while undergoing therapy, this does not need to involve a distinct fault of the clinician.

An American dentist was recently charged because his patient died after he extracted 20 teeth in one procedure.

I have performed such extensive treatment in the past; it depends on the need for treatment and how it is done. Probably, that case in the US was the result of a combination of many things. For instance, did the dentist act in accordance with state-of-the-art practice? If not, he is at fault. If he did, one has to remember that dentists cannot rise above today’s level of knowledge and technology. Let us say an impaired patient files charges for something that happened to him 20 years ago that would have been preventable with the latest medical treatment. He can, of course, make a claim, but the dentist could not be sued for it if he/she treated the patient according to the best knowledge available at that time.

With the consequence that patients partially lose sensation in the mouth surface?

Yes. Another consequential damage, of which I only recently learnt, is loss of sense of smell. Patients whose sinuses have been injured often lose their ability to smell. Sometimes, they may not even realise it initially, because the sinus runs on both sides of the face and the unaffected side often functions normally. Imagine losing your sense of smell completely owing to a defective bilateral sinus lift procedure—that would be a fairly serious impairment of a person’s quality of life.

Displacement of dental implant into the maxillary sinus of a 70-year-old male patient. (© Dr Andy Wolff)
That is a very important aspect when writing expert reports on dental malpractice. Did the dentist act to the best of his or her ability and according to the current knowledge or with gross negligence? That is what makes the difference.

What can medical professionals do to protect themselves against legal disputes arising from high-risk procedures they intend to perform?

Patients should not only be warned of the possible consequences of a certain procedure, but also be advised of the alternatives—and one of those alternatives is not proceeding with treatment at all. In my opinion, the patient should always understand both options: the risks of a particular treatment and what could happen if nothing is done. Only then should the patient be asked to sign a declaration of consent.

Unfortunately, the reality is often quite different. Patients are often asked to sign declarations of consent on their way into surgery or while already on the dental chair. Even if they had questions then, there would be no time to answer them properly. Although it should be of major concern, this alone can prevent litigation in many cases. Of course, if a nerve is damaged, there needs to be a settlement of some kind, but if a bridge fails, for example, instead of filing charges the patient will return for further treatment if there is a solid trust-based relationship.

Time, communication, trust—what else is important when it comes to preventing malpractice?

So, you are saying that consultation should be of similar importance to treatment? Absolutely. In my opinion, building mutual trust between doctor and patient is key for avoiding malpractice and consequential charges. If patients feel that their condition is being properly treated, and that money is not the dentist’s first concern, this alone can prevent litigation in many cases. Of course, if a nerve is damaged, there needs to be a settlement of some kind, but if a bridge fails, for example, instead of filing charges the patient will return for further treatment if there is a solid trust-based relationship.

Do you see basic problems in dentistry that need to change? Nowadays, we face the problem of ‘cheap’ dentistry. Owing to the amount of competition with the large number of dentists in the market, there are many cases of overtreatment. Cheap dentistry needs to be fast, yet I have documented cases in which patients have returned for retreatment of a simple problem up to 70 times in two years. If you add up the time those patients invest only to have a poor outcome, it is striking. However, it is not possible for there to be elite dental practices solely. For legal purposes, dental treatment does not need to be exquisite, but it has to be reasonable.

Maybe it is a problem of today that patients have increasing expectations regarding the service or technologies their dentist should be using. That is certainly part of the same problem. Advertising that promises people a new Hollywood smile in 2 hours forms the basis of patients’ beliefs or expectations regarding treatment. Dentists should not be tempted to involve themselves in this kind of misguided pressure. Honest communication is key when aiming to avoid disappointing patients.

Measures to prevent malpractice should begin as early as possible, but where should prevention start?

Personally, I think legal regulation should be extended, such as specific laws or by-laws concerning the amount of experience and training, for example, required in order to perform certain procedures. Basically, it is just what common sense calls for and everybody will agree with if they think about it: should one be allowed to place an implant after attending a speakers’ corner talk or looking over a colleague’s shoulder? No, yet this is often what happens.

A second measure could focus on undergraduate education. Dental schools should devote more time to prevention of lawsuits. This aspect is neglected in the curriculum, although it is an essential part of dentistry. General awareness of the subject needs to be raised and this alone would help prevent mistakes. As I said earlier, mistakes are not always avoidable, but they should at least not arise out of negligence, hubris or greed. Apart from that, there will always be ways of legal malpractice. Dentists are humans too; only he who does nothing makes no mistakes at all.

Thank you very much for the interview.
Tips and strategies for restoring large cavities using fibre-reinforced material

By Drs Stephane Browet, Belgium, & Javier Tapia Guadix, Spain

Evidence has shown that one of the biggest challenges facing dentists today is restoring severely damaged teeth. In order for these restorations to be long lasting, certain biomechanical and biochemical criteria need to be met. Even the smallest of cavities can result in dramatic failure owing to poor material choice and incorrect biomechanical interaction between the tooth and the material.

We often see cases where a small cavity was restored with amalgam a few years prior. The amalgam itself meets the material criteria but the biomechanical issues are clearly evident and cause severe cracks to develop. These cracks could lead to complete failure of the restoration with loss of vitality of the tooth, and possibly even loss of the tooth. Amalgam has long been relied upon as a durable restorative material. But what value is a restoration itself if it fails? The final objective should be to restore those cavities with another material.

In addition, the tooth will also be damaged to some extent. Our challenge is to minimise this damage by making good choices in cavity design and material. The principles of cavity design are well established. This means the surrounding tooth structure is strong enough to function with the restorative material inside. It is recommended that you need at least two or three millimeters of wall thickness in order to maintain good intrinsic strength. It is clear that if we don’t respect these criteria and the cavity ends up with very thin and undermined walls, biomechanical failure will occur.

Our biggest problem here is that we get cavities like this to start with. It’s not necessarily our choice to drill a cavity like this for caries removal. Often times an old amalgam restoration can lead to this type of cavity and the temptation is to keep the remaining tooth structure to enable a direct restoration. The tendency is to keep those cusp tips, as references for occlusal morphology and to preserve as much tooth tissue as possible. Because the walls are clearly not thick enough the load bearing forces will create fatigue within the cusps. Even with a bonded restoration, this fatigue will eventually cause the wall to fracture. The following clinical situations call for cuspal coverage:

1. A wide isthmus and thin walls.
2. If there is no dentinal support and cusps are undermined — blocking out the unsupported enamel will not solve the problem because curing a composite inside a shell will fracture it.
3. A horizontal crack in the undermined base of the cusp.
5. Any crack inside the pulp chamber.
6. An endodontically treated tooth with MOD restoration requires coverage for all cusps.
7. An endodontically treated tooth with a crack in the pulpal floor requires all cusps to be covered.

everX posterior

What is needed for these restorations is a material that will bond to the tooth. This is not a guarantee that the restoration will work, but some sort of adhesion is required that is not mechanically retained like amalgam. What is needed is a material that behaves like tooth structure, something that resists fatigue and also increases the load bearing capacity of the total restorative complex of the tooth with the restoration.

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Additional tips for using everX Posterior

- everX Posterior should be completely enclosed by the other material.
- First close the proximal, then the occlusal.
- Use a ball plugger or microbrush to adapt the material to the floor and take your time.
- Light-cure in layers of 2mm thickness.
- Always respect manufacturer guidelines for maximum rotation speed for polishing points – avoid heating because it will change the properties of the material.
- For final polish use a goat hair brush with diamond paste to create a glossy result for surface polishing.

Fracture prevention

Some dentists are misguided when they think that a tooth can be saved by using a very strong material. In actual fact, when using such a strong material, the tooth inadvertently becomes the weaker part of the restorative complex. This means that if failure occurs, the tooth will fail first. With everX Posterior, in the case of failure, the damage can be contained. Cracks can be deviated along the material inside the tooth, resulting in fractures which are more above gum level, instead of running through the entire tooth leading to catastrophic failure. It will still fail, but will allow for further restoration because the fracture line is still visible and accessible. Fracture toughness is another physical property which is twice as high in everX Posterior than in conventional composites. The flexural modulus is closer to that of natural dentine, so it behaves like natural tooth structure. While the build-up procedure of the material allows for a well-functioning restorative complex, it’s how the material shrinks that matters. The volumetric change and shrinkage stress of the material after and during setting is similar to that of conventional composite, but a very big difference is the presence of the fibres. By placing the material in the cavity and by pushing it down you can align the fibres into a more longitudinal direction which reduces linear shrinkage. With the vertical shrinkage you can expect the entire restoration to shrink down, but this won’t create the same stress as a regular composite. The linear stress and shrinkage on the hard tissue will give you a more predictable outcome and minimised damage. By using everX Posterior as dentine replacement and layering it with a regular composite, the total load-bearing capacity of the tooth complex will increase significantly. Therefore it makes sense in both direct and indirect approaches to have the support from a fibre-reinforced composite underneath.

Editorial note: This article was first published in GC get connected (www.gconeurope.com/news/newsletter/index.php).
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Direct anterior restoration placed with a modern composite

Lifelike aesthetics achieved with minimally invasive methods

By Dr Ali H. Ozoglu, Turkey

The possibilities of restoring teeth have grown immensely over the past few decades owing to the development of innovative dental composites. In the past, dentists had to rely on indirect veneers to produce highly aesthetic results, but today advanced materials are available that offer a suitable alternative in many cases. Composite resins have undergone considerable changes in recent times. The dental research community and industry have reacted to the emerging demand among practitioners and patients for these materials, and as a result, composite resins are now at a level where they are regarded as state of the art.

With modern materials such as IPS Empress Direct (Ivoclar Vivadent), anterior restorations can be efficiently layered to produce highly aesthetic results that are virtually indiscernible from the natural tooth structure. Consequently, dental practitioners can benefit from the convenient handling properties of composites without having to make any compromises in terms of aesthetics. In our opinion, IPS Empress Direct is the best material of its kind available for satisfying exceptionally high aesthetic requirements. Owing to the material’s lifelike opacity, fluorescence and opalescence, true-to-nature restorations can be fabricated using a very efficient method.

Generally, the filler composition of composites is more significant in anterior than in universal materials. A composite resin has to meet special physical property requirements with regard to volume shrinkage, surface hardness, flexural strength, polishesability and wear resistance. Furthermore, the optical characteristics have to be carefully balanced. IPS Empress Direct fulfills all of these major requirements. The monomers contained in the composite determine its reactivity, strength, shrinkage and handling. The monomer matrix incorporates fillers that determine the wear resistance, strength, polishability, surface gloss, radiopacity and translucency of the material. A coarse barium glass filler imparts the Dentin shades with high strength, whereas the finer barium glass filler contained in the Enamel shades ensures excellent polishability, high gloss and low susceptibility to wear.

The composite system comprises 52 shades and five translucency levels. The properties of fluorescence, translucency and opalescence are decisive for the aesthetic appearance of the restoration. IPS Empress Direct obtains its lifelike fluorescence from special pigments and owes its exceptional optical characteristics to its composition. The Dentin shades exhibit a higher opacity and colour saturation than the Enamel materials. Therefore, the aesthetic effect is enhanced from within the restoration. The translucency of the Enamel shades allows the Dentin materials to scatter light in a manner similar to natural tooth structure. Furthermore, the Trans Opal shade gives the restoration a true-to-nature opalescence. In reflected light, it appears bluish and in transmitted light reddish-orange, which corresponds to the appearance of natural tooth structure.

Nevertheless, ideal physical and optical properties alone are not enough to ensure an aesthetic result. Skill and expertise are required on the part of the dental practitioner who has to impeccably layer and shape the restoration, as well as faithfully reproduce the shade and optical characteristics of the tooth.

For this purpose, a composite should be convenient to handle. IPS Empress Direct is applied according to an intuitive method.

Fig. 1: Initial situation with tooth #22 discoloured as a result of endodontic treatment. — Fig. 2: Minimally invasive preparation of tooth #22 for the placement of a composite restoration. — Fig. 3: The prepared tooth surface is covered with IPS Empress Direct Color in white. — Fig. 4: The tooth is completely coated with a layer of IPS Empress Direct in A3 Dentin. — Fig. 5: Internal play of colours: IPS Empress Direct Color in blue in the incisal area and IPS Empress Direct Color in honey yellow in the cervical area to match the neighbouring teeth. — Fig. 6: Contouring of the composite with an OptraSculpt Pad instrument.

Fig. 7: After final shaping of the restoration and polymerisation. — Fig. 8: Finished and polished restoration on tooth #22. — Fig. 9: Two months after treatment: the result is stable. — Fig. 10: Examination of the functional situation two months after treatment.
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Case study

A 28-year-old patient was referred to our practice. He was dissatisfied with the colour and position of the maxillary left lateral incisor (Fig. 1). The examination showed that tooth #22 had been endodontically treated, which explained its substantial discoloration. The shade of the existing composite restoration considerably deviated from that of the natural tooth structure. In addition, the position of tooth #22 contributed to the suboptimal overall appearance of the dentition. It was inclined towards the palatal aspect and therefore looked very small compared with the adjacent teeth. The patient desired an aesthetic result that could be achieved in one appointment. This was the ideal indication for IPS Empress Direct.

We suggested that the patient consider having the tooth restored with a direct composite. This type of restoration would involve minimally invasive preparation and could be placed in a single appointment. The patient accepted this proposal, and we proceeded to prepare tooth #22 for a modified veneer and to remove any discoloured dental tissue.

In the process, as little as possible of the healthy tooth structure was removed. Since minimally invasive criteria were being followed, the existing composite restoration was not completely removed (Fig. 2). The tooth was conditioned and a bonding agent was applied. Next, the discoloured dentine was concealed with IPS Empress Direct Color in white. The material was applied to the tooth surface in such a way that the restoration would not appear completely opaque (Fig. 3). The tooth surface was then entirely covered with IPS Empress Direct in A2 Dentin (Fig. 4).

In order to impart a lifelike appearance to the incisal part of the tooth, we applied IPS Empress Direct in A2 Enamel in layers and imitated the enamel areas of the adjacent teeth. The natural incisours exhibited several dark incisal areas as a result of their relatively high translucency. These areas were imitated with IPS Empress Direct Color in blue. Owing to the thin enamel layer, the cervical areas of the natural teeth had a yellowish tinge. This feature was recreated in tooth #22 using IPS Empress Direct Color in honey yellow (Fig. 5). The enamel layer was completed with IPS Empress Direct in A2 Enamel. This layer was shaped with the help of an ingenious contouring instrument called OptraSculpt Pad (Vivadent; Figs. 6 & 7). This instrument was used to form the final contours of the restoration. The foam pad attachments allow composites to be shaped quickly and without sticking. This instrument has become an indispensable tool in our daily work. Finally, a thin layer of IPS Empress Direct in Trans Opal was applied and the restoration was shaped again with OptraSculpt Pad. The Trans Opal material allowed us to imitate the natural optical properties of the tooth surface. Subsequently, the restoration was polymerised according to the manufacturer’s recommendations.

The excess material was removed with finishers and fine-grit diamond burs. The occlusion and function of the restoration were checked. The restoration was then polished to a high-gloss finish with silicone polishers and polishing discs in a few easy steps.

The patient was thrilled with the new appearance of his anterior teeth (Fig. 8). The shape and shade of tooth #22 blended in smoothly with the existing teeth. The optical characteristics of the restoration were comparable to those of the natural dentition. Two months after the treatment, the patient returned to the practice for a recall appointment. On this occasion, the restoration showed excellent integration. Its shape and shade completely fulfilled our expectations (Figs. 9 & 10).

Conclusion

IPS Empress Direct is a nano-hybrid composite for direct restorative procedures. It features lifelike opac- ity, fluorescence and opalescence. Aesthetic anterior restorations can be skilfully created with the material in a very short time. Given the appropriate conditions, this material can be used to offer patients an adequate alternative to laboratory-fabricated ceramic veneers.