Middle East’s Dentist Meet Recommends Power Brushes for Improved Oral Hygiene

By Oral-B

DUBAI, UAE: First dental consensus agrees that electric power brushing is best for oral health; 80 per cent of children between 12-14 years have unhealthy gums, according to research by the Dubai Healthcare Authority.

A group of the Middle East’s leading dentists have come together to agree on how best to promote good oral hygiene through brushing. Held in Dubai at the end of August and supported by Procter & Gamble, the first dental consensus has issued a series of recommendations to help improve oral hygiene in the region. These proposals, which focused on tooth brushing habits across the Middle East, include an agreement that electric power brushes are more effective at maintaining oral health, and that Bluetooth enabled power brushes have the potential to encourage better oral care among children.

Co-chaired by Dubai’s Hamdan Bin Mohammad College of Dental Medicine’s Professor Crawford Bain and Dr. Arwa Al-Sayed, Head of the Periodontics and Implants Department at Prince Sultan Military Medical City in Riyadh, the ten dentists from Lebanon, Oman, Saudi Arabia and the United Arab Emirates met for two days to discuss how best to promote better brushing habits among the region’s consumers. Research undertaken by the Dubai Healthcare Authority in February of this year showed that 80 percent of children in Dubai between the ages of 12 and 15 have unhealthy gums.

The group agreed on the following recommendations:

1. Evidence suggests that power brushes are more effective in the short & long term compared to manual brushes. According to present data, over the short & long term, power brushes are better at maintaining oral health.

2. Evidence suggests that oscillating rotating power brushes are superior to all

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Counterfeit KaVo branded dental turbines may pose severe risks to the dental practice

By KaVo

In the last year the dental market has witnessed a high increase in the number of counterfeit KaVo branded turbines and replacement parts. KaVo has identified counterfeit turbines and parts in several different countries and sales channels. The fake turbines are of unknown origin and are poorly constructed items. The counterfeit parts are also untraceable, constructed items. The counterfeit turbines use out dated COMPACTtorque design rather than the current SMARTtorque design that was launched in 2015.

- The CE label is counterfeit; so these products are not proven medical devices that were tested for safety and effectiveness. - With no official manufacturer, there is no organization responsible for these items or any warranty claims.

In January 2014, the Medicines and Healthcare Products Regulatory Agency even issued a warning to dentists after a counterfeit product shattered while being used on a patient. For all the above reasons, KaVo is advising dealers to not buy or sell these counterfeit turbines and warning dentists to not use them for patients’ treatment.

Identifying the Counterfeit Products

In an effort to deceive buyers, the fake products have exactly the same packaging as the genuine KaVo turbines with a forged “SMARTtorque” wrapped around a black box. Furthermore, many of the counterfeit turbines use the same serial number (SN 11-0505000). If you encounter a product with serial number SN-11-0505000 it is almost certainly counterfeit and should be discontinued. In some instances the product description in the user manual differs from the printed name on the turbine.

Many of the counterfeit items also use a fake name “COM- Pacttorque 660B” and the user manual, in most instances, is for a different product, the Unik Midwest Turbine. Therefore the REF number on the product label doesn’t match with the REF number on the user manual.

Counterfeit parts are also untraceable, constructed items. The counterfeit turbines use outdated COMPACTtorque design rather than the current SMARTtorque design that was launched in 2015. - Dealers, who trade in counterfeit KaVo turbines in the EU are responsible for any claims and may face legal consequences.

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Ketac™ Universal Aplicap™ Glass Ionomer Restorative Clinical Case

By Dr. Jacqueline Esch, Germany

Treatment of a 6-year old patient under general anesthesia with caries on deciduous mandibular molars.

Fig.1. X-ray of deciduous teeth. Proximal lesion visible.

Fig.2. Initial situation: primary first and second molar with carious lesions.

Fig.3. Caries removal. Minimally invasive preparation: caries-free areas of enamel and dentine are left in the center of the cavity.

Fig.4. Placement of Tofflemire matrix.

Fig.5. Bulk placement of Ketac™ Universal Aplicap™ into cavity.

Fig.6. Shaping of the occlusal surface.

Fig.7. Surface adjustment and excess removal with a fine diamond bur.

Fig.8. Polishing of the occlusal surface with Sof-Lex™ Spiral Polishing Wheels.

Fig.9. Final Ketac™ Universal Glass Ionomer restorations.

In an application test, 965 fillings were placed using Ketac Universal Aplicap restorative. Dentists were pleased with time savings, overall handling, ease of placement and cavity adaptation.1

84% agreed the NEW design of the nozzle leads to better access to deep cavities.

94% verified it enables an easy 1-step placement.

75% stated that the low stickiness to instruments allows easy placement.

1. Source: Please refer to the Technical Data Sheet.
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Ketac Universal restorative … because the most caries-prone patients are also the most restless.

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Use and abuse of antibiotics

mCME articles in Dental Tribune have been approved by:
HAAD as having educational content for 2 CME Credit Hours
DHA awarded this program for 2 CPD Credit Points

By Steven G. Morrow, USA

For the past 90 years, antibiotic therapy has played a major role in the control of bacterial infections. Since the discovery of penicillin in 1928 by Fleming and sulfanilamide in 1935 by Domagk, the entire world has benefitted from one of the greatest medical advancements in history. The discovery of safe, systemic antibiotics has been a major factor in the control of infectious diseases and, as such, has increased life expectancy and the quality of life for millions of people.

According to the Centers for Disease Control and Prevention, life expectancy of individuals in the United States born in 1900 was 47 years, while those born in 2005 is projected to be 78 years.1 At the beginning of the 20th century, the infant (<1 year) mortality rate in the United States was 100,000 live births compared to 6,710 in 2005.2 The major reason for these phenomenal improvements has been the ability to control infectious diseases.3

Development of antibacterial drug resistance

Along with the dramatic benefits of systemic antibiotics, there has also been an explosion in the number of bacteria that have become resistant to a variety of these drugs. The problem is not the antibiotics themselves. They remain one of medicine’s most potent weapons against diseases. Instead, the problem is in the way the drugs are used. The inappropriate or excessive use of antibiotics has resulted in a crisis situation due to bacterial mutations developing resistant strains.

Many worldwide strains of Staphylococcus aureus exhibit resistance to all medically important antibacterial drugs, including penicillin and methicillin-resistant S. aureus has become one of the most frequent nosocomial, or hospital-acquired, pathogens. The rate at which bacteria develop resistance to antibacterial drugs is alarming, demonstrating resistance soon after new drugs have been introduced. This rapid development of resistance contributed significantly to the morbidity and mortality of infections, especially nosocomial infections.4

A nosocomial infection is a hospital-acquired infection that develops in a patient after admission. It is usually defined as an infection that is identified at least 48 to 72 hours following admission, so infections occurring in the first 24 hours of hospitalization are excluded. Nosocomial infections are costly, resulting in increased morbidity, requiring longer periods of hospitalization and limiting access of other patients to hospital resources. The direct costs of hospital-acquired infections in the United States are estimated to be $4.5 billion per year. Nosocomial infections also contribute to the emergence and dissemination of antimicrobial-resistant organisms. Antimicrobial treatment for treatment or prevention of infections facilitates the emergence of more resistant organisms. Patients with infections caused by antimicrobial-resistant organisms are then a source of infection for hospital staff and other hospitalized patients. These drug-resistant infections may subsequently spread to the community.5

The British Society for Antimicrobial Chemotherapy published a review of the Journal of Antimicrobial Chemotherapy. This review examined the contributions of antibacterial prescribing by general dentists in the United Kingdom and has made to the selection of antibacterial resistance in bacteria of the oral flora.6 The review concluded that inappropriate antibacterial drug prescribing by dental practitioners was a significant contributing factor in the selection of drug-resistant bacterial strains. The American Dental Association reported the results of a survey of antibiotic use in dentistry in the November 2000 Journal of the American Dental Association.7 The authors surveyed all licensed dentists practicing in Canada and found that confusion about prescribing antibiotics and inappropriate prescribing practices were evident, and that inappropriate antibiotic use, such as improper dosing, duration of therapy and prophylaxis are all factors that may affect development of antibiotic-resistant microorganisms.8

There is a glimmer of hope! A report from Aker University in Oslo, Norway, strongly suggests that bacterial resistance to antibacterial agents can be reversed.9 While dangerous and contagious staph infections kill thousands of patients in the most sophisticated hospitals in Europe, North America and Asia, there is virtually no sign of this “killer superbug” in Norway. The reason? Norway stopped using so many antibiotics.10 We don’t throw antibiotics at every person with a fever. We tell them to hang on, wait and see, and we give them a TYLENOL to feel better,” said Dr. John Haug, infectious disease specialist at Aker University Hospital in Norway’s simple solution, there is a glimmer of hope.

The proper clinical use of antibacterial drugs

In 1997, the ADA Council on Scientific Affairs issued a position statement on Antibiotic Use in Dentistry.8 The Council stated: “Microbial resistance to antibiotics is increasing at an alarming rate. The major cause of this public health problem is the use of antibiotics in an inappropriate manner, leading to the selection of dominance of resistant microorganisms and/or the increased transfer of resistance genes from antibiotic-resistant to antibiotic-susceptible microorganisms.”11

The Council’s position statement further identified that “Antibiotics are properly employed only for the management of active infectious disease or the prevention of metastatic infection, such as infective endocarditis, in medically high-risk patients.”12

One method of education is to teach from errors rather than principles. Psychologists from the University of Exeter have identified an “early warning signal” in the brain that helps us avoid repeating previous mistakes. Published in the Journal of Cognitive Neuroscience,13 their research identifies for the first time, a mechanism in the brain that reacts, in just one-tenth of a second, to things that have already led us making errors in the past. Evaluating the following eight misconceptions or “myths” may help to establish general guidelines to aid us in making clinical decisions regarding the use of antibiotic therapy, thereby leading to optimum use and therapeutic success.14

Myth No. 1: Antibiotics cure pa-

About in patients with a compromised immune system, antibiotics are not curative, but instead function to assist in the re-establishment of the proper balance between the host’s defenses (immune and inflammatory) and the invasive agent(s).

Antibiotics do not cure patients; patients cure themselves.

Myth No. 2: Antibiotics are substitu-

tes for surgical intervention. Very seldom are antibiotics an appropriate substitute for removal of the source of the infection (extractions, endodontic treatment, incisions and drainage, periodontal scaling and root planing). Occasionally, when the infection is too diffuse or disseminated to identify a nidus for incision, or the clinical situation does not allow for immediate curative treatment, the prudent dentist will choose to place the patient on appropriate antibacterial therapy until such time as curative treatment can be implemented. It is imperative to remove the cause of the infection prior to, or concomitantly, with antibiotic therapy, when the cause is readily identifiable.

Whenver antibiotic therapy is used, the risk of bacterial selection for antibiotic resistance is present.

Myth No. 3: The most important decision is which antibiotic to use. To avoid the deleterious effects of needless antibiotics on patients and the environment, the most important initial decision is not which antibiotic to prescribe but whether to use one at all. It has been estimated that up to 60 percent of human infections resolve by host defenses alone following removal of the source of infection without antibiotic intervention. Endodontic disease is infectious. Microorganisms cause virtually all pathoses of the pulp and peripulpal tissues. There is ample evidence to support that opportunistic normal oral microflora colonize in a symbiotic relationship with the host, resulting in endodontic infections.15 The majority of endodontic infections are systemy antibiotic therapy when the cause of the infection

Primary Reasons for Revision of Infective Endocarditis Guidelines

1. IE is much more likely to result from frequent exposure to random bacteremias associated with daily activities than from bacteremias caused by dental, GI tract or GU tract procedure.

2. Prophylaxis may prevent an exceedingly small number of cases of IE, if any, in individuals who undergo a dental, GI tract or GU tract procedure.

3. The risk of antibiotic-associated adverse events exceeds the benefit, if any, from prophylactic antibiotic therapy.

4. Maintenance of optimal oral health and hygiene may reduce the incidence of bacteremia from daily activities and is more important than prophylactic antibiotics for a dental procedure to reduce the risk of IE.

Table 1. (Tables/Provided by American Association of Endodontists).

1. IE is much more likely to result from frequent exposure to random bacteremias associated with daily activities than from bacteremias caused by dental, GI tract or GU tract procedure.

2. Prophylaxis may prevent an exceedingly small number of cases of IE, if any, in individuals who undergo a dental, GI tract or GU tract procedure.

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has been properly managed (complete debridement of the pulp space and proper obtu-
ration and sealing of the pulp space from the oral environ-
ment).

Apical periodontitis lesions of pulpal origin are generated by the immune system and are the
result of intraradicular infections (Fig. 1). In most situations, this inflammatory process suc-
cessfully eliminates the bacteria emerging from the apical fora-
men and prevents their spread to the periapical tissues. This process is primarily facilitated by the polymorphonuclear leuc-
ocytes that eventually phago-
cytize and kill the bacteria.11

Asymptomatic apical periodon-
titis of pulpal origin does not routinely require systemic an-
tibiotic therapy for satisfactory resolution and healing. Endo-
dontic therapy alone is usually sufficient.

When the intraradicular infec-
tion is able to overwhelm the host’s immune response, vi-
able bacteria are able to gain access to the periapical tissues and colonize, forming an active infection. This results in the for-
mation of an apical abscess. A chronic apical abscess usually presents with gradual onset, no to mild symptoms and the pres-
ence of a sinus tract or parulis (Fig. 2). The majority of chronic apical abscesses of endodontic origin do not require systemic antibiotic therapy for satisfac-
tory resolution and healing. An acute apical abscess usually presents with rapid onset, spon-
taneous pain and swelling, both localized and intraoral, some-
times with exudate present, or with diffuse facial cellulitis. When the abscess is intraoral and localized (Fig. 5), debride-
ment of the pulp space and placement of calcium hydrox-
ide and surgical incision for drainage is usually sufficient to resolve the problem. Systemic antibiotic therapy is not routine-
ly indicated, depending on the patient’s general medical status. However, when the patient pres-
ents with diffuse facial swell-
ing (cellulitis) resulting from an acute apical abscess or an infection with systemic involve-
ment (fever or malaise) (Fig. 4), debridement of the pulp space
with placement of calcium hy-
droxide, surgical incision for drainage, and an appropriate regimen of sys-
temic antibiotics (oral or IV) are the treatments of choice.

Understanding the enemy is an important factor in winning any battle. The rational choice and use of antimicrobial agents be-
gins with the knowledge of the microorganisms most likely responsible for common dental infections of pulpal origin. The bacterial flora found in endo-
dontic infections is indigenous, mixed (Gram-positive and Gram-negative) and predomi-
nately anaerobic. Several spe-
cies have been isolated in association with acute apical abscesses. These species include: dark-pigment-
ed bacteria (Prevotella and Por-
phyromonas), eubacteria, fuso-
bacteria and Actinomyces.12

Baumgartner and Xia published a report of the susceptibility of bacteria recovered from acute apical abscesses to five com-
monly used antibiotics in den-
tistry. Antibiotic susceptibility data from 98 species of bacteria recovered from 12 acute apical abscesses led to the following conclusions:

1. Pen-V-K is the antibiotic of choice for endodontic infec-
tions due to its effectiveness in polymicrobial infections, its relative narrow spectrum of activity against bacteria most commonly found in endodontic infections, its low toxicity and low cost.

2. Clindamyx is the antibiotic of choice for patients allergic to penicillin.

3. While amoxicillin and aug-
mentin (amoxicillin plus clavu-
lanate) demonstrated a higher antibacterial effectiveness than Pen-V-K, due to the broader an-
tibacterial spectrum of amoxi-
cillin and the increased cost of augmentin, the authors rec-
nommended that amoxicillin/ augmentin be reserved for un-
resolved infections and patients who are immunocompromised.

4. Metronidazol demonstrated the greatest amount of bacterial resistance and is only effective against anaerobes. Therefore, it should not be used alone for the treatment of endodontic infec-
tions.13

Myth No. 4: Antibiotics increase the host’s defense to infection. The increased prevalence in organ and tissue transplants, resulting in patients with com-
promised immune systems, has heightened the interest in the potential effects of antimicro-
bial drugs on the host’s resist-
cance to infection. However, in vitro and in vivo studies are highly vari-
able and sometimes contradic-
tory. However, the following considerations appear valid: 1) Antibiotics that can penetrate into the mammalian cell (eryth-
romycin, tetracycline, clinda-
ymycin and metronidazole) are more likely to affect the host defenses than those that can-
not (beta-lactams); 2) Tetracy-
clines may suppress white cell chemotaxis; 3) Most antibiot-
ics (except tetracyclines) do not depress phagocytosis; and 4) T-
and B-lymphocyte transforma-
tion may be depressed by teta-

cyclines. The greatest potential harm to the host defenses may result from antibiotics that eas-
ily penetrate into mammalian cell and the least harm is observed with bactericidal, nonrepeting agents (penicill-
ins and cephalosporins).

Myth No. 5: Multiple antibiotics are superior to a single antibiot-
ic. It is often assumed that a combination of antibiotics is su-
perior to a single carefully cho-

Table 2. (Tables/Provided by American Association of Endodontists)

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Myth No. 5: Multiple antibiotics are superior to a single antibiotic. It is often assumed that a combination of antibiotics is superior to a single carefully cho-

osen antibacterial agent. When the purported benefits of antibi-
otic combination are weighed against the possible conse-
quences to the host as well as to the bacterial environment, this assumption is not always real-

y. The usual sequela to com-

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bined antibiotic therapy results in a greater selective pressure on the microbial population to develop resistance. The greater the antibiotic spectrum of the antimicrobials used, the greater the likelihood that resistant microorganisms that develop, and thus is not effective in treating a resulting superinfection. The primary clinical indication for combined antimicrobial therapy is a severe infection in which the offending organism(s) is unknown and more than one drug may ensue if antibiotic therapy is not instituted immediately before culture sensitivity tests are available.3

Myth No. 6: Bactericidal agents are always superior to bacteriostatic agents. Bacteriostatic agents are usually satisfactory when instituted immediately before surgery and appropriate dosing is given (DO NOT ALTER DOSE). Bactericidal agents are always superior to bacteriostatic agents. Bactericidal agents (beta-lactams) are more effective against rapidly growing bacteria, whereas bacteriostatic agents are more effective against slowly growing or non-growing bacteria. Bactericidal agents are more effective when doses are administered in divided doses every four hours. This is due to the shorter half-life of antibiotics (e.g., cefazolin, clindamycin, tetracycline) or by suppression of nucleic acid synthesis (e.g., trimethoprim, quinolones). As a result, these bacteriostatics are more effective with pulse dosing (high antibiotic concentrations at widely spaced intervals). The beta-lactam antibiotics, however, have a slow, time-dependent killing activity and demonstrate very little PAE. Beta-lactam microbial killing requires much more doses of each cell division (interference with cell wall development); hence, they must be continuously present (steady-state blood levels) because bacteria divide at different rates.

Myth No. 7: Antibiotic dosages, dosing intervals and duration of therapy are established for most infections. After more than 90 years of antibiotic usage, the proper dosages, dosing intervals and duration of therapy are essentially unknown for most specific infections. Infections diseases are associated with a high number of variables that affect treatment outcome (microbial characteristics and drug sensitivity, diverse resistance mechanisms, tissue barriers to antibiotic diffusion, and the integrity and activity of the host’s defense mechanisms). However, basic principles are available to guide the dental health care provider in establishing proper dosages, dosing intervals and duration of therapy once the microbial pathogen(s) is identified and a rational choice of antimicrobial agent is made. The following principles of antimicrobial dosages are adapted from Dr. Thomas J. Palladino.md 1. The current recommendation is to employ an antimicrobial on an intermittent basis with vicarious dosage for as short a period of time as the clinical situation permits. The major factor in determining the clinical success of most antimicrobial agents is the height of the serum concentration of the drug and the resulting amount in the infected tissue(s). Also important to the host to the antimicrobial agent for as short a duration of therapy as possible, even if the indication is the duration of therapy the longer the risk to the patient for the development of antimicrobial-induced toxicity and/or allergy, and a reduced risk of developing resistant microorganisms. The goal of antibiotic dosing is to achieve drug levels in the infected tissue equal to or exceeding the minimal inhibitory concentration of the target organism. Serum levels of antibiotics do not necessarily reflect those in tissues. Blood concentrations of the antibiotic should exceed the MIC by a factor of between two to eight times in order to offset the barriers that restrict the drug to the infected site. The choice of an initial antibiotic therapy with a loading dose (an initial dose higher than the maintenance dose). An antibiotic loading dose should be used whenever the half-life of the drug is longer than three hours or whenever a delay of 12 hours or longer to achieve a therapeutic blood level is expected. Most antibiotics used in the treatment of orofacial infections have a half-life shorter than three hours but, due to their acute nature, most orofacial infections require therapeutic drug blood levels sooner than 12 hours. Steady-state blood levels of any drug are usually achieved in a time equal to three to five times the drug’s half-life. Amoxicillin has a half-life of one to one-and-a-half hours. A steady-state blood level would then be achieved in three to seven-and-a-half hours, thereby leading to a substantial potential for treatment failure. The half-life of the beta-lactam antibiotics. A loading dose of two times the main maintenance dose is recommended for acute orofacial infections, which better achieves the goal of rapid, high blood levels rather than initiating therapy with the maintenance dose. Prolonged dosing is required to should ideally be administered at dosing intervals of three to four times its steady-state dosing intervals. If, however, the serum half-life of Pen V K is 0.75 hours. Higher continuous blood levels of this antibiotic are more likely to be obtained with four-hour rather than six-hour dosing intervals. The shorter the serum half-life of the drug, the shorter the dosing interval will need to be in order to maintain continuous therapeutic blood levels of the drug. When determining the appropriate dosing interval, it is also important to consider the following: 1) the postantibiotic effects of the drug; and 2) the relative merits of continuous or pulse dosing. PAEs are more persistent (two to seven hours) with antibiotics that act intracellularly within the microbial cell (erythromycin, clindamycin and tetracycline) or by suppression of nucleic acid synthesis (trimethoprim, quinolones). As a result, these bacteriostatics are more effective with pulse dosing (high antibiotic concentrations at widely spaced intervals). The beta-lactam antibiotics, however, have a slow, time-dependent killing activity and demonstrate very little PAE. Beta-lactam microbial killing requires much larger doses of each cell division (interference with cell wall development); hence, they must be continuously present (steady-state blood levels) because bacteria divide at different rates.

Myth No. 8: Bacterial infections require a “complete course” of antibiotic therapy. There is no such thing as a “complete course” of antibiotic therapy. The only guide for determining the effectiveness of antibiotic therapy is the duration of treatment, which is the clinical improvement of the patient. PAE’s and intermittent dosing assertions that prolonged (after clinical remission of the disease) antibiotic therapy is necessary to prevent “rebound” infections from occurring. Orophacial infections do not persist for this length of time. The infection is to be treated when the infection is properly eradicated. Most orofacial infections persist for seven to ten days, and often less. Patients placed on antibiotic therapy for an orofacial infection should be clinically evaluated on a daily basis. When there is sufficient clinical evidence that the patient’s host defenses have regained control of the infection and that the infection is cleared, the antibiotic therapy should be terminated.

Antibiotic prophylaxis for medically at-risk patients Antibiotic prophylaxis is the administration of antibiotics to patients without evidence of infection to prevent bacterial colonization and reduce subsequent postoperative or post-treatment complications. The only established use of antibiotic prophylaxis is dentistry in the attempt to reduce the potential consequences of bacteremia induced by dental treatment in certain medically at-risk patients. The principle indication for antibiotic prophylaxis for dental patients is the prevention of infective endocarditis during specified dental treatment of patients who also have specific medical conditions. Controversial indications include patients with orthopedic prosthetic devices, indwelling catheters and impaired (immunosuppressed) host defenses.

Table 3. (Table Provided by American Association of Endodontists)
risk of adverse outcomes from IE, and who would derive the greatest benefit from prevention. The prevalence of heart disease and other cardiac conditions associated with the highest risk of adverse outcomes from IE is so great that it is feasible for some dental procedures is reasonable, even though we ac-
knowledge that it is effective, is unknown.17

Therefore, the 2007 AHA guideline for prophylaxis should be consid-
ered for patients presenting for dental treatment, to review the current nature of the needed dental treatment, to review the current decision making for patients undergoing dental procedures. The practitioner and the patient should consider possible oral bacteremias that may suggest the presence of a significant medical risk to patients with prosthetic joint infection, as well as the known risks of frequent antibiotic prophylaxis. As part of the evidence-based approach to care, this clinical practice guideline should be integrated with the patient's needs and preferenc-
es.20

In February 2006, the AAP published an information state-
ment in which it was recommended that "clinicians consider antibiotic prophylaxis for patients prior to any invasive procedure that may cause bac-

teria to be released into the bloodstream. In response to this statement, the American Acad-

The authors of the AAMOS po-

tion statement reviewed the available literature on the subject as it relates to the new 2007 AHA guideline statement and concluded: "The risk of patients' experiencing drug reactions outweighs the benefit of preventing bact-
eria infections and the cost of antibiotic medications alone do not justify the practice of antibiotic prophylaxis in (all) patients with prosthetic joints."
The authors called for a multi-
disciplinary, systematic, review of the literature relating to antibiotic prophylaxis in patients with prosthetic joints. In the meantime, they con-
cluded that the new AAMOS 2009 information statement should not replace the 2005 joint con-

During December 2012, a panel of experts representing the Amer-
ican Academy of Orthopedic Surgeons and the American Academy of Oral Medicine published a systematic review and clinical prac-
tice guideline, titled "Prophylaxis for Orthopedic Implant Infection in Patients Undergoing Dental Procedures: Evidence-based Guideline and Evidence Report." This report contained the following three recommendations:

1. The practitioner might con-
sider discontinuing the practice of routinely prescribing pro-
antibiotic prophylaxis for patients with hip and knee prosthetic joint implants undergoing den-
tal procedures. "We are unable to recommend for or against the use of topical oral anesthetics with or without prophylactic antibiotics for patients with hip and knee prosthetic joint implants undergoing dental procedures."

2. Health, United States, 2010: U.S. Department of Health and Human Services, Centers for Disease Control and Preven-
tion, National Center for Health Statistics, 2009.

2. Health, United States, 2010: U.S. Department of Health and Human Services, Centers for Disease Control and Preven-
tion, National Center for Health Statistics, 2010.

2. Health, United States, 2010: U.S. Department of Health and Human Services, Centers for Disease Control and Preven-
tion, National Center for Health Statistics, 2011.

2. Health, United States, 2010: U.S. Department of Health and Human Services, Centers for Disease Control and Preven-
tion, National Center for Health Statistics, 2012.

2. Health, United States, 2010: U.S. Department of Health and Human Services, Centers for Disease Control and Preven-
tion, National Center for Health Statistics, 2013.

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Endodontic irrigants and irrigant delivery systems

By Gary Glassman, Canada

Endodontic treatment is a predictable procedure with high success rates. Success depends on a number of factors, including appropriate instrumentation, successful irrigation and decontamination of the root canal space to the apex and in areas such as isthmuses. These steps must be followed by complete obturation of the root canals, and placement of a coronal seal, prior to restorative treatment.

Several irrigants and irrigant delivery systems are available, all of which behave differently and thus have relative advantages and disadvantages. Common root-canal irrigants include sodium hypochlorite (NaOCl), chlorhexidine gluconate, alcohol, hydrogen peroxide and ethylenediaminetetraacetic acid (EDTA). In selecting an irrigant and technique, consideration must be given to their efficacy and toxicity.

With the introduction of modern techniques, success rates of up to 98 percent are being achieved.1 The ultimate goal of endodontic treatment per se is the prevention or treatment of apical periodontitis, such that there is complete healing and an absence of infection,2 while the overall long-term goal is the placement of a definitive, clinically successful restoration and preservation of the tooth. For these to be achieved, appropriate instrumentation, irrigation, decontamination of the root-canal obturation must occur, as well as attainment of a coronal seal.

There is evidence that apical periodontitis is a biofilm-induced disease.3 A biofilm is an aggregate of microorganisms in which cells adhere to each other and/or to a surface. These adherent cells are frequently embedded within a self-produced matrix of extracellular polymeric substance. The presence of microorganisms embedded in a biofilm and growing in the root-canal system is a key factor for the development of periodical lesions.4,5 Adherent lining, the root-canal system has a complex anatomy that consists of arborizations, isthmuses and cul-de-sacs that harbor organic tissue and bacterial contaminants (Figs. 1a, b).

The challenge for successful endodontic treatment includes always being the removal of vital and necrotic remnants of pulp tissue, debris and bacteria during instrumentation, the dentin smear layer, microorganisms, and micro-toxins from the root-canal system.6 Even with the use of rotary instrumentation, the metallic sodium hypochlorite is currently available only act on the central body of the root. The goal is to rely on irrigation to clean beyond what may be achieved through mechanical instrumentation alone. Enterococcus faecalis and Actinomyces species prevent or perturbit punctures such as Actinomyces israelii — which are both implicated in endodontic infection and in endodontic failure — penetrate deep into dental tubules, making their removal through mechanical instrumentation impossible.7,8 Finally, E. faecalis commonly expresses multidrug resistance,9 complicating treatment.

Therefore, a suitable irrigation protocol, including but not limited to E. faecalis. NaOCl is superior to all other irrigants.19,20 It has the unique ability to dis- solve necrotic tissue. The irrigant that satisfies most of the requirements for a root-canal irrigant is NaOCl.19,20 It has the ability to enter the entire root canal and thus cannot prevent the formation of a smear layer during instrumentation.21 Calcifications hindering mechanical preparation are frequently encountered in the root-canal system, further complicating treatment. Desensitizing agents such as EDTA have therefore been recommended as adjuvants in root-canal therapy.22,23 The higher concentration may increase the wetting efficiency of the irrigant.24,25 However, although NaOCl appears to be the most desirable single endodontic irrigant, it cannot dissolve inorganic particle and thus cannot prevent the forma-

The desired attributes of a root-canal irrigant must not only be effective for dissolution of the organic of the dentin, but also be effective in ef- fectively eliminate bacterial contamination and remove the smear layer — the organic and inorganic layer that is created on the wall of the root canal during the mechanical instrumentation.26 A delivery to irrigant to the root-canal system is essential for efficient irrigation and the success of endodontic treatment.27 The irrigant must be used prior to mechanical preparation, even when the use of such methods such as lowering the tempera-

The irrigation system is essential for efficient irrigation and the success of endodontic treatment.27 Also, NaOCl incidents must be kept to a minimum to prevent the valve from frozen. NaOCl irrigants are required to be used with caution, as deeper caries or fractures may lead to increased leakage of irrigants and irritation of the oral cavity. If deep caries or fractures is present adjacent to the root-end, there are several general safety precautions that must be fol-

General safety precautions

Root-canal treatment and irrigation system is employed, and particularly if an instrument with tissue toxicity is used, there are several general precautions that must be fol-

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Apical vapor lock

Because the root canal is surrounded by the periodontium, and

the root canal foramen is open, the root canal behaves like a closed-ended channel. This produces an apical vapor lock that resists displacement during root-canal cleaning and final irrigation, thus preventing the flow of irrigant into the apical part of the root canal. This impediment of the root-canal system. Apical vapor lock also results in gas entrapment at the apical third. During irrigation, NaOCl reacts with organic tissue in the root-canal system, and the resulting hydrolysis liberates abundant quantities of ammonia and carbon dioxide. This gaseous mixture is trapped in the canal system and quickly forms a column of gas into which further fluid penetration is limited. Extension of the irrigant into fluids through this vapor lock does not reduce or remove the gas lock. This limits the availability of an adequate flow of irrigant.

The phenomenon of apical vapor lock has been confirmed in studies in which roots were embedded in polymethyl methacrylate for impression material to restrict fluid flow through the apical foramen and the closed-ended channel. The result in these studies was incomplete debridement of the apical part of the canal walls with the use of a positive-pressure syringe delivery system.

Micro-CT scanning and histological tests conducted by Tay et al. have also confirmed the presence of apical vapor lock. In fact, studies conducted with root canals with communicating apices cannot be regarded as conclusive on the efficacy of the use of ultrasound-free instrumentation.

The apical vapor lock may also explain why in many instances of sterile root canals were unable to demonstrate a clean apical third in sealed root canals.

In a paper published in 1985 based on research by Chow determined that traditional positive-pressure irrigation had virtually no effect apical to the orifice of the root canal compared to a closed-ended canal. Fluid exchange and debris displacement may not have occurred. Equally important to his primary findings, Chow set forth an infallible solution to mechanical irrigation: “For the solution to be mechanically effective in removing all the particles, it has to: (a) reach the apex; (b) create a current (force); and (c) carry the particles away.” The apical vapor lock and consideration for the patient’s safety have always preserved the thorough cleaning of the apical 5 mm. It is critically important to determine which irrigation system will effectively irrigate the apical third, as well as inferences and lateral canals, and in a safe manner that prevents the extrusion of irrigant.

Manual agitation techniques

By far the most common and conventional set of irrigation techniques, manual irrigation involves dispensing of an irrigant into a canal through needles/cannulae of variable gauges, either passively or with agitation by moving the needle up and down the canal space without binding it on the canal walls. This allows the control of needle depth and the volume of irrigant that is flushed through the canal. However, the closer the needle tip is positioned to the apical tissue, the greater the chance of apical extrusion of the irrigant. This must be avoided; were NaOCl to extrude past the apex, a catalytic scenario could occur.

Manual-dynamic irrigation

Manual-dynamic irrigation involves gently moving a well-fitting gutta-percha master cone in and out of the root canal, thereby producing a hydrodynamic effect and significant irrigant exchange. Recent studies have demonstrated that this irrigation technique is significantly more effective than automated-dynamic irrigation and static irrigation.

Machine-assisted irrigation systems

Sonic irrigation

Sonicated activation has been shown to be an effective method for disinfecting root canals, operating at frequencies of 1-6kHz. There are several sonic irrigation devices on the market. The Vibrafile delivers activation and sonic irrigation in one step. It employs a two-piece syringe with a rechargeable battery. The irrigant is sonically activated, as is the needle that you insert into the syringe. The EndoActivator is a more recently introduced sonically driven canal irrigation system. It consists of a portable handpiece and three types of disposable polymer tips of different sizes. The EndoActivator has been reported to effectively clean debris from lateral canals, remove the smear layer and dislodge clumps of biofilm within the curved canals of molars.

Ultrasonic

Ultrasound energy produces higher frequencies than sonic but low amplitudes, oscillating at frequencies of 25-50 kHz. Two types of ultrasonic irrigation are available. The first type is simultaneous ultrasonic instrumentation and irrigation, and the second type is referred to as passive ultrasonic irrigation operating without simultaneous irrigation (PUI). The literature indicates that it is less advantageous to apply this issue with both systems testing their ability to eliminate microorganisms during clinical treatment.

Pressure protocol described by ISO size 0.55 mm in diameter. The plastic rotary F File. Although sonic or ultrasonic instrumentation is more effective at removing residual canal debris than rotary endodontic files are, and irrigation solutions are delivered into the canal during this endodontic treatment, many clinicians still do not incorporate it into their endodontic instrumentation armamentarium. The common reasons given for not using sonic or ultrasonic instrumentation are consumer resistant to set up, an unwillingness to incur the cost of the equipment, and lack of awareness of the benefits of this final instrumentation step in endodontic treatment. It is for these reasons that an endodontic polymer-based rotary irrigation system was developed. This new, single-use, plastic rotary file has a unique file design with a diamond abrasive embedded into a non-toxic polymer. The F File will remove dentinal pulpal debris and eliminate the NaOCl without enlarging the canal further.

Pressure-alternation devices

Rinsendo irrigates the canal by using pressure-alternation technology. Its components are a handpiece, a cannula with a 7 ml syringe filled with irrigant carrying the handpiece. The handpiece is powered by a dental air source at an air pressure of 0.2 MPa. The irrigation solution is delivered at a rate of 6 ml per minute. Research has shown that it is not cost-effective to use a handpiece with the root-canal system, but more research is required to provide evidence of its effectiveness. Periapical extrusion of irrigant has been reported with this device.

The EndoVac apical negative-pressure irrigation system

The EndoVac apical negative-pressure irrigation system has three components: the Master Delivery Tip, MacroCanna and MicroCanna. The Master delivery tip is connected to the canal in a semi-bored channel and evacuates the irrigant. The handpiece is powered by a dental air source at an air pressure of 0.2 MPa. The irrigation solution is delivered at a rate of 6 ml per minute. Research has shown that it is not cost-effective to use a handpiece with the root-canal system, but more research is required to provide evidence of its effectiveness. Periapical extrusion of irrigant has been reported with this device.

The VibeTip is connected to a syringe of irrigant and the evacuation equipment is connected to a suction line to the high-speed suction of a dental unit. The Plastic MacroCanna is connected to the high-speed suction of a dental unit.
This does not imply that NaOCl can or should be excluded as an endodontic irrigant; in fact, its use is critical, as has been discussed elsewhere. The implication of this does imply that it must be delivered safely.

Safety first
In order to compare the safety of six-canal intra-canal irrigation delivery devices, an in-vitro test was conducted using the working length of the canal, by apical negative pressure with neutral atmosphere and an open apex to determine whether the EndoVac did not exceed apical negative pressure and a triple antibiotic that had been utilized for pulpal regeneration and in teeth with incompletely formed apices (Trinum x Cipro, Minugus,Flagyl) versus use of apical negative pressure irrigation with NaOCl, it was found that the results were statistically significant for mineralized tissue formation and the repair process.

Conclusions
Since the dawn of contemporary endodontics, dentists have been syringing NaOCl into the root canal system and then proceeding to place endodontic instruments in the canal in the belief that they were carrying the irrigant to the apical termination. Biological, scanning electron microscopic and other studies have proven this belief to be in error. NaOCl acts with an almost immediate chemical reaction in the root canal and quickly forms micro-bubbles at the apical termination that coalesce into a large apical vapor bubble with subsequent instrumentation. Because the apical vapor lock can cause damage via mechanical means, it prevents further NaOCl flow into the apical area.

The safest method yet discovered to provide fresh NaOCl safely is to eliminate the apical vapor lock before extracting NaOCl with apical negative pressure pressure, because it always draws irrigant into the apical area. This method has also been proven to be safe because it always drains irrigant into the apical area. When the proper irrigating agents are delivered safely to the full extent of the root canal termination, thereby removing 100 percent of organic tissue and 100 percent of microbial contaminants, success in endodontic treatment may be taken to levels never seen before.

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EDITORIAL NOTE: A complete list of references is available from the publisher.

This article has been reprinted in part from Dr. Glassman, Safety and Efficacy Considerations for the Delivery of Negative Pressure irrigation (Penwell, 2011.)

About the Author
Dr. Gary Glassman graduated from the University of Toronto, Faculty of Dentistry in 1984. He graduated from the Endodontol-ony Program at Temple University in 1987, where he received the Louis I. Grossman Student Award for academic and clinical proficiency in endodon-tics.

The author of numerous publications, Glassman lectures globally on endodontics, is on staff at the University of Toronto, Fac-ulty of Dentistry, is editor-in-chief of the endodontic journal, and adjunct professor of dentistry and director of endodontic pro-gramming at the University of Technology, Kingston, Jamaica.

He is a fellow of the Royal Col-lege of Dentists of Canada, fel-low of the American College of Dentists, and editor of the Canadian Journal of Endodontics. He maintains a private practice, Endodontic Specialists of Toronto, Ontario, Canada. He can be reached atgary@torontoe-d.com.
Mirror mirror on the wall who has the whitest teeth of all...

By Jordan

The American Dental Association asked consumers what would they most like to improve about their smile, and the reply was whiter teeth. This is in line with the research we have conducted, that shows a clear trend that more consumers are concerned with their teeth’s appearance. The basic need for clean teeth has evolved into clean and white teeth. Supporting the macro health and beauty trends, consumers want to live better lives that also last longer. Yellow teeth are associated with poor personal hygiene and are also considered a sign of aging.

As we age our teeth naturally become yellower. The outer layer of our enamel gradually breaks down, exposing the under-layer, called dentin, which is naturally yellower than enamel. We can take care of our enamel by brushing with a soft toothbrush, not brushing too hard, and using a toothpaste that is also tailor-made to the patient’s mouth. Prior to treatment, a check-up will ensure there are no undetected cavities. If there are, these should be filled, prior to whitening applications. The treatments are, as a rule, more effective and quicker. It is important that the patients are informed that these will not work on crowns, fillings, caps or veneers. To ensure a good and lasting result it is also important to help them find the most effective routine for maintaining their new white(r) smile. Help your patients keep daily surface care effective. Most dentists already recommend a soft toothbrush and are positive to gentler formulated whitening toothpastes (most commercial whitening toothpastes contain some level of silica to lift plaque and tar-
tar during daily brushing sessions). There are also several toothbrushes that have specialized bristles that effectively lift tar.

The number one recommendation from dentists is to encourage their patients to floss once a day. Flossing before brushing will remove food particles and plaque between the teeth (where 50% of cavities start) and leave this space clean and receptive to fluoride treatment from the toothpaste. Using a straw could also be recommended if the patient has a high intake of caffeinated drinks like coffee, tea, juices or carbonated drinks. Tobacco intake is also one of the worst offenders when it comes to staining teeth. Patients might experience some sensitivity post treatment, so it is also important to advise them on what to do should this happen to them.

Deeper stains, or intrinsic stains, are more difficult to remove. These can be caused by a past injury, use of certain medications and antibiotics and grey or dull teeth can also be hereditary. Teeth bleaching, using either a hydrogen or carbamide peroxide will help break up these deeper stains into smaller, less colored pieces that will make the teeth appear brighter and whiter.

Consumers try whitening products because they want white(r) teeth². Many consumers are skeptical to the working power of whitening products. However, they buy them anyway as they feel they have nothing to lose³. A whitening toothpaste gives them all the other benefits they need, for example, cavity protection and fresh breath, and on top of that they also get any whitening advantages that they might have missed out on if they choose a product without whitening claims. 25% of all toothpastes launched globally are whitening toothpastes. In comparison only 10% of toothbrush launches are³. These numbers are expected to keep growing, in line with an escalating trend of consumers wanting nice looking white teeth.

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Contact Information
Jordan Middle East POBOX 17795, Dubai, UAE Tel.: +971 4 8871050 ejordndub@emirates.net.ae

For more information www.jordan.no jordndub@emirates.net.ae
Professional oral hygiene for children is one of the simplest procedures in terms of the child’s comfort and one of the most difficult in terms of parental motivation. This article discusses materials for improving the quality of teeth-cleaning by dentists, reducing the time taken and level of trauma, as well as the psychological aspects of cleaning from the point of view of the parents and child.

Main problems in professional cleaning in children

Professional teeth cleaning for children in the dentist’s chair is a procedure which needs a special approach. It must include not only mechanical removal of plaque from dental surfaces, but is also an important step in adapting the child to later visits to the dentist, preparation for orthodontic and restorative treatment, as well as forming a general culture of children going to the dentist.

What problems can be encountered by paediatric dentists in this apparently simple procedure?

Foremost is categorical refusal of the parents and the need to progress directly to treatment because of lack of understanding of the importance of the procedure.

Unwillingness of the parents because of the apparent disparity between the cost of the service and the dentist’s efforts.

Refusal of the child to accept the procedure because of unpleasant sensations during the process or the duration of the procedure.

Unsatisfactory results due to low effectiveness of the equipment and materials used.

Patients’ lack of motivation to undergo the procedure regularly.

Successful resolution of these issues was sought by questioning patients at different stages of teeth-cleaning and assessing the results using a variety of professional hygiene materials. The procedure was performed step-by-step, with detailed explanations of each stage to the parents and child. The first step was to provide a visual demonstration of plaque using a disclosing agent (Fig. 1) not only to the child but also to the parents, explaining the consequences of lack of high-quality oral hygiene at home and the need for professional teeth-cleaning, as well as educating the child and parents.

At this stage, the dental hygiene materials currently used at home are analyzed, with suggestions about changing them if necessary.

The second step consists of explaining to the child how to follow the correct procedure for oral care at home, demonstrating this with a mirror. At this stage, parental dissatisfaction can be formulated as: “You have cleaned his/her teeth but we cannot see how we can do it ourselves,” so it is important to give the child the opportunity to repeat all the movements demonstrated and, where necessary, correct them, giving additional explanations. The third step consists of actually cleaning the teeth.

The process of professional hygiene in children must be as comfortable as possible. The aims of the procedure are not only to provide mechanical removal of plaque, but also to develop a positive experience when visiting the dentist. When questioning parents afterwards, we have had the following negative comments:

- the child does not like the taste of the paste;
- the child is allergic to the paste;
- the parents failed to see the fundamental difference between the paste and brush used during the procedure and those they use at home;
- the cost of the procedure seems unreasonably high;
- the gums bleed after cleaning by the dentist even though the cleaning was gentle;
- the procedure took a long time and was unpleasant, and the child refused to come to the dentist again.

Thus, the materials and accessories of performing professional hygiene must not only produce high-quality and visible cleaning results, but the procedure must also be as comfortable as possible for the patient and dentist. Considering all these points, there is particular interest in Cleanic® professional dental cleaning and polishing paste produced by Kerr. The perlite particles in this paste alter the abrasiveness of the paste during cleaning; most cleaning of Priestley plaque. The paste has a pleasant taste and the child has a choice - mint or green apple. There is also a solution for children unable to tolerate any taste or tendencies to allergy - Cleanic-Light, which has no flavor.

By Dr. Olga Melinkova, Russia

An Optimum Set of Materials for Professional Paediatric Oral Hygiene

PATENTED PERLITE TECHNOLOGY

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A NEW tantalizing taste for an outstanding prophylaxis result

... parents become more confident in the dentist as a professional working with children and caring not only for the short-term results, but also the long-term outcome.”

Cleanic Light, which has no flavor - Mint or Green Apple: Parents become more confident in the dentist as a professional working with children and caring not only for the short-term results, but also the long-term outcome. 
The Ultimate Sonicare Power Toothbrush

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- Our newest power toothbrush removes 45% more plaque than Sonicare FlexCare+ with ProResults brush head.
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- Clinically proven to whiten teeth in just 1 week.


A representative independent survey conducted by TNS on a sample of 3,600 consumers in the GCC.
so that even minimal contact margin to be strongly inflamed, is very common for the gum when there are problems with high gum sensitivity, and is ideal for professional oral hygiene for children. The special composition of the cup material prevents heating of the tooth. The cups do not contain latex, which decreases the risk of allergy. Because of its optimized shape, the edge of the cup accurately goes under the gum (Fig. 6), significantly decreasing the probability of traumatizing the mucosa and ensuring the absence of bleeding after cleaning (Figs. 7 and 8).}


Teeth Whitening – No Longer a Sensitive Subject!

By Beverly Hills

The popular accessory nowadays is not just the handbag, the shoes, or the Chihuahua; it's the pearly white smile to boost appearance and self-esteem. In fact, the teeth whitening market is one of the fastest growing in the dental market, boasting an estimated value of $600 million according to the Academy of General Dentistry.

This growth has allowed teeth whitening to become more accessible for patients and there's a solution to suit all budgets; in-office procedures, dentist-prescribed at-home treatments, strips and gels. But a common factor of this cosmetic procedure is that the patient will almost certainly experience some level of discomfort through sensitivity. This pain can often be so excruciating that the patient either stops treatment halfway through or dismisses this procedure altogether in search for a less painful option.

And it's not just after teeth whitening, dentine hypersensitivity affects one third of the adult population at some point in their lives. This can be anything from a mild twinge to having severe discomfort that lasts for several hours or even days. Be it a result of teeth whitening or if they are simply sensitive to heat, cold, sweetness, acidity or brushing, by educating patients on how to deal with dentine hypersensitivity you can help them achieve a whiter, brighter, “pain-free” smile.

Explaining the causes and symptoms of sensitive teeth

Many people can be confused about the causes of their sensitive teeth so it's important to inform them of all the common factors and put them at ease. Generally, when the hard enamel is worn down, gums begin to recede and the dentine tubules become exposed; the causes and symptoms will differ for every patient, from eating or drinking foods and hot or cold beverages to touching teeth or exposing them to cold air.

The pain associated with dentine hypersensitivity can even affect the eating, drinking, and breathing habits of patients, so it's ideal to start by informing them that sensitive teeth are relatively common and not usually a health concern.

Check which toothpaste they use

Perfect White Sensitive, from Beverly Hills Formula, provides the patient with sensitivity action combined with stain removal and low abrasion. A study conducted by an independent US Laboratory in 2012 found that Beverly Hills Formula toothpastes are proven to be less abrasive than some other leading brands of whitening and regular toothpastes, making it the ideal whitening toothpaste for patients who suffer with sensitive teeth.

Perfect White Sensitive has been formulated using Potassium Nitrate, which is proven to decrease tooth sensitivity. Various clinical studies have shown that using potassium nitrate when brushing over a period of time can help to reduce sensitivity. Not only does Potassium Nitrate work to prevent tooth decay, it also strengthens tooth enamel and works to prevent the pain caused by tooth sensitivity.

Check the patient’s five senses

A study which appeared in the General Dentistry journal (2002) confirmed that people who are sensitive to bright lights, loud noises, pungent perfumes and itchy clothing, are most likely to avoid hot and cold foods and drinks because they have sensitive teeth. The study found a di-
rect relationship between sensitive teeth and other sensitivities, finding that patients with sensitive teeth expressed a need to wear sunglasses when outdoors.

Helping patients overcome sensitive teeth

As a dental professional, your expert advice and recommendations carry considerable weight. Openly discussing sensitive teeth with patients will encourage you to identify how much of a concern it is for them and recommend a solution to help eliminate the discomfort. Put their mind at rest by confirming that sensitive teeth can be easily addressed by following some simple oral care procedures; avoid brushing teeth too hard or too much, avoid grinding or clenching teeth and avoid acidic foods and drinks.

Patients should also be advised to use a low abrasion, desensitising toothpaste, such as Perfect White Sensitive, which contains the ingredient Potassium Nitrate. This desensitising agent will help relieve tooth sensitivity by effectively blocking the transmission of pain sensation between the nerve cells rapidly and effectively, so that tooth whitening is no longer a sensitive subject! Ultimately, by switching to a low-abrasive whitening toothpaste, patients can reduce the risk of suffering from dentine hypersensitivity from the outset.

In a study recently performed by Missouri Analytical Laboratories (July 2011), a range of whitening toothpastes were tested to compare and evaluate their levels of abrasion. The results confirmed that Beverly Hills Formula whitening toothpastes are proven to be less abrasive than other leading brands of both whitening and regular toothpastes, scoring as low as 95 on the RDA table whilst some leading competitors have levels as high as 147.

Raising awareness of sensitive teeth

By helping your patient’s combat sensitive teeth you will be making a dramatic improvement to their life, enabling them to enjoy hot and cold foods and drinks again.

Nominate a “sensitive teeth” expert in the practice or hold a “sensitive teeth” day/week/month; you’ll be surprised at how many patients will come forward to end their fight against sensitive teeth. Leave flyers/brochures on sensitive teeth around the practice, in reception or in the waiting room, and patients will feel more inclined to tackle the subject.

About the Author

Eric Peterson is founder of the whitening toothpaste Beverly Hills Formula.

Contact Information

For more information on the Beverly Hills Formula products please call +353 1842 6611, email info@beverlyhillsformula.com or visit www.beverlyhillsformula.com.
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A perfect synergy of technologies

State-of-the-art technologies and materials provide a fast route to achieving excellent results. With careful clinical planning, the chairside part of the treatment can often be completed in a single appointment. Intrarotary digital impressioning circumnavigates the risk of deformed impression materials and allows preparations to be visualized in a 3D format.

Three-dimensional visualization helps patients form a clear idea of what their treatment can achieve and increases the likelihood for obtaining their approval. These advantages are augmented by the favourable mechanical properties of modern ceramic materials such as lithium disilicate glass-ceramics (LS2). In a nutshell, the benefits of CAD/CAM-based manufacturing include reduced treatment times, enhanced accuracy of impressions and precise visualization of the treatment outcome. The following case report describes the clinical steps required in the fabrication of anterior single-tooth crowns to achieve functionally and esthetically first-class results.

Preoperative assessment

A female patient presented with anterior metal-ceramic restorations, wishing for an improvement of her esthetic appearance (Fig. 1). A radiographic examination was carried out followed by an intraoral photographic series. Then, the esthetic parameters were evaluated. Using the conceptual treatment planning tool Digital Smile Design (DSD, Dr. C. Coachman), the desired changes were visualized on the computer and discussed with the patient. Visualization is essential in an esthetically motivated treatment that requires preparation of the tooth structure because it affords the opportunity to familiarize the patient with the most salient changes in a straightforward fashion.

After the patient had approved of the treatment, a conventional intraoral impression (polyvinyl siloxane) was taken and a diagnostic wax-up fabricated. The gum line was not altered at this stage. The diagnostic wax-up was key in helping the patient fathom the prospective three-dimensional volumetric change in her anterior dentition and fabricating the temporary restoration. Among other things, the patient's main concerns were to have the excessive length of her anterior teeth ameliorated to harmonize with the surrounding dentition and to have the severe palatal curvature mitigated.

Planning and temporization

The information gained from the DSD procedure and the tryin of the mock-up formed the basis for the final treatment planning. The mock-up model conveyed a precise impression of the morphological changes to be applied to the teeth. At the try-in,
Many manufactures have developed materials that can hardly be distinguished from their natural counterpart, i.e. the tooth.

the canines were found to be too long in relation to the new appearance of the central and lateral incisors (Fig. 2). To redress this situation, the patient was given the option to have her canines reduced by approx. 1 mm following the insertion of the temporary restoration. Furthermore, the patient was informed of the need for surgical intervention to adapt the course of her gum line. Treatments necessitating a reduction of healthy tooth structure and/or a change of the gingival profile require the use of visualization software, such as the Digital Smile Design program, because such changes cannot be made visible with models or mock-ups.

After the existing restorations were removed with a tungsten carbide bur (Fig. 3), the resulting abutments were in a suboptimal condition and tooth 22 was damaged by a carious lesion. It was therefore necessary to build up the abutments using composite material and an adhesive before the temporary PMMA restorations (polymethyl methacrylate) could be placed. The primary objective was to avoid a further reduction of tooth structure. After completion of the conserva-
tive treatment, the built-up teeth were again slightly reduced to create space in the interproximal area with the aim to encourage the papillae to grow into the alveolar ridge and, as a result, to limit the coronal growth of the soft tissue portions in the buccal and palatal areas. Finally, the soft tissue flaps were secured over the buccal and palatal sides of the alveolar bone using simple vertical mattress sutures (PGA 6/0) and anchored to the periosteum on the buccal side. After the surgery, the temporary restorations were inserted using calcium hydroxide cement. This intervention meant that the patient was not able to clean her teeth in the areas affected. Instead, she was instructed to rinse with 0.12% chlorhexidine solution for one minute three times a day.

Temporization
At the following appointment, the sutures were removed and a precision impression - with- out placing a retraction cord - was taken. This impression was used to create a second “occlusal” model. After the surgical intervention, the temporary restorations were adjusted to the bone crest with the help of curettes, followed by the preparation of the abutment teeth. Here, the aim was to modify the natural emergence profile of the teeth as they emerge from the alveolar ridge and, as a result, to limit the coronal growth of the soft tissue portions in the buccal and palatal areas. Finally, the soft tissue flaps were secured over the buccal and palatal sides of the alveolar bone using simple vertical mattress sutures (PGA 6/0) and anchored to the periosteum on the buccal side. After the surgery, the temporary restorations were inserted using calcium hydroxide cement. This intervention meant that the patient was not able to clean her teeth in the areas affected. Instead, she was instructed to rinse with 0.12% chlorhexidine solution for one minute three times a day.

Simultaneously with the advancement of CAD/CAM technology, the manufacture of CAD/CAM blanks has been consistently improved. Esthetic results that look intrinsically similar to the natural dentition can now be easily achieved due to the combination of the “enamel-like” optical properties of the IPS e.max® CAD HT blocks (high translucency) and the staining technique - no individual lay- ering is required. Lithium disilicate glass-ceramic blocks (IPS e.max CAD HT C14/A2) were chosen for the material for the case described here. The blanks were processed in the CEREC mill unit (Sirona) using a Step 12 and a Cylinder Painted Bur 12S (Fig. 9).

Crown seating
After crystallization firing, the restorations were fitted on the abutment teeth and their accur- acy of fit was evaluated. Minor shape adjustments were performed and the occlusal and proximal contacts adjusted (Fig. 10). Finally, customized effects were applied to the crowns using the staining technique (IPS e.max Ceram Shades) (Fig. 11). The dual-curing luting composite was selected for placing the crowns. This material is available in several shades to allow an ideal esthetic integration. Water-soluble, glycerine-based try-in pastes provide valuable assistance in selecting the cor- rect colour composite (Fig. 12). With these pastes, the shade ef- fect of the all-ceramic restoration can be simulated before it is permanently cemented. The try-in pastes feature the same shade and translucency as the luting composite after it has been lined. The trial denture of the try-in paste is similar to that of the luting composite. In the pre- sent case, each time the restora- tion was tried in with one of the coloured try-in pastes, the shade effect was measured using a col- ourmeasurement device (Spec- troShade, MHT). With the five different shades Light+, Light, Neutral, Warm and Warm+, the translucency can be modified in varying degrees of percentage, ranging from brighter/whiter to darker/yellower and the darker shades can be used to change between the levels of opacity and translucency. With a trans- lucency of approx. 16% and a relatively bright shade effect, the “Light” version was selected for the final cementation. The crowns were seated on the day of the surgery (Figs. 13 and 14).

Conclusion
In the case presented here, the combination of CAD/CAM tech- nology, a lithium disilicate glass- ceramic and a colour-balanced luting composite enabled us to use a straightforward and effi- cient method to restore our pa- tient’s smile to its full attractiveness.

Contact Information
Carlo Monaco, DDS, MSc, PhD
Researcher, Assistant Professor
University of Bologna
Via S. Vitale 56
40125 Bologna, Italy
carlo.monaco@unibo.it

Giovanni Zucchelli, DDS, MSc, PhD
Associate Professor
Department of Oral Sciences
University of Bologna
Via S. Vitale 56
40125 Bologna, Italy
giovanni.zucchelli@unibo.it

Luigi De Stefano, DT
Via Martini d’Ungheria 132
40124 Scandic (BA)
Italy
info@luigides Stefano.com

Carlo Monaco, DDS, MSc, PhD Researcher, Assistant Professor University of Bologna Via S. Vitale 56 40125 Bologna, Italy carlo.monaco@unibo.it Giovanni Zucchelli, DDS, MSc, PhD Associate Professor Department of Oral Sciences University of Bologna Via S. Vitale 56 40125 Bologna, Italy giovanni.zucchelli@unibo.it Luigi De Stefano, DT Via Martini d’Ungheria 132 40124 Scandic (BA) Italy info@luigides Stefano.com
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Contact Information
KaVo Dental GmbH
MEA Division
Phone:+971 4 550 8600
E-Mail:info.mea@kavo.com
Internet:www.kavo.com

Contact Information
Dr. Noor Al-Aswad
Mob: 056 7945588
Dubai, U.A.E,
Century Plaza 101,
Jumeirah 1 Beach Road.
Tel: +971 4 3427576
Sharjah, U.A.E,
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A new era in digital orthodontics

By Jeffrey T. Kozlowski, USA

A true straight-wire appliance would necessitate a patient-specific appliance based on an individual's anatomy. Now, with advances in computer software and digital scanning and fabrication, that idea is a reality and a practical consideration for your practice. Customized Insignia™ is the first true straight-wire appliance. It involves two components: customized appliances—brackets, wires and placement gauges—and 3D real-time virtual treatment planning software. The 3D software enables clinicians to design the patient's final occlusion on-screen before initiating treatment, then prescribes the fabrication of patient-specific appliances to achieve the planned result. This concept is quite different from how clinicians customarily practice orthodontics. Traditionally, we treat patients with specific torque values to have certain effects, then react to those effects by repositioning brackets and making wire bends to guide the teeth into the desired positions. With Insignia, we begin with the end in sight and drive directly towards the desired end result.

Over 20 years in development, customized Insignia appliances offer the only comprehensive patient-specific solution available. The treatment planning process begins with accurate PVS impressions. New clinical methods and materials make this procedure quick and easy. From the impressions, the pre-treatment malaeection (T1) is digitized into a precise mathematical model of the patient's skeletal and dental anatomy and the proposed setup (T2) designed (Fig. 1a-b).

See Dr. Craig Andreiko’s discussion. The setup is loaded to the Insignia web portal where, using on clinical experience, functional and aesthetic preferences and intimate knowledge of the patient’s specific orthodontic needs, the clinician can easily customize it using the Insignia Approver software (Fig. 2). The included software offers clinicians unprecedented control in determining accurate tooth position and in their ability to make changes directly to the 3D models without relying on an operator's interpretation of instructions.

Insignia does not determine treatment mechanics nor prescribe tooth movements and it allows clinicians to use the mechanics and adjacents of their choice. As doctors modify the desired final outcome in the Approver software, they can view in “real time” how the changes affect the opposing occlusion.

Once the clinician finalizes the ideal setup, the Insignia software engineers the customized brackets, wires and precision bonding placement gauges to the exact prescription required to deliver the designed end result accurately and efficiently.

My experience with Insignia is with both the customized passive self-ligating appliance (Insignia custom SL) and Insignia using stock Damon® System appliances. The Insignia software can be used to fabricate patient-specific conventional twin brackets and aligners as well. You can also use Insignia software with stock appliances (Orthos®, Inspire ICE™ and, as I mentioned, Damon).

The difference between customized Insignia and Insignia using stock brackets is the third-order customization (torque) that is engineered into the customized brackets. This difference saves considerable treatment time and effort over using a “best fit torque” stock appliance. Having treated with both customized Insignia SL and Insignia using stock Damon brackets, I can attest to the superior value of the customized appliances.

The Clinical Evaluation

My initial experience with customized Insignia SL began in 2007 when I conducted an extensive clinical evaluation by treating 41 patients to completion. The only limitations on the selection criteria were that patients have no missing or impacted teeth, no pending restorative needs, and must not exhibit poor oral hygiene. The criteria were limited in these ways simply because I wouldn't have been feasible for me to coordinate the ancillary procedures from across the country. At the time, I was in the process of opening my new office in Connecticut and the clinical evaluation was to be conducted atOrmco in California—nearly 3000 miles away. For operator consistency, I played the roles of doctor and assistant, performing the diagnoses, treatment planning, initial bondings and wire changes, providing all mechanics for 100% of treatment. Full records were taken of each patient, including PVS impressions and iCAT® scans (Imaging Sciences, International, Hatfield, Pa.) for diagnostics and treatment planning using the Insignia interactive Approver software. Based on my previous experience with Damon System appliances, I estimated that treatment time for the 41 patients would average 17.5 months.

While I wouldn't recommend selecting this many patients to begin treating with customized Insignia SL for the first time, I am convinced that the best way to learn Insignia is to submit cases regularly. Regular case submission allows the clinician to relate what is designed in the digital environment to the clinical experience and final results. This positive feedback loop of learning will help the clinician design each successive Insignia...
case with a higher level of understanding and accuracy and hence be more successful with its application. My experience has been that clinicians who routinely submit Insignia cases are more successful with it than those who start only a few cases and wait to see how they work out. My skills improved substantially through the first 10 to 20 cases, and like using any other new appliance, it takes a bit of time to learn the nuances. I also strongly recommend doctors initially select easier cases, and then add more challenging cases when they become familiar with the software and clinical protocols.

In late February, 2008, in a one-chair operatory at Ormco’s Insignia manufacturing facility in Glendora, California, I bonded all 41 patients over a five-day period. This intensive week of bonding proved to be my first insight into the potential efficiencies of Insignia’s direct view/in-direct bonding process. After just the first few patients my bonding technique using the placement gauges significantly improved and during the balance of the week, the bonding appointments averaged less than one hour, including preparing the teeth, bonding the brackets, placing bite-turbos, engaging the wires, attaching the elastics and reviewing the patient instructions. And all without the help of a clinical assistant!

We all know the importance of placing brackets correctly, but few of us can consistently and quickly place each bracket precisely where it needs to be. With Insignia, you design the final occlusion and the customized appliances will be fabricated with custom torques, custom bases (in-and-out) and custom wires. You specify your bracket positioning preference (e.g., center of the tooth, more gingival or more incisal) so that the custom appliances are designed to your specifications; thus, it is possible for your Insignia SL appliances to clinically match the placement of your direct-bonded appliances.

To transfer the Approver-designed appliances to the mouth, Insignia provides customized placement gauges that place the brackets in the right spot without need for adjustment (Fig. 4). The precision built into the brackets in the right spot with the precision of planned indirect bonding.

The major challenge in conducting this clinical evaluation was logistics. Managing treatment from so far away was a daunting experience at first; however, the process reinforced the importance of good clinical decision making and its impact on clinical efficiency. Gone was the luxury of shortening patients’ appointment intervals to accommodate case management alternatives when we needed to make clinical decisions based on how a patient responds. It was thus incumbent upon me to create mechanical systems that would withstand the eight-to-ten-week appointment cycle of my West Coast trips.

At six months, the first patient finished treatment and by December 2009, after just 21 months, the fourth patient had his appliances removed. To determine the value of customized Insignia SL, for my own practice, I initially compared the results of this evaluation with my previous seven years of experience treating patients with direct-bonded Damon System appliances. This comparison helped me evaluate customized Insignia SL, with what I used to do in my office—direct bonding. These 41 customized Insignia cases treated in an average time of 12.5 months—a full five months (25%) shorter than my estimate of 17.5 months (Fig. 5). I based the estimates on my previous seven years of experience with the Damon System appliance but before I had had any experience with Insignia. In my opinion, this difference alone attests to the efficiency of customized Insignia SL treatment.

Another value indicator was the number of repositioned brackets needed to finish the customized Insignia SL cases, which was 50% less than my cases with direct-bonded stock Damon System appliances. This second comparison assisted me in placing a value on the patient-specific customized torques of the customized Insignia SL appliance. The 41 customized Insignia SL cases in the evaluation finished in 22% shorter treatment time (at 12.5 months) than the next consecutive 41 cases using Insignia with stock Damon brackets that I treated in my private practice (16.1 months). The average number of appointments for the 41 customized Insignia SL cases was 10.2 versus 8 appointments for the 41 customized Insignia SL cases.

In terms of quality, a subjective evaluation I grant you, I feel that my customized Insignia SL cases finished with quality that equals or exceeds my direct-bonded Damon System cases or my Insignia cases using stock Damon brackets yet in less time and with significantly less effort. I have felt confident enough with the customized Insignia case results to have shown them in presentations around the world and have been so pleased with the results that I now treat 70% of my cases with customized Insignia SL appliances. I still treat 30% of my patients with direct-bonded stock Damon appliances, primarily those who start treatment in late mixed dentition, but for all those cases for which customized Insignia SL applies, it is now my appliance of choice.

This article highlights a few of the patients I treated in the clinical evaluation, demonstrating the quality of the results and efficiency of treatment.

About the Author
Dr. Kozlowski obtained his DDS degree in 1996 and a certificate in orthodontics at State University of New York at Buffalo in 1998. His practice, Kozlowski Orthodontics, has locations in New London and East Lyme, Connecticut. He has lectured extensively all over the world, including the AAO and its various constituent societies and universities and study clubs as well as annually at the US Damon Forum and European Damon Symposium. His topics include efficiency and excellence in orthodontics, early treatment and facial esthetics. He has also been published in several orthodontic journals, including Seminars in Orthodontics and the Journal of Clinical Orthodontics.

A fitness advocate, he has completed five Ironman Triathlons, more than a dozen Half-Ironman Triathlons and numerous marathons and endurance cycling events, including the grueling Mt. Washington Bike Cycle Hill Climb seven times. He and his wife, Amy, a pediatric dentist, have two children: Amelia and Jake.
By Crawford Bain, UAE

Implant dentistry has evolved dramatically in the 50 years since Branemark’s first patient was treated. The combination of improved micro-roughened implant surfaces and tapered implants offers both enhanced initial primary stability and more rapid osseointegration. This has led to successful treatment of many patients in an accelerated protocol, often offering early or even immediate restoration of the implants. Those who have become involved with implants in the last few years may take this early or immediate loading for granted, and consider it to be the norm for most patients; however only by careful case selection can we ensure predictable success.

Some patients however present with a complex mix of problems that necessitate a slower, systematic approach to implant treatment if optimum results are to be achieved. Professor Dennis Tannow of Columbia University, one of the world’s leading implant specialists, has a well used maxim... “Let’s do one miracle at a time”. The purpose of this article is to present one such case when only by a stage by stage systematic approach was a good result achieved for the patient.

Case Report

Patient RR was a healthy non-smoking 44 year old male who presented with a complaint of a high smile line and a proportion showing a large amount of darkened labial root surface. The diagnosis was of endodontic failure and possible root fracture leading to loss of labial bone and soft tissue. With a complex situation such as this, it often beneficial to visualize the end result – in this case an implant supported crown, supported by adequate bone and soft tissue providing gum line symmetry – then to work out “how do I get there from here”? In this case the treatment plan was essentially divided into 3 stages:

1. Re-entry was carried out at 4 months using a full thickness incision lines fully closed. (Fig. 6, 7)
2. Rebuilding the lost bone
   1. The graft was left to mature 4 months to check for good graft condensation and to ensure there was no positive pressure in the area of the grafted bone.
   2. The partial denture was adjusted and refitted after ensuring there was no positive pressure in the area of the grafted bone.
3. Rebuilding the lost soft tissue – necessary to close over bone graft materials and give symmetry
4. Rebuilding the lost bone – necessary to provide support for an implant
5. Replacing the tooth

In detail these involved:

1. Fabrication of a tooth borne immediate partial denture
   2. Extraction and the split root apicectomy in his 20s. Clinical examination revealed an otherwise periodontally healthy, well looked-after mouth. (Fig. 1, 2, 3)
   3. Re-building the lost soft tissue providing gum line symmetry and adjacent papillae gives a better match than palatal tissue. We are ready to re-enter when incision lines fully closed. (Fig. 6, 7)
   4. OsseoGuard xenograft membrane (Biomet 3i) was placed after being moistened with blood and saline (Fig. 9)
   5. The flap was sutured with 4-0 silk to achieve primary closure (Fig. 10)
   6. Fitting and adjusting as necessary the tooth borne immediate partial denture
   7. Monitoring of soft tissue healing. Tissue from the tuberosity and adjacent papillae gives a better match than palatal tissue.

Replacing the tooth

1. The graft was left for 6 months then a full thickness papillae preserving flap was used to access the site, revealing excellent regenerated bone
2. A 5.5mm Full Osseotite straight sided external hex implant (Biomet 5i) was placed with an insertion torque of 45Ncm. Because the implant was largely

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Dental Tribune Middle East & Africa Edition | September-October 2015

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Diploma in Implant Dentistry
Dubai 28 February - 1 March 2016

In an exciting new development, The Royal College of Surgeons of Edinburgh is offering a diet of the examination in Dubai.

This examination offers general practitioners with a particular interest in Implant Dentistry the opportunity to obtain a formal qualification in this field.

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The provision of a one-day preparatory course is currently under discussion. Once this has been finalised details will be published on the College website.
in regenerated bone, immediate restoration was not attempted. No additional grafting material was needed. (Fig. 12, 13)

5. After 4 months exposure was carried out using a punch gingivectomy approach.

4. A temporary cylinder was seated and a clear crown form was used with cold cure acrylic to fabricate a temporary crown. This was Torqued to 20N/cm and cotton wool + Cavit placed in the access hole. (Fig. 14, 15)

6. Pick up coping impression was taken with Impregum injection into sulcus to capture emergence profile developed with the temporary crown. Occlusal records and shade were taken and agreement was reached with the patient on a midline diastema to improve symmetry. (Fig. 17)

7. The porcelain fused to metal, screw retained crown was tried in, and the fit and occlusion were checked then, after aesthetics had been approved by the patient, a square Goldtite screw was torqued to 32 N/cm and access sealed with cotton wool + composite (Figs 18, 19)

8. A final x-ray was taken and oral hygiene instruction and recall advice were given.

9. The patient returned one year later for a recall examination and x-ray and was still delighted with the aesthetic improvement (Fig. 20, 21, 22)

This case report illustrates the fact that not all tooth replacement problems can be managed by immediate or rapid implant restoration of the lost teeth.

While the concepts of immediate replacement and immediate loading of implant prostheses certainly has a place in our armamentarium, it is not applicable to all situations and is certainly a long way from being a panacea. We may all enjoy fast food occasionally, but generally slower, more relaxed fine dining is preferred. It is perhaps appropriate to consider Dennis Tarnow’s maxim “Do one miracle at a time”.

Crawford Bain
BDS, DDS, MSc, MBA
Professor of Periodontics and Programme Director of Graduate Periodontics
Hamdan Bin Mohammed College of Dental Medicine, Dubai, UAE

About the Author

• NuOss® is physically and chemically comparable to the mineral matrix of human bone
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TODAY’S DENTAL PROFESSIONALS RELY ON NUOSS ANORGANIC BOVINE BONE.
General dentists are considered the gatekeepers of the dental profession, with the primary responsibility to evaluate, diagnose, treat or refer a patient while keeping the patient’s best interests in mind. General dentists establish relationships with dental specialists with post graduated training in order to render the appropriate treatment for their patients.

Today this relationship has never been stronger than before. Most general dentists have one or two highly trained dental specialists in their communities that they feel comfortable referring patients to and this has really impacted the level of dental care and opened doors for endless possibilities for patients. Whether it’s a simple referral, or a multi interdisciplinary approach, a team of general dentist and specialist dentist can treat a single patient in a comprehensive manner to ensure the best clinical outcomes possible. Although at a slower pace, this referral culture is also growing across country lines. Many dentists from the Gulf region refer their patients to dental specialist in Dubai and this has had a positive impact on dentistry and medical tourism in Dubai.

As an Implant clinic concentrating mainly on dental implants, SameDay Dental Implants Clinic in Dubai Healthcare City has treated thousands of patients referred by well-known dentists in the region. By having a team of well-trained specialist under one roof, dentists can refer their patients to SameDay

**SameDay® molar implant replacement**

By Dr. Safa Tahmasebi, USA & Dr. Costa Nicolopoulos, Greece

Fig. 1. Unrestorable tooth # 46 with peri-endo lesion, furcation involvement and periapical granuloma

Fig. 2a: Periapical granuloma, extending to the vicinity of the inferior alveolar nerve

Fig. 2b: Intact buccal and lingual bony walls

Fig. 3a: The Max Immediate molar replacement - Implant from Southern Implants.

Fig. 3b: The projected Implant on the 3D dental implant planning system

Fig. 4a: Periapical granuloma, extending to the vicinity of the inferior alveolar nerve

Fig. 4b: Intact buccal and lingual bony walls

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JONATHAN L. FERENCZ, D.D.S.
Diplomate American Board of Prosthodontics

Dental Implants knowing that the treatment will be rendered with maximum care and efficiency. At SameDay Dental Implants Clinic the team is comprised of dental specialist such as maxillofacial surgeons, prosthodontists and master dental technicians. Additionally well trained surgical assistants, an in-house 3-D digital scan facility and an internal dental laboratory make SameDay Dental Implants Clinic a one-stop shop for dental implants. Furthermore, what starts as an introductory referral report from the general dentist gets converted into a meeting where patients’ x-rays and preliminary diagnostic information is shared and discussed. SameDay Dental Implants Clinic specializes in immediate placing and immediately loading the majority of the dental implants and many referring dentists praise this highly since their patients’ cases are completed swiftly without delay. The team at SameDay Dental Implants are also involved in many teaching courses in the UAE region that concentrate in training other dentists in placing and restoring dental implants.

Below is a description of such a relationship demonstrated by a case referred to SameDay Dental Implants Clinic by a general dentist that refers patients to SameDay Dental Implants on a weekly basis. It involves a previously restored crown on tooth # 46 that presented with pain on percussion and minor lingual swelling. Upon radiographic examination, periapical granulomas can be seen at the apex of both roots, extending into the furcation with dental decay spreading into the mesial and distal root chambers (Figure 1). Upon further evaluation of the 3D scan the periapical granuloma/abscess is seen extending into the vicinity of the inferior alveolar nerve and hence attributing to the symptoms of pain. (Figure 2a, b). Nonetheless the intact labial and lingual walls render this case an ideal situation for immediate extraction and immediate loading with a MAX dental implant from Southern Implants.

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For more information please visit www.zirlux.com
This implant is designed for immediate replacement of molar teeth as it is engineered to provide high insertion torques to ensure maximum primary stability at the time of the implant placement. Pre-planning of the future position of the implant and the available bone is assessed in the 3-D implant planning software prior to implant placement (Figure 5a, b). In order to maximize the osteotomy preparation and ensure a screw-retained restoration, we have mastered the "drill through the tooth technique". This is initiated once the crown is sectioned horizontally and detached at the cervical level (cornerectomy) to increase the visibility while drilling through the tooth (Figure 4a, b). Consecutive drills are used to widen the hole within the tooth at a depth slightly short of the apex. By drilling through the tooth, the drills are stabilized and this prevents a traumatic osteotomy preparation (Figure 5a, b). Next the mesial and distal roots are separated to ensure an atraumatic extraction and intact buccal and lingual wall. The separated roots are simply elevated into the space created and removed without causing any damage to the extraction site (Figure 6a, b, c). The periapical granuloma visible on the CBCT is now curetted, the extraction site is degranulated and irrigated with saline (Figure 7a, b). Bony Alveolar housing of the extracted site shows intact buccal, lingual, mesial and distal walls (Figure 8). A Max 7-11 Southern implant in the dimensions of 7mm in diameter and 11mm in height is the appropriate size for this extraction socket. Should a larger diameter size implant be needed, then a larger range of sizes starting from 7mm to 10 mm in diameter designed for immediate placement within molar extraction sites can be selected (Figure 9a, b). The MAX implant is inserted at a minimum of 65 Ncm of torque or higher and the platform is placed 1-2mm deeper & 1-2 mm away from the buccal crest (Figure 10a, b). In order to fabricate the final restoration within the same day a pre-machined zirconia abutment is selected in order to fabricate a screw-retained restoration (Figure 11a, b). For this particular MAX 7-11 implant a zirconia abutment CER-ZR-58 is selected. The 5 represents the 5mm platform diameter and the 8 represent the divergence of the cylinder to a 8mm dimensions. Since the MAX 7mm diameter converges / platform switches to a 5mm platform, then a 58 zirconia is the appropriate abutment for this case (Figure 12a, b). Once the implant is placed and an abutment selected, the next step is to take an impression to fabricate the final restoration. A fast setting, medium body, addition cured polyvinylsiloxane is used and an open tray impression is made (Figure 13a, b, c). A healing abutment is placed and in four hours our in-house dental lab converts the zirconia 58 cylinder to an all-ceramic screw retained restoration (Figure 14). The zirconia 58 cylinder is cut down and porcelain build up is completed prior to final glazing (Figure 15a, b, c, d).
b). Finally on the same day the screw-retained restoration is inserted and the prosthetic screw is torqued to 45 Ncm before sealing the screw access hole with composite restoration (Figure 16a, b). The CBCT and conventional x-rays shows an appropriate positioning of the implant within the correct bony housing (Figure 17a, b). Not only is it a pleasure to render this swift treatment to this patient, but also general dentists find this treatment very beneficial to their patients, since the treatment is finalized in one appointment. This one appointment SameDay Dental Implant concept saves time and money both for dentist and patient. The dentist saves expensive chair time whilst the patient does not have to stay away from work or social responsibilities.

Once again, by working as a team and establishing a referral base, we can turn around cases faster and better thereby strengthening the trust in our profession as a whole. This is a gratifying experience for all members of the team and in particular for the patient who doesn’t have to be seen by the dentist multiple times. Truly this is an implant solution for a patient with a busy life.

At the three-month checkup appointment, periapical and bitewing x-rays show stabilized bone levels and clinical solidity of the implant & SameDay Zirconia crown (Figure 18a, b, c). Although in this case no adjustments were needed, we can easily make any changes should addition of porcelain be needed due to soft tissue changes. This can be done quite easily since this crown is a screw-retained restoration and is retrievable in a few minutes.

About the Authors

Dr. Costa Nicolopoulos, BDS cum laude, FFD (SA) MFOS
Oral & Maxillofacial Surgeon
SameDay Dental Implants Clinic
BRANEMARK OSSEOINTEGRATION CENTER – DUBAI
costa@samedayme.com

Dr. Safa Tahmasebi, D.D.S, M.S Cert. Prosthodontist (USA)
SameDay Dental Implants Clinic
BRANEMARK OSSEOINTEGRATION CENTER – DUBAI
safa@samedayme.com

Contact Information
SameDay ® Dental Implants Clinic
Unit 107, Building 39, DHCC
Dubai, UAE.
T: +971 (0) 44275010
M: +971 (0) 502745085
F: +971 (0) 44275011
E: info@samedayme.com
W: www.samedayme.com

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Dr. Safa Tahmasebi, D.D.S, M.S Cert. Prosthodontist (USA)
SameDay Dental Implants Clinic
BRANEMARK OSSEOINTEGRATION CENTER – DUBAI
safa@samedayme.com
Easy, fast and precise
Implant-prosthetic restoration of an edentulous maxilla

By Cristian Petri, CDT, Romania

Creating an esthetically pleasing smile in an edentulous patient is no easy task. Effective collaboration, combined with suitable materials and procedures, empowers dental professionals to address this challenge effectively.

Rehabilitation of the edentulous jaw can be achieved with various treatment modalities. Removable implant-supported overdentures can provide a comfortable, aesthetic and functional option even in circumstances where only a reduced number of implants can be used. This treatment option is frequently practised due to the fact that the number of patients wishing to find an alternative to complete dentures is rising. The patients’ expectations regarding their prosthetic tooth replacements are similarly high as for fixed ceramic veneered restorations. With the emergence of new materials and their combinations with CAD/CAM technology, outstanding outcomes can be achieved for this indication. An adequate solution can be found for almost every patient and budget. Generally, overdentures offer several advantages over conventional removable prosthetics. These advantages include stability, functionality, comfort, confidence in the ability to interact socially, straightforward rehabilitation and easy maintenance for the patient, or, simply put: a significant improvement in quality of life.

Clinical case
A 58-year-old patient presented at the practice with discomfort caused by her complete upper denture. At history taking, we found a prosthetic restoration retained on six implants in the lower jaw and a complete maxillary denture that was esthetically and functionally inadequate (Fig. 1).

An initial aesthetic evaluation revealed that the shape and shade of the teeth were inappropriate. In addition, the midsline was misaligned and the curvature of the maxillary anterior group was shaped incorrectly. The poor stability of the denture was caused by insufficient prosthetic support and by the method of manufacture. Taking into account the patient’s requirements, financial possibilities and clinical condition of the maxillary prosthetic field, we decided in favour of an implant-supported prosthetic treatment modality. The plan was to insert four maxillary implants to retain an overdenture prostesis using the double-crown method. This procedure is frequently practised in such cases and has been improved with the emergence of new technologies and materials. Our protocol required primary telescope crowns milled from zirconia at an incline of 2° and secondary copings obtained by galvanofoming. This approach combines the advantages of zirconia (primary telescopes) with the advantages of hydraulic retention (galvano copings).

Following a complication-free period of healing and osseointegration, the four implants were uncovered and a preliminary impression was taken. From the resulting model, a customized tray was created. Next, a functional impression that would transfer the exact position of the implants was required to proceed to the next stage of the treatment. The four impression posts were splinted together on the custom tray using composites material (Figs 2 and 5). After creating the working models (Fig. 4), we determined the patient’s vertical dimension of occlusion (VOO), length of future teeth and gingival smile line by means of an occlusal plate (bite rim). In the upper jaw, the occlusal rim was shaped in such a way that two millimetres of the edge were visible when the upper lip was in rest position.

The lower edge of the rim was aligned in parallel to the bupillary plane and smoothly followed the curve of the lower lip when the patient smiled. On the maxillary rim, the midline, the smile line and the line of the canines were outlined. A facebow was used for the transfer of the maxillary position in relation to the base of the skull.

Once the relevant ratios had been obtained, the models were mounted on the articulator (Fig. 5). The difficulty of this case was that we had to make allowance for the existing mandibular restoration in the design of the maxillary rehabilitation. The implant axes of the mandibular prosthesis in particular posed some problems. Shade selection was dictated by the mandibular restoration and, consequently, our room for decision-making was reduced to deciding on the shape of the teeth. To this end, a photo of the patient as a young adult came in handy, as it was her wish that the shape and size of her teeth as they were when she was young should be maintained in the prosthetic reconstruction.

Primary structure
A try-in of the setup was performed to check the phonetics, esthetics and occlusion (Fig. 6) and then a silicone key was created over the setup. The silicone key acted as a guide in the subsequent working steps. To manufacture the primary structure, the four titanium abutments were customized (Fig. 7), the resulting abutments were scanned together with the model and setup (double scan) and these data sets were imported into the design software. The CAD program proceeded to suggest the shape, height and angulation of the telescope crowns, which we adjusted and optimized as required (Fig. 8). The primary telescopes were milled from zirconia and sintered to their final density at 1500°C. After checking the accuracy of fit, the zirconia crowns were permanently bonded to the titanium abutments (Multilink® Hybrid Resin Cement). Following a try-in, the definitive telescopes were milled and splinted together on the base of the skull. The prosthesis was then mounted on the articulator (Fig. 9). Theurga was determined by the maxillary position in relation to the base of the skull. With the aim to attain as perfect an esthetic prosthesis as possible and to make the most of the available space, we created a wax setup using prefabricated denture teeth (SR Phanore® II).

The tertiary structure provides the removable prosthesis with the stability required. All three structures together form a tension-free implant-supported prosthetic restoration.

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Upper jaw had been provided with a conventional complete denture.

The overdenture structure with the tertiary structure was removed with a nitric acid.

Fig. 11: Intraoral bonding of the galvanoformed secondary structure with the tertiary structure.

The primary crowns could now be fabricated, the galvanofomed telescopes and the galvanofomed crown were covered in a thin layer of wax to create the space necessary for the cement that would later be used. The tertiary structure was invested, cast in CoCr alloy using induction casting technology and then finished. The tertiary structure was intrusively cemented onto the galvanofomed telescopes (Multilink Hybrid Abutment, Monobond®) in order to obtain a tension-free restoration (Fig. 11).

Fig. 12 and 13: Detailed view of the completed denture: customized prefabricated teeth and soft tissue parts.

We decided to create a tooth replacement that provides the expected level of comfort. Against such a background, we need to be well trained and know which materials and technologies can ease our job and increase our efficiency. This will enable us to solve any clinical case, regardless of its difficulty.

Conclusion
Many patients respond with reluctance to the idea of being given removable dentures, if dentures are optimized by adding the stability of implants and the effectiveness of telescopes, dental professionals will be able to dispel the initial reservations of their patients and offer them a tooth replacement that provides the expected level of comfort. Completely edentulous patients have the same high esthetic expectations as patients requiring fixed restorations. However, some of these requirements are more difficult to satisfy in the edentulous patient, because we are forced to replace not only missing teeth but often also soft tissues. To achieve this, we need to find a way of creating harmony between the pink and white aspects of the denture. Today’s patients tend to be well informed. They place ever higher expectations on the restorative outcome. Against such a background, we need to be well trained and know which materials and technologies can ease our job and increase our efficiency. This will enable us to solve any clinical case, regardless of its difficulty.
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*18 x 24 cm image in quick mode  ** 18 x 24 cm image
Restoring a back to basic approach

Paul Tipton, President of the British Academy of Restorative Dentistry tells Scottish Dental how he aims to bring much-needed but neglected techniques back into use

Inaugural BARD president Paul Tipton explained that the academy came into existence less than two years ago following concerns he and a few colleagues – including Linda Greenwall, Tony Kilcoyne and Adam Toft among others – had about the quality of restorative teaching at both undergraduate and postgraduate level. He said: “We were despairing at the quality of restorative dentistry teaching that goes on these days in dental hospitals and the quality of the dentists who are qualifying. I think that is both north and south although I think over a period of time the teaching up in Scotland may have been better, thanks to the work of people such as Professor Richard Ibbetson in Edinburgh.”

Paul explained that they felt there was a real need to get back to basics, with concerns over taking amalgam out of dental schools being a big driver. He said: “That would mean that the graduates won’t be using amalgam at all, so they will just be using composite. Posterior composites is probably the most difficult technical skill for a young graduate or an undergraduate to do. So they are going to be asked to do posterior composites everywhere that amalgams are at the moment. The alternative is that they are going to put glassionomer in teeth, so either way the nation’s teeth are going to start suffering.”

He also added that graduates don’t get any occlusal training and are not trained on things such as bridge design. “So, some of the fundamentals of good restorative dentistry, that you can’t leave out in practice are just not being taught,” he said.

“Everyone is going cosmetic crazy and minimal intervention crazy. Of course, that is fine for a patient that only needs a little bit of work doing, but we all know that there are an awful lot of people who have massive amalgams and already have crowns and bridgework, and dentists are just not being trained in how to deal with these people.

“So the aim of BARD is just to get back to teaching some good quality restorative dentistry techniques that maybe the dental hospitals and especially the younger graduates just aren’t doing at the moment.”

Paul is one of the most well-known and respected names in restorative dentistry, not just in the UK, but also internationally. He is a specialist prosthodontist and has established a series of Tipton Training Academies in Manchester, Leeds, London and Dublin. As a young man he was a keen cricketer and between 1974 and 1978 he opened the batting for Lancashire County Cricket Club and enjoyed five years as a professional. He explained that his decision to follow a career in dentistry was down to the fact that his ability and ambition didn’t quite match up. He said: “I think I came to the realisation that, at best, I would only ever be a county cricketer. I didn’t really feel that I had the ability to go on beyond that.

“Also, the life of a county cricket- er in those days was pretty mundane. You didn’t get paid a lot of money and in the winter time most of the professionals went on the dole, so it was not really an inspiring career choice. As a kid it seemed a great idea, but as I got into it and I realised that I wasn’t going to play for England, I thought I’d better do something else.”

Halfway through his spell at the club, Paul enrolled at university in Sheffield to study dentistry and when the term was over he came back to Lancashire to play the second half of the season. After graduating in 1978 Paul car-
Paul Yule, President of the British Academy of Restorative Dentistry

ried on playing on a semifro-

n the Edinburgh section. He said: "I

plus years, its membership is

and qualifications without trav

the NHS, I helped many patients

her to the Edinburgh branch, Mid-

the Edinburgh study club – if it

the idea is to widen and deepen


dentistry. Talking to graduates, very few of them have the ability to do three quar-

so that, in the nine years I spent in

The BARD is open to anyone in

from that, in the nine years I spent in

We would like to encourage like-minded den-

have exactly the same problems,

and occlusion" Paul explained that the wider BARD mission is to help the nation's teeth. He

said: "The nation's teeth are in a

parallel is that I worked really hard to get to the
top of cricket by sheer hard work and I probably took that same work ethic into dentistry." Paul
has used this formidable work ethic in his order to bring about the

the establishment of BARD and he has already spoken at study
clubs in Stoke-on-Trent, Mid-

Cheshire, Liverpool and, most

in seven or eight years.

something that will last. They

want longevity rather than a

wants cosmetic dentistry. There

is that not everyone in the world

aim to try to get quality den-

the rise in cosmetic procedures,

and academics.

The BRSD has been around for more

40 years, its membership is predominantly hospital dentists

He said: "We wanted to make this a bit more wet-fingered and practical as opposed to hospital

based. We wanted to get away from hospital consultants be-
ing there lecturing to GDPs. We

wanted wet-fingered dentists themselves to be lecturing to each other and in the organisa-
tion of the academy.

"The BRSD has been around for some years, so we are the new kids on the block. We aim to put

on proper courses and CPD, do
certificates and diplomas even-
tually as well. We want to give people a pathway that is not via the hospitals or the Royal Col-
lege of Surgeons, but another

waypath where they can get de-

fined courses and CPD, do

and every-where and finding out

us and meetings such as these are

important in encouraging practi-
tioners to use the dental literature for solutions to clin-
ical questions. Having clinicians like Paul critically reviewing the dental literature is extremely

helpful."

One of the main benefits of the Edinburgh study club – if it

proves successful - is the fact that Scottish dentists will have

access to top-quality courses and qualifications and

without travelling down south. But, if we do get enough interest I know Paul would be keen to

look into the possibility of doing something in Scotland."

By training dentists in the "sci-

ence of restorative dentistry and
occlusion" Paul explained that the wider BARD mission is to help the nation's teeth. He

said: "The nation's teeth are in a

shocking mess. Every day in and
day out. Many dentists out there

are trying their best, but they
don't really have the skillset to

know or do what is required.

They are trying their best, but

we can't overplay cosmetic den-

tistry. Cosmetic dentistry is very
good in the right situation, but

you can't overlay cosmetic den-

tistry. Sometimes you need to
give back to quality long-term mate-

rials."

The academy actively espouses a back-to-basics approach, but Paul said the system down in

England means that restorative dentistry is becoming increasingly rare. He

said: "With the NHS system in

Scotland."
Effective retraction of the lips and cheeks during the dental treatment – this is the wish of every clinician. OptraGate does not only offer relative isolation but also a comfortable solution. The proven lip and cheek retractor is now also available for children in the colours blue and pink.

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Designing Bespoke Modern Wonder Clinics

When Splyce Interior Designs set about its business, its raison d’être was creating stunning designs that exceeded client expectations. A boutique agency driven to meet satisfactions of a clientele that knew the value of good design and incorporated that into their own philosophy. Never did they think they would end up designing high end dental clinics and would acquire an expertise in the domain. They refer it to as magic-circumstantial, a term pioneering street photographer Henri Cartier Bresson used once.

When they beat the odds to win the 2014 Middle East & North Africa Interior Design Awards for the Healthcare category, it was a justified validation for their vision and how they set about their work. The award winning design was for the Sky Clinic Dental Center JLT. Apart from designing other dental clinics in the region and beyond, they had upped their game and realized and delivered a lot of unique projects.

One day Dr. Micheal Apa walked into their offices wanting Splyce to design the new clinic, Apa Aesthetic Dental & Cosmetic Centre, in Jumeirah, Dubai, the first clinic that he was opening outside New York, where his practice and vision had catapulted him into being a leading force in dentistry. Dr. Apa, a celebrity dentist that shares Splyce’s own values, the attention to detail, the ability to see the bigger picture, and an intense desire to get it perfect. When Ranjit Prasad, the Creative Director of Splyce was asked to describe in a few words the design principle of the clinic, he replied, “As a design principle, fluid. As a customer experience, a spa.” The design was very ingenious, avoiding hard edges and filled with curves. It is a very positive experience walking through the space, an almost zen like uplifting ambience to the place like a new age clinic.

“Walking through the space, I can understand why it has glowing praises, and realize that no stone has been left unturned.”

Walking through the space, I can understand why it has glowing praises, and realize that no stone has been left unturned. This was exactly what Splyce set out to do. More of their great design principles in the next edition.
Henry Schein Middle East trains dealers in Dubai for improved support of MEA partners

DUBAI, UAE: During the last week of August 2015, Henry Schein Middle East took the necessary time to train its Middle East regional dealers on the latest updates of its products. The one week training included dedicated days focused on CAO, Planmeca, Ritter and Busa ranging throughout all the specialties of the dental profession.

Starting with the 23rd of August 2015, CAO provided training to the Henry Schein dealers and partners in Dubai updating all on the full range of whitening, prevention, soft tissue lasers and light curing machines. Henry Schein is becoming more and more active in the Middle East region with the vast amount of products made available for the dental profession, both clinical and laboratory. CAO is a brand leader of providing the latest state-of-the-art technologies privately manufactured dental devices and materials.

Between 24 and 25th of August, Planmeca OY – the Finland based company is one of the world’s leading health care technology providers with a range covering digital dental units, world class 2D and 3D imaging devices, and comprehensive CAD/CAM solutions.

Henry Schein MEA dealers receive training on latest products in the wide portfolio which offers full Clinical and Lab solutions. The training included updates on the CAD/CAM line, from scanning using the Planmeca PlanScan, to designing with the Planmeca PlanCAD Easy, to milling by Planmeca PlanMill 40. Each dealer managed to scan, design and mill a case using the latest available software.

Further training was provided by Ritter Concept on the 26th and 27th of August. Training included all lines of the dental units and other available equipment such as the compressors and suction units. In addition there was a full day technical / service training for service engineers covering installation methods and servicing of the units. Ritter Concept has built on its 125 years’ experience in dentistry providing leading dental equipment, dental units and spareparts.

On the last days of the training week (28-29th August), BUSA was famous for its innovation in dental equipment, with a range covering digital dental units, world class 2D and 3D imaging devices, and comprehensive CAD/CAM solutions. BUSA is famous for its innovation in dental equipment, with a range covering digital dental units, world class 2D and 3D imaging devices, and comprehensive CAD/CAM solutions.

The one week training included all on the full range of whitening, prevention, soft tissue lasers and light curing machines. Henry Schein is becoming more and more active in the Middle East region with the vast amount of products made available for the dental profession, both clinical and laboratory. CAO is a brand leader of providing the latest state-of-the-art technologies privately manufactured dental devices and materials.

Henry Schein Middle East will be showcasing its latest brands at the upcoming 7th Dental Facial Cosmetic International Conference on 15-14 November 2015 where it will be an Official Sponsor of the event. Make sure you get the latest updates on the trainings, brands and products at the event.

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The Road Map to Customer Service

By Dr. Ehab Heikal, Egypt

Good customer service is the lifeblood of any business. You can offer promotions and slash prices to bring in as many new customers as you want, but unless you can get some of those customers to come back, your business won’t be profitable for long.

Good customer service is all about bringing customers back. And about sending them away happy – happy enough to pass positive feedback about your business along to others, who may then try the product or service you offer for themselves and in their turn become repeat customers.

If you’re a good dentist with good selling capabilities (able to sell your service well), then you can sell any service to anyone once. But if you’re a good dentist with good customer service, then you can sell a new denture to one person this one time – and you may be able to please this one person this one time - and position your business to reap the benefits of good customer service.

And above all, DON’T over promise. Over whelming customers will lead to disappointment if your service was delivered at a slightly lower level than promised. Even though customers might have expected less than reality, yet your promises increased their level of expectations. (See the chapter Quality & Standardization in the dental Office in my earlier book &A for the Dental Profession, Second edition).

1) Answer your phone. Get call forwarding, or a proper answering machine. Hire the right staff to answer your calls. But make sure that someone is picking up the phone when someone calls your business. (Notice I say “someone”. People who call want to talk to a live person, not a “fake recorded route”).

2) Don’t make promises unless you WILL keep them. Not plan to keep them. Reliability is one of the keys to any good relationship, and good customer service is no exception. If you say, “Your new denture will be delivered on Tuesday”, make sure it is delivered on Tuesday. Otherwise, don’t say it. The same rule applies to client appointments, deadlines, etc. Think before you give any promise – because nothing annoys customers more than a broken one.

And above all, DON’T over promise. Over whelming customers will lead to disappoint- ment if your service was delivered at a slightly lower level than promised. Even though customers might have expected less than reality, yet your promises increased their level of expectations. (See the chapter Quality & Standardization in the dental Office in my earlier book &A for the Dental Profession, Second edition).

1) Answer your phone. Get call forwarding, or a proper answering machine. Hire the right staff to answer your calls. But make sure that someone is picking up the phone when someone calls your business. (Notice I say “someone”. People who call want to talk to a live person, not a “fake recorded route”).

3) Listen to your customers. Is there anything more exasperating than telling someone what you want or what your problem is and then discovering that that person hasn’t been paying attention and needs to have it explained again? From a customer’s point of view, I doubt it. Let your customer talk and show them that you are listening by making the appropriate responses, such as suggesting how to solve the problem.

4) Deal with complaints. No one likes hearing complaints, and many of us have developed a reflex shrug, saying, “You can’t please all the people all the time”. Maybe not, but if you give the complaint your attention, you may be able to please this one person this one time - and position your business to reap the benefits of good customer service.

5) Be helpful – even if there’s no immediate profit in it. Upon my request, my travel agent arranged a limo to pick me up from the airport. Upon arrival, the driver did not have any receipts. He promised to send me one the following day. No one showed up. I called the travel agent and asked him for the limo agency number. Only to discover that the travel agent gave me the number of a different limo agency. However, the manager asked how could he help me, I explained the situation. Although it wasn’t his problem, yet he offered to send me a receipt. And he did. I have been their customer now for seven years. Not to mention how many new customers they have through me!!

6) Train your staff to be ALWAYS helpful, courteous, and knowledgeable. Do it yourself or hire someone to train them. Talk to them about good customer service and what it is (and isn’t) regularly. Most importantly, give every member of your staff enough information and power to make those small customer-pleasing decisions, so he never has to say, “I don’t know, but so-and-so will be back at…”

7) Take the extra step. For instance, if someone walks into your clinic and asks you to help them find a good orthodontist or Psychiatrist for example, don’t just say, “Dr. X.” Lead the customer to him, give him the phone number or address or even call Dr. X if you know him. Better yet, wait and see if he has questions about it, or further needs. Whatever the extra step may be, if you want to provide good customer service, take it. They may not say so to you, but people notice when people make an extra effort and will tell other people.

8) Throw in something extra. Whether it’s a free follow up, a coupon for a future discount, additional information on how to use the water pick, or a genuine smile, people love to get more than they thought they were getting. And don’t think that a gesture has to be large to be effective. A small thing, could be so appreciated.

If you apply these eight simple rules consistently, your business will become known for its good customer service. And the best part! The irony of good customer service is that over time it will bring in more new customers than promotions and price slashing ever did!!

Contact Information
Dr. Ehab Heikal
BDS,FICD,MBI,DCBA
(Practice Management consultant)
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What do patients want?

By Fiona Stuart-Wilson, UK

Very often when planning our practice’s services, we take as a starting point what we would like to offer our patients and even the level of service that we would like to receive ourselves if we were patients. After all patients have certain expectations and requirements which must be met if they are at least going to be satisfied, let alone delighted, with their experience. So perhaps reflecting on what would give us satisfaction is no bad place to start. But should it stop there? If we are satisfied with our products, we are not us and may be looking at things from a different angle and may indeed want something different.

Key priorities that tend to be identified by patients in surveys include - unsurprisingly - the cleanliness of practices, the knowledge and technical ability of staff, and treatment outcomes. However patients also identify that the way they are treated plays an important part in forming their view of a practice, so customer service and communication skills play a critical role in a patient’s decision to return to a dentist.

Research from the US on patient requirements also makes for interesting reading and can help us reflect on how we in our own practices measure up. Here are some of the key highlights of recent findings of what patients thought important:

- High standards of sterilization, cross-infection control and general cleanliness
- Your sterilization and cross-infection procedures might be perfect but patients notice all aspects of a practice. If the bathroom is not scrupulously clean or the reception desk is grubby and cluttered, patients will have misgivings about your standards of cleanliness generally.

- Patient-facing staff need to see their time.
- Patients appreciate having treatment plans and financial options. Well-explained treatment plans and financial options.
- Patients would like to have treatment explained in terms they can understand and feel comfortable with the investment they are making. In addition, there is some evidence from the US that patients want more than one financial option to be considered, rather than a patient’s decision. It is suggested that if this is more than 2 days, patients may choose to look elsewhere.

- Location and opening hours are crucial in to patients’ levels of satisfaction. If your practice is not the most convenient location do make sure that you communicate to patients the positives, the easiest way of getting to the practice etc. and the convenience of your opening hours for both treatment and for appointment making and information.

- A fast new-patient appointment

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<td>Dr. Ann Vora, USA</td>
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*With twice-daily brushing
iTOP - Harp instead of rock guitar

By Rolf Kufus, Switzerland

In prophylaxis, the individual approach is as important as the training aspect. iTOP, which is Curaprox prophylaxis training, therefore considers "prevention" to be more than just using fluoride toothpaste.

When Rolf Kufus, a Zurich dentist, talks about prevention, he emphasizes the demands that prevention makes on dentists and patients alike. He compares it to music: "In most cases, prophylaxis means that the guitarist in a heavy metal band suddenly has to learn to play the harp. This is not something you learn overnight, and especially not without a teacher.

Oral health is a pleasure. Just like a delicate ripple on the 47 strings of a harp, iTOP teeth cleaning means saying goodbye to the coarse scrubbing by a rock guitarist with his few chords.

Right through from cleaning interdental spaces to the proper use of the single tuft and the efficient method with a soft, densely-bristled toothbrush based on the modified Bass method: iTOP is a three-step tutorial for beginners and advanced learners, for dental professionals. With toothbrush, single tuft brush, interdental brushes and dental floss in hand, participants learn

Innovating Oral Care

What makes a great toothbrush?

By Hansjoerg Reick, USA

As Hansjoerg Reick describes his career and involvement in Oral-B and Procter and Gamble's Professional Care Technology, his enthusiasm and interest are obvious. When asked what he considers his greatest personal achievement since joining Oral-B in 1996, he will tell you that it has been helping people achieve better oral health. "Oral care has been an area of growth and great innovation, an exciting business to be in and a great opportunity to create better products," Hansjoerg recalled.

With research and development facilities throughout the world, all Procter and Gamble's innovative oral care products are developed by global teams in multiple technical centers and with experts from different disciplines. This involves working in close collaboration and partnership with all stakeholders - dental practitioners, universities, product research and development, marketing, clinical and consumer research, engineering and quality assurance.

Hansjoerg and his team ‘tap into the expertise and understanding of all technical centres worldwide, bringing together all of the innovators in research, development, clinical and consumer testing. In this way,’ he added, ‘we can create truly global and superior products.’

Big stride forward

In his opinion, the most innovative toothbrush development has been the creation of a small, round brush head with an oscillating-rotating motion. The basic innovation for this product happened shortly before Hansjoerg joined the company. ‘This was revolutionary and a completely different cleaning approach, everything else at the time was either a manual or power brush that mimicked manual brushing motions,’ he said.

When asked how the research and development team had come up with the idea, Hansjoerg will tell you that it was a dentist-inspired solution. The research team developed the oscillating-rotating power brush by analysing the most effective cleaning mechanisms available in the dental industry and elsewhere - how brushes and bristles worked, and in what directions the bristles went depending on the motion of the brush.

‘What the team discovered was that a rotational side-to-side brush movement was necessary for the bristles to reach all areas of the teeth from all angles, especially in hard-to-reach areas. This novel design was tested extensively in the laboratory, in clinical trials and by dentists in practice before it was introduced. ‘It has been independently reviewed and determined to be superior to manual brushes - especially in the critical lingual and interproximal areas, and other areas with difficult access. This design provides the best cleaning efficiency by surrounding and adapting to the morphology of the teeth,’ Hansjoerg said.

‘It offers a superior clean experience and benefit for users. In fact, a 2005 Cochrane collaboration study found that only oscillation-rotation brushes were consistently superior to manual brushes for plaque and gingivitis reductions.

‘In a more recent systematic review in 2011, significantly greater plaque and gingivitis reductions were again found only with oscillation-rotation brushes compared to manual brushes, confirming these earlier findings. After I joined Oral-B, we built on this innovation by adding pulsations to the oscillating-rotating technology to create the 3D Professional

Oscillating rotation brushes are superior to manual brushes in reducing plaque and gingivitis
Individually Trained Oral Prophylaxis

Announcing one day iTOP seminar and hands-on training

Event:
7th Dental Facial Cosmetic International Conference in Dubai

Venue:
Jumeirah Beach Hotel, Dubai, UAE

Date:
13th of November 2015

Lecturer:
Dr. Franka Baranovic Huber, Switzerland

Objectives:
• To establish right criteria in choosing oral health tools
• To discuss mechanical control of biofilm
• To discuss failures in modern dentistry concerning prevention
• To show clear difference in using interdental brush vs. floss

Care generation," he added.

Project development
For Hansjoerg and his colleagues, the biggest objective is to have more and more people use a power brush and also enjoy the experience.

‘A key part in our success has been our partnership with dental practitioners, our dental advisory board and universities. ‘With their involvement in all stages of product development, we have been able to build on research, knowledge and experience. We still do that today,’ he said, ‘all the while working on developing the ideal toothbrush for patients and consumers.’

The goal is set high for new products during development: better performance and novel benefits, with a continuous stream of innovations at an affordable cost for dental professionals and consumers.

‘All of this is only possible because we invest into cutting-edge technologies; for instance, using specially-developed brushing robots enables us to improve product designs 24 hours a day. At our robotic centre we can set validated parameters to reliably reproduce and test brushing movements with prototype brushes early on.

‘Prior to conducting the robotic tests, we cover the models with a coloured plaque substitute and then we determine the results of brushing by using a visual system and computer-based analyses to calculate the results.

‘In this way we can simulate plaque removal and calculate plaque reductions for all areas of the teeth. This leads to fast-cycle learning experiments and provides confidence in our results before running long-term and expensive clinical studies.

‘We also use mechanical tests to rapidly perform quality assurance, simulating twice-daily tooth brushing over an extended period of time, to determine the durability of our power brushes,’ said Hansjoerg.

Key Milestones
A global team and partnership with dental professionals has led to a continuous stream of new products.

Key milestones have included a series of brush heads with different designs for various clinical needs and benefits, such as the Floss Action brushes that focus on interproximal cleaning and a brush head that is shaped like a polishing cup for optimal stain removal and whitening. Specialty brushes also became available, including extra soft brushes, orthodontic brushes and interproximal brushes. Handles that are more ergonomic and that offer different features to encourage greater use and a more pleasing experience were also introduced. Along with providing brushes offering a superior clean, the other focus is on improving the sensory experience.

‘Research shows that people naturally don’t like to, and often do not, brush for as long as two minutes. If you give people a brush they like to use, they will use it more, their compliance will increase and overall cleaning and oral health will improve,’ said Hansjoerg.

From this standpoint, innovations have been introduced that improve both performance and the sensorial experience for patients. The Professional Care brushes include a unique 3D mechanism with both the oscillating-rotating movement and a small pulsating motion for superior plaque and biofilm removal.

One study in which dental hygienists used a professional brushing technique, showed that by using the Professional Care brush and toothpaste they were able to remove as much plaque as they did when using a rubber polishing cup and the same toothpaste.

Just two minutes of brushing with the Professional Care brush resulted in a 94% reduction in plaque, while 10 minutes of brushing reduced plaque by 99% compared to 95% for 10 minutes’ use of a rubber polishing cup. In testing, its use has also resulted in greater reductions in gingivitis than use of a manual brush.

In addition, the pulsations add a pleasing sensation that helps drive use and compliance. A recent milestone has been the development and introduction of Procter and Gamble’s Professional Care brushes with in-use feedback. In addition to the well-established two-minute timer that gives a signal during brushing and when two minutes have elapsed, a novel pressure sensor was introduced that helps the user develop good habits.

The pressure sensor gives visual guidance on the right amount of pressure to use when brushing: if too much pressure is used, a red light appears on the brush. This helps the user learn to apply only the right amount of pressure – in just 30 days, 67% reductions in excessive brushing pressure were found when patients used this brush.

The ultimate sensory experience comes from the Smart Guide series. Hansjoerg described it as: ‘a remote display with interactive feedback to achieve best brushing results. The Smart Guide interacts with the user during brushing and a final ‘smiley face’ appears after two minutes of brushing. It’s a reward for a job well done!’

The Future
Hansjoerg said, ‘I am still in oral care development because it is very rewarding – there is plenty of opportunity for future product improvements to help patients and consumers improve their oral health.’ Fast forward 10 years and Hansjoerg sees a clear and continued commitment to the delivery of the best-performing power brushes – brushes that people will like using because of the experience itself. All products will be global and there will be a range of products for everyone.

He added, ‘It’s a great job!’

About the Author
Hansjoerg Reick is the associate director of research and development of Global Oral Care Advanced Technologies and Innovation at Procter and Gamble. He has a diploma in Mechatronics Engineering, and lives in Cincinnati, Ohio.
over several days how prophylaxis is more than mere fluoridation. That it means efficient and atraumatic brushing, individual training and even tailored coaching. Prophylaxis can also be a pleasure—and can motivate: Yes, my teeth are clean, my gums are healthy!

Train and train once again

iTOP is individually trained oral prophylaxis, that rejects the thinly-spread “watering-can” principle in favour of individually tailored prevention. Every mouth is different, and because the individual approach often means “scrub less” that is also the training aspect that iTOP alumni such as Rolf Kufus emphasize in particular. How else are we to compete against the force of habit, which so often causes us to brush our teeth incorrectly from childhood on - with too much pressure from too hard a toothbrush and dental floss where only an interdental brush is of use? “Patients with tooth-cleaning damage such as exposed tooth necks are unaware of being ill but instead they feel they’re doing everything right,” says Rolf Kufus. “And nobody wants to intentionally destroy their mouth. These are all simply wrongly trained habits.” Catherine Schubert, dental hygiene specialist and iTOP instructor, knows how detrimental these habits can be: “All too often, I see patients who are still suffering from bleeding gums even after ten years of treatment because they were not educated and trained. This bleeding could so easily be stopped.” (Cf. box).

Implants - the failures of prophylaxis

Rolf Kufus realigned the prophylaxis concept for Personalized Dentistry in his practice after his first iTOP course. “People are living into their 90s nowadays. It’s better without tooth repair. Today, there is an ever-increasing number of patients who view prevention as an essential part of the Hippocratic oath - namely the obligation to dental health as a whole. This also changes the role of dental hygienists who are shedding their role as “abrasive cleaners” and are turning into partners and fitness trainers for the oral health of patients.

Ultimately, iTOP also changes the role of a dental practice, moving away from repair towards prevention - without losing sight of profit orientation.

Dental care is fun like this

Dental hygiene professional and iTOP instructor Catherine Schubert on the:

- three most common mistakes in dental hygiene:
  Cleaning in the wrong place: the toothbrush is not close enough to the gums, with the result that its bristles cannot reach the sulcus.
  Brushing with too hard a toothbrush: if the toothbrush bristles are too hard, the patient automatically moves the brush away from the gums and simultaneously causes brushing damage.
  Brushing with too much pressure: together with cuts by flossing (and resulting recession of the gums), one the most frequently corrected errors.

- three most easily achievable improvements:
  Using an interdental brush: iTOP graduates learn with surprising speed just how efficiently the spaces between the teeth can be cleaned.
  Feeling rather than intellect: DH professionals mainly instruct patients using a model. In iTOP courses, they learn on each other how atraumatic tooth cleaning actually feels.
  Brushing perceived as pleasure: bleeding disappears in an instant thanks to a change in brushing technique and a soft brush. Dental care and its results create happiness.
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STARTING FROM DAY 1
WITH CONTINUED USE

*ON ENAMEL PLAQUE AND ENAMEL EROSION VS ORDINARY TOOTHPASTE

Toothpaste from the No.1 toothbrush brand used by dentists themselves worldwide
Infection control in an era of emerging infectious diseases

It’s critical to remain vigilant in ensuring an infection-free environment

By Eve Cuny, LSA

More than three decades have passed since the emergence of human immunodeficiency virus (HIV) as a global pandemic. More than any other infection, it is possible to single out HIV as the primary stimulus for changing infection control practices in dentistry. Prior to the mid-1980s, it was uncommon for dentists and allied professionals to wear gloves during routine dental procedures. Many dental clinics did not use heat sterilization, and disinfection of surfaces was limited to a cursory wipe with an alcohol-soaked gauze sponge. This was despite our knowledge that hepatitis B virus (HBV) had been spread in clusters in the offices and clinics of infected dentists and that dentists were clearly at occupational risk for acquiring HBV.

Plenty of reasons to remain vigilant

Today, many take safe dental care for granted, but there is still reason to remain vigilant in ensuring an infection-free environment for providers and patients. HIV has fortunately proven to be easily controlled in a clinical environment using the proper procedures. These standards include the use of personal protective attire, such as gloves, surgical masks, gowns and protective eyewear, in combination with surface cleaning and disinfection, instrument sterilization, hand hygiene, immunizations and other basic infection control precautions. Sporadic reports of transmission of blood-borne viruses associated with dental care continue, but are most often linked to breaches in the practice of standard precautions.

Once rare viruses now in headlines

Emerging and re-emerging infectious diseases present a real challenge to all health care providers. Three of the more than 50 emerging and re-emerging infectious diseases identified by the Centers for Disease Control and Prevention and the World Health Organization (WHO) include Ebola virus disease (EVD), pandemic influenza and severe acute respiratory syndrome. These previously rare or unidentifiable infectious diseases burst into the headlines in the past several years when they exhibited novel or uncharacteristic transmission patterns.

Concern about emerging infectious diseases arises for several reasons. When faced with a particularly deadly infectious disease such as EVD, which can be spread through contact with an ill patient’s body fluids, health care workers are naturally concerned about how to protect themselves if an ill patient presents to the dental clinic. With diseases such as pandemic influenza and severe acute respiratory syndrome, which may be spread via inhalation of aerosolized respiratory fluids from a patient coughs or sneezes, the concern is whether standard precautions will be adequate.

In addition to standard precautions, treating patients with these diseases requires the use of transmission-based precautions. These encompass what are referred to as contact, droplet and airborne precautions for diseases with specific routes of transmission. Transmission-based precautions may include patient isolation, placing a surgical mask on the patient when he or she is around other people, additional protective attire for care providers, and in some cases, the use of respirators and negative air pressure in a treatment room. In most cases, patients who are contagious for infections requiring droplet or airborne precautions should not be treated in a traditional dental clinic setting.

Treatment delay can be best policy

Updating a patient’s medical history at each visit will assist dental health professionals in identifying patients who are symptomatic for infectious diseases. Patients with respiratory symptoms, including productive cough and fever, should have their dental treatment delayed until they are no longer symptomatic. Additionally, health care professionals who are symptomatic should refrain from coming to work until they have been free of fever without taking medication for 24 hours.

In most cases, a patient with symptoms as severe as those experienced with EVD will not present for dental care and therefore extraordinary screening and protection protocols are not recommended. If a patient is suspected of having a highly contagious disease, he or she should be referred to a physician, hospital or public health clinic.

Protect yourself and patients with vaccinations, proper hand hygiene

Dental professionals should take action to remain healthy by being vaccinated according to accepted public health guidelines, understanding that the recommendations may differ according to country of residence. Performing hand hygiene procedures at the beginning of the day, before placing and after removing gloves, changing gloves for each patient, wearing a clean mask and gown or laboratory coat, and wearing protective eyewear are all positive actions that help prevent occupational infections. In addition, cleaning and heat sterilization of all instruments and disinfection of clinical surfaces ensure a safe environment for patients. There is solid evidence that dental care is safe for patients and providers when standard precautions are followed, but patients and dental health care workers are placed at risk when precautions are compromised and breaches occur.

References


About the Author

Eve Cuny is the director of environmental health and safety and associate professor at Pacific Douglass School of Dentistry in San Francis co. She is a consultant to the ADA Council on Scientific Affairs and expert reviewer to the Centers for Disease Control and Prevention. Cuny is past chairperson of the Organiza tion for Safety, Asepsis and Prevention (OSAP) and is a member of the National Occupational Research Agenda Council with the U.S. Department of Health and Human Services. She has published articles and textbook chapters on safety and infection control and presented numerous continuing education programs domestically and internationally.
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Discovering the world of dental ceramics

A blog delivers answers to questions about dental ceramics which concern dental laboratories today:

By Ivoclar Vivadent

Ivoclar Vivadent has established a new interactive online platform, whose contents address the challenges currently facing dental laboratories.

In our fast-paced world, dental laboratories are confronted by many questions. They look for enhanced efficiency and cost-effectiveness; for solutions that provide reliable support in their everyday work. Many are unable to keep track of the continuously increasing variety of products, product systems and processes that are entering the market and thus seek direction.

Increasing productivity and efficiency

The new online platform www.worldofceramics.com provides useful tips on the issues that concern laboratory owners. For example, they will learn how to increase the productivity of their lab, what they should pay attention to when selecting a ceramic material or equipment and what the current trends in the field of dental ceramics are. Moreover, they will be given the opportunity to participate in the discussion and contribute their experience as well as provide further tips.

New products in October

But that’s not all. During October, dental technicians will be informed about the new products developed by Ivoclar Vivadent and how these will provide answers to today’s pressing questions for dental laboratories.

Natural-looking imitation of pink esthetics

Completing a denture base using the IvoBase System

By Carsten Fischer, Germany

Even in the case of complex prosthetic reconstructions, patients want their dentures to look natural in addition to having the basic functions (speaking, chewing, tasting) returned to their stomatognathic system. Dentures should by no means have an adverse effect on the patient’s esthetic appearance. Esthetic soft tissue design reflects this philosophy.

The IvoBase® denture base system offers an efficient method to create custom-made esthetic soft tissue reconstructions. The patients’ expectations can be ideally met with a flare for esthetic design and a combination of three materials – IvoBase denture base material, SR Nexco® light-curing lab composite (customization) and ideally designed denture teeth.

IvoBase System

The IvoBase System is based on a fully automated injection and polymerization process. All the components (flasks, capsules, injector, etc.) are coordinated with each other. Chemical shrinkage of the resin is compensated during the polymerization process due to thermal management in the flask. As a result, volumetric shrinkage is prevented by the continued supply of additional material during the polymerization process to provide a denture base that demonstrates a high accuracy of fit and an excellent surface finish. Chemically, the IvoBase denture base materials fall into the category of self-curing polymers but offer the qualitative advantages of heat-curing polymers. Monomer and polymer are supplied in pre-dosed capsules to ensure an optimal mixing ratio and to eliminate direct skin contact with the monomer.

The IvoBase System results in denture bases that demonstrate lifelike pink esthetics and closely resemble the light-optical properties of the natural gingiva. Characterizations can be easily applied to the denture bases to accommodate the specific expectations of the patient.

Case presentation

A partially edentulous upper jaw was to be restored with a palate-free denture retained with telescopic crowns. The inner (primary) zirconia copings for
teeth no. 15, 14, 15 and 24, 25 were sheathed with electrofor- med copings (secondary parts) attached to a tertiary structure made of base alloy. The electro-
formed copings were cemented to the base alloy structure in the oral cavity to ensure a ten-
sion-free fit. Tool setup was performed according to con-
ventional prosthetic principles while the static and functional requirements as well as the pa-
tient’s individual expectations were taken into account. Tooth position, smile line, lip volume, phonetics and other criteria were checked in the course of an esthetic try-in (Fig. 1) before fabricating the final denture.

Lab procedure
After both the dentist and patient had approved the wax-up, the denture was ready to be pro-
cessed into acrylic. To perform this task, I used the Ivoclar den-
ture base system, which allowed me to transfer the wax-up to the final restoration without loss of detail.

Finishing and boiling out
Both flask halves were identical. Prior to investing the model, I placed the flask lid, access for-
mer half and filter wax compo-
nent in one of the flask halves. After applying a thin coating of petroleum jelly to the inner surfaces of the prepared flasks, I soaked the model with the mounted waxed-up denture with water and isolated it with stone-to-stone separating fluid. The model was now ready for being invested in plaster; a Class III dental stone was used for this purpose. I took care to place the model at the centre of the flask and to ensure a space between the anterior margin of the model and the flask of approx. 10 mm. To create a flash-free surface between the edge of the model and the flask housing, I moved all surplus plaster whilst it was still soft. The stone surface should be flash-free with the access former to ensure a gap free from spilling during the sub-
sequent working procedure.

After the stone had hardened, I replaced the access former half with the access former full and positioned the prefabricated injection wax component. As a palate-free denture base was fabricated in the present case, the sprues were pressed onto the maxillary tuberosity. I made sure that the sprue was contigu-
ous in all areas of the denture base. Then, I attached what are known as wax injection channels at the anterior region to vent the flask cavity during the injec-
tion process. These components were also prefabricated and were easy to connect to the dentu-
re base. Important: the air-
ation channels must not come into contact with the flask hous-
ing. I coated the teeth and gingival areas with a medium-
body addition curing silicone (A silicone of a Shore hardness of 65) and then applied some stip-
pling to the silicone before it had set to create a retentive pattern and secure the silicone in the stone. No silicone was applied to the occlusal surfaces and access former. After isolating the stone surface, I positioned the upper half and locked the flask halves using the locking clasp. Then, I filled the flask with den-
tural stone (Class III) with the help of a vibration device to avoid air bubbles. Excess stone was skinned off so that a flash-free sur-
face resulted between the stone and flask lid. Once the stone had set, the flask was heated in a water bath at 90°C and then the two flask halves were sepa-
rated. The wax was now soft and could be easily removed in large pieces. After the full access former had been removed, the model and teeth were boiled out with clean boiling water to thor-
oughly remove all wax residue.

Result
The basal surfaces of the cleaned teeth were roughened with jet medium and mechanical reten-
tions applied with a small round bur. After that, I returned the teeth to the silicone key. Next, I applied a thin coating of Sepa-
rating Fluid to the stone sur-
faces of the cooled flash halves (Fig. 4). Prior to joining the flash halves, I masked the base metal alloy framework with opaque. For this purpose, I used a pink opaquer for the gingival areas and a tooth-colored shade for the areas under the telescope teeth. These materials were first applied as a foundation layer and then placed on the model and secured with wax (Fig. 5). The aeration filter, centring insert and frame were inserted and the flash halves assembled.

The denture base materials are available in seven shades. For the case presented here, I se-
lected Ivoclar High Impact in shade 54-V. I removed the mon-
omer container from the pre-
dosed capsule, joined the fluid and powder and mixed the two components to a homogeneous mixture. With a few easy manipu-
lations I attached the centring insert and flask to the capsule and then placed them into the injector according to the manu-
facturer’s instructions. Next, I selected the relevant injection program and then started the in-
jection process (Fig. 6). The pro-
cess was fully automated and, with the RMR function added, took approx. 45 s to com-
plete. The RMR function further reduces the already very low content of residual monomer to below one per cent. As the injec-
tion and polymerization process were exactly matched to the ma-
terial, chemical shrinkage was completely compensated. Once the program had been complete, I removed the flask and cooled with water. Divesting was per-
formed under a dental press.

The Ivoclar System includes a divestig aid to facilitate this process. Having removed the flash half, I carefully removed the denture from the stone core and separated the silicone from the plastic injec-
ting separating disc (Fig. 7). All waxed-up areas were faithfully reproduced in the acrylic.

Completing the denture
Now, I directed my full attention to finishing the denture. The advantage of using this system became most apparent at this stage, as hardly any rework-
ing was necessary. The finely modelled surface structures and textures of the wax pattern were replicated in the acrylic without loss of detail. In a few quick steps, the denture base was ready for final customiza-
tion (Fig. 8). With SR Nexco, the artificial gingiva can be given an individual touch and natural-
looking characteristics to suit the patient’s expectations. SR Nexco ideally complements the Ivoclar base material (shade 54-V) (Fig. 9).

I applied a light-curing con-
ditioner (SR Connect) to the acrylic surface to create an ad-
hesive interface that would al-
low the application of individual shade characteristics (Figs 10 and 11). After that, I focused on creating subtle details to re-
produce a natural depth effect. I

Contact Information
Carsten Fischer
sirius ceramics
Carsten Fischer, 60528 Frankfurt on the Main, Germany
info@sirius-ceramics.com

Conclusion
The Ivoclar injection process provides a well-proven method to process waxed-up dentures into high-quality PMMA. Waxless setups can be transferred in 1:1. Polymerization shrinkage is mostly compen-
sated by the program used and the RMR function required by the dental techni-
cian. The soft tissue parts can be customized to meet the individ-
ual expectations of the patient and to provide dentures with natural-looking pink esthetics.

I would like to thank Dr. Ralfa van Heurck and Dr. Tobias Goerke of Cerrapor for their support.
Accurately colour zirconia using the Amann Girrbach colouring concept

By Amann Girrbach

Colour zirconia restorations accurately and reproducibly – this is performed successfully using the Ceramill Colouring Liquids from Amann Girrbach. The colouring liquids were developed and adapted according to the specific material characteristics of the respective zirconia group (LT, HT, SHT) to ensure consistently exact and reliable results based on the VITA classical shade guide. All shades of the VITA classical shade guide can only be reliably matched right away using this optimal harmonisation of material and colouring solution.

Three material-specific Ceramill Liquid sets have been created that are used for easily and precisely customising the milled restorations.

A compact liquid set with 4 basic shades and 2 shade modifiers was therefore developed specifically for the slightly translucent zirconia Ceramill ZI (LT), which only requires an aesthetic basis for the porcelain veneer due its use as an anatomically reduced framework material.

A clearly designed set of colouring solutions in the 16 VITA classical tooth shades and shade modifiers for the incisal/occlusal surfaces and gingival region is also available for each of the (super-) highly translucent zirconia materials Ceramill Zolid and Ceramill Zolid FX (HT/SHT), which are also used for monolithic restorations. The shades can be applied directly to the restoration without mixing and optimise the reliability and efficiency of the workflow. Both liquid sets provide the maximum degree of aesthetics, customisation and cost-effectiveness as they are coordinated with one another as well as with the specific working and material parameters for Ceramill Zolid and Ceramill Zolid FX.

The Amann Girrbach colouring concept is completed by the Ceramill Stain&Glaze set, which can especially be used to enhance the light dynamics and in-depth shade effect of monolithic restorations.

Contact Information

Amann Girrbach AG
Herrschaftswiesen 1
6842 Kohlbach | Austria
Web: www.amanngirrbach.com
The Fascination of Simplicity

By Dr. Patrice Lalet, France

After 50 years of research and development, CEREC can today be considered as so highly user-friendly that tasks can be handled quicker, more easily and more successfully. Using dental CAD/CAM technology for the first time is easier than you would think and is worthwhile for all dentists. New software features, which further enhance user comfort and offer additional treatment safety, make the system especially interesting to newcomers of all ages. Starting out in the world of CAD/CAM production is not normally a cause for concern for younger dentists who have grown up using PCs, mobile phones and tablets. And experience has shown that even less technology savvy dentists quickly get used to the computer support - making treatments extremely safe thanks to its intuitive operation. Nevertheless, during this initial period, CEREC training is highly recommended to allow users to learn how to use the system as quickly and safely as possible.

Intuitive user guidance leads to impressive results. CAD/CAM technology is appealing thanks to its impressive results. Its usability means that even dentists who have not grown up as “digital natives” can use CEREC easily. An easy-to-operate camera replaces the conventional impression technique using a tray and impression material. Quick, digital, extremely precise – and no prior powdering is required. The various restorations are then designed with the intuitive CEREC software with user guidance and active feedback. The subsequent in-house production of the restoration ensures precise results and enthusiastic responses from patients. It also increases the value added in the practice. And the possibility of single visit dentistry which leads to more comfort for the patient and the dentist.

Brief case report

A very typical example for CEREC treatment is presented in the following case: A 42-year-old patient came to my practice to improve the look of her anterior teeth. Since the teeth emerged at the age of 6 or 7 years she suffered from a lack of enamel. So we decided to make crowns on lively teeth. With the aid of the CEREC Bluecam we captured the preparation, the antagonist and the bite situation and the 3D preview appeared on the monitor in the CEREC software. On the basis of these intraoral impressions the software generated a virtual 3D model. When generating the initial proposal for the four crowns, the software used the Bioesthetic modelling function. We sent the design of the restorations to the CEREC milling unit and clamped a block made of zirconia-reinforced Lithium-Silicate. The transparency of the ceramic assured very natural looking teeth. We added stain and glaze to obtain this result. After characterization, we placed the crowns and the patient could leave the practice with a new nice smile.

Quo vadis, cerec?

Powder-free impressions in natural colors, designing in an intuitive software and the grinding of a wide range of innovative materials – all these treatment steps are possible in every practice with CEREC. It is the only professional CAD/CAM system worldwide, which allows you to offer all-ceramic restorations in a single visit with a clear conscience. Using the latest digital technology there are no limits to construct fully anatomical bridges as well as implant restorations. With the patient specific surgical guides CEREC GUIDE 2 for a safe placement of implants and the CEREC ORTHO software for orthodontic treatments CEREC enables an incomparably broad range of applications to the practitioner and the patient to ensure optimal treatment result.

About the Author

Dr. Patrice Lalet has been a CEREC user for 15 years and received his certification as a CEREC trainer from ISCD in 2004. Dr. Lalet is member and co-founder of the French CEREC Training team e-dentisterie.
Diagnosis and management of a rare case of a maxillary second molar with two palatal roots - Supported by conventional radiography and CBCT

By Ass. Prof. Katarina Beljic-Ivanovic, Serbia

Besides adequate knowledge of root canal morphology in general, it is of utmost importance to evaluate each individual case for aberrant anatomy and to identify any morphological variation before performing and during an endodontic procedure on such teeth. In clinical practice, conventional radiography with the assistance of an operating microscope is the most common method for evaluating root canal anatomy. However, it has been shown that their use does not reveal all anatomical details. Recently introduced and developed cone beam computed tomography (CBCT) for dental use has proved to be more accurate in detecting root canal morphology, especially in maxillary posterior teeth. One of the most unusual and rare aberrations of tooth anatomy is a maxillary second molar with two separated palatal roots. This article presents the case of such a patient, who presented ten years after another such patient had been recorded.

Case report
A 26-year-old male patient sought treatment at the Department of Restorative Odontology and Endodontics at the University of Belgrade with the following chief symptoms, which had persisted for several weeks already:
- spontaneous dull, mild and intermittent pain in the region of the left maxillary molar;
- moderate sensation of pain when biting hard food.

Additional information was acquired from further anamnesis:
- There were no other symptoms, and no irradiation of existing pain.
- The patient recalled that a root canal therapy had been performed on the same tooth several years before.
- He also recalled that two teeth on the same side of the upper jaw had been extracted at least ten years before.

Furthermore, clinical examination confirmed the following:
- only the second molar, #27, with an extensive amalgam restoration, was present in the left maxilla;
- moderate sensitivity on vertical percussion of the buccal cusps, and painful response to percussion of the mesiopalatal cusp;
- no sensitivity on digital palpation on the vestibular or palatal side;
- both hot–cold and electric vitality tests were negative;
- no pathological mobility of the tooth.

The diagnostic periapical radiograph (bisecting angle technique) showed:
- partly obturated palatal and mesiobuccal (MB) root canals and an unfilled distobuccal (DB) root canal;
- slight radiolucency around the palatal root apex; no distinctive border towards the surrounding maxillary bone structure.

The necessity of an endodontic retreatment of the tooth was explained in detail to the patient, who accepted the suggested therapeutic procedure and the general schedule for further appointments.

Treatment procedure
The old amalgam restoration and the phosphate cement base were completely removed, and the cavity walls were additionally prepared to enable clear visibility and straight-line access to all root canal orifices. The orifices of the palatal and MB root canals were blocked with obturation material, presumably iodine phosphate cement and a gutta-percha cone. Approximately 5 mm distal from the orifice of the obturated palatal root canal, another oval, crack-like orifice could be seen, with the appearance of a perforation. Further assessment of the pulp chamber floor was performed with 4.5 x magnifying loupes and the Endodontic Probe Orifice Opener (DENTSPLY Maillefer). Using the probe and a #10 k-file to negotiate the flat oval orifice, the presence of a second palatal (distopalatal, DP) root canal was detected. The orifice of the DB root canal was hidden under brownish deposits of tertiary dentine, located about 2 mm distal from the obturated MB canal orifice and approximately 2 mm buccal from the DP canal orifice. The DB canal orifice was negotiated and
A combined surgical and nonsurgical approach to repair an external root resorption utilizing a nano-particulate bioceramic root repair material

By Allen Ali Nasseh, DDS. MMSc

Introduction

The applications of bioceramic compounds in endodontic therapy range all the way from their non-surgical use as a root canal sealer, a pulp capping agent, or an external root repair material to their surgical applications for root repair and apicoectomy procedures. The first bioceramic compound introduced, MTA (Tulsa Dentsply, OK) was derived from Portland cement and has proven to be a valuable root repair material for surgical applications. More recently, medically pure nanoparticulate bioceramic formulations (that have been engineered from the ground up) have improved on some notable shortcomings of MTA by addressing the clinical handling challenges associated with this first generation material1. In addition, the removal of heavy metals, that can cause tooth staining in MTA repaired cases, has also been addressed with these newer 2nd generation formulations.

This new family of compounds known as EndoSequence BC Sealer, Root Repair Material (BRM), and Fast Set Putty (BUSA/Brasseler USA, Savannah GA) has shown significant clinical handling advantages over MTA for both non-surgical and surgical applications. Due to their nanoparticulate size and viscosity, these materials can now be used as a sealer and/or filler for root canal obturation, as well as for the surgical repair of root defects and apicoectomies.

This clinical case report demonstrates the use of EndoSequence Bioceramic (BC), Fast Set Putty, and MTA both the non-surgical root canal treatment and the surgical repair of an extensive external root resorption defect in a single central incisor.

Case Report

A 28 year old female presented with a chief complaint of the comfort and swallowing around her front tooth (Figure 1). She explained that she was seeking a third opinion after being told twice that tooth #9 was not salvageable and had to be extracted. Clinical and evaluation revealed erythematous gingivitis issues on the buccal aspect of tooth #9 with deep probing (±6mm with BOP on the buccal normal probing on the lingual). Testing also revealed that all anterior teeth were within normal limits to thermal and percussion test except for tooth #9, which was positive to percussion with severe and lingering response to cold. A post radiographic examination, tooth #9 was diagnosed with extensive external root resorption. A history of protracted orthodontic therapy ten years ago was noted in the patient’s dental history. A pulpal diagnosis of symptomatic irreversible pulpsitis was made and the prognosis, given the large extent of the resorptive defect was deemed guarded to questionable at best. Extraction was deemed the most predictable option. The patient, however, was very motivated and wanted to attempt to save her tooth despite the guarded prognosis.

The non-surgical endodontic therapy was completed in a single visit using a combination of EndoSequence Root Repair Material (BRM) Patty (BUSA/Brasseler USA, Savannah GA) in a barrier technique and EndoSequence Root Repair Putty (BUSA/Brasseler USA, Savannah GA) in a syringeable formulation (BUSA/Brasseler USA, Savannah GA) in the following manner:

- Following cleaning and shaping to a size 70/0.04 EndoSequence Filer (BUSA/Brasseler USA, Savannah GA) the tooth was further disinfected with full strength (7%) Sodium Hypochlorite. This was accomplished by using a negative irrigation system (EndoVac Macro-Canula (SybronEndo, Orange CA) and Verta V5 Ultrasonic unit with an E1 tip size 20 U-blade insert (BUSA/Brasseler USA, Savannah GA). Thereafter, a size 70/04 EndoSequence BC Gutta Percha Cone (BUSA/Brasseler USA, Savannah GA) was fitted to the apex with tug back. The cone was then trimmed with a scalpel blade so that it would fit ±4mm short of the apex. A 4mm plug of EndoSequence BC Patty was then condensed to the apex using the fitted cone so that a 4mm plug of patty filled the apex, creating a barrier (Figure 2).
- The apical barrier technique has been described previously2.3.4. The cone was then removed and the entire remaining canal was filled with Syringeable BC Sealer (BUSA). The access was restored with Fuji IX (Figure 3). The patient was rescheduled for the surgical repair of the external defect 2 weeks later. The surgical appointment was not scheduled concurrently in order to allow time for the intra-radicular cement to set and to evaluate patient response.

The patient returned for the surgical root repair visit and a sinus tract was noted on the buccal aspect of the tooth pre surgically (Figure 4). A large external resorption defect was noted on the buccal aspect of the tooth after a full thickness intra-sulcular flap was raised (Figure 5). Using a high speed round bur and copious amounts of water, the defect was prepared and all visible resorptive soft tissue in the area was removed. The root canal was reached, exposing the set EndoSequence BRM Material inside the root canal (Figure 6). Once all the soft tissue was removed, the remaining preparation and the exposed root surfaces were conditioned with citric acid. The remaining root defect was then repaired with an equivalent amount of bioceramic patty trying to keep the patient and the root surface as dry as possible (Figure 7) and the flap was sutured closed.

The immediate post-operative radiographs show the extent of the root repair with the Patty in this tooth (Figure 8). Following normal post operative healing the patient was evaluated at 6 months and two years, where the gingival tissue was observed to be fully healed and probing was found to be within normal limits (Figure 9). At this point, the surgical repair procedure was deemed successful. The post operative esthetics were completely acceptable to the patient and no tooth staining was noted as a result of the material used to repair this tooth inter-digitally and lingually.

Conclusion

Extensive external root resorption and other aggressive forms of cervical root resorption are challenging when they cause significant root damage. These lesions can sometimes be monitored requiring no intervention at all. However, when endo-perio involvement results in pulpsitis and later infection of the resorption defect, extraction of the tooth or surgical repair of the root are the only viable options. In cases where direct surgical access with good visualization of the defect can be achieved, the use of modern bioceramic formulations (which are easy to apply to the site and have demonstrated excellent biocompatibility, bonding, and hydrophilic qualities) may have a role in these cases. In this clinical case, the use of nano-particulate bioceramic formulations, both EndoSequence Syringeable BC Root Repair Material (BRM) & Patty (BUSA/Brasseler USA, Savannah GA) were demonstrated. Long term follow up of the healing of the gingival tissues and acceptable esthetics were achieved in a tooth that was otherwise unsalvageable. The ease of clinical handling during surgery and a lack of dentin staining were noted. Further studies in this area are warranted in order to explore the true potential of this family of compounds in root repair applications, as well as all other aspects of endodontic therapy, where direct contact between biological tissues and biocompatible repair material is essential to success.

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A careful assessment of the internal anatomy of the pulp chamber is essential for detecting all root canals. A maxillary second molar with two separate palatal roots is a rare anatomical variation and, according to our records, is detected only once in a decade. CBCT images provide more accurate and reliable information regarding roots and the root canal morphology than conventional radiographs are able to provide. Furthermore, concerning the treatment outcome, CBCT images enable a much more predictable and successful endodontic treatment procedure.

Conclusion and key learning points

1. CBCT images enable a much more predictable and successful endodontic treatment procedure.
2. Two intra-oral, retro-alveolar radiographs captured post-treatment was of relatively poor quality owing to superimposition and interference of the infra-structural arch and adjacent bone structures, and failed to show the most important apical portions of the roots with the correct root canal fillings.
3. In agreement with the patient, a CBCT scan was obtained, primarily to check the treatment outcome, but also to document this extremely rare case with much more accurate and reliable images. The small field of view (90 x 50mm) was recommended, and the data was acquired by SCANORA 3Dx (SOREDEX) immediately after the treatment and at the six-month recall.

The edited images (OnDemand3D, Cybermed) clearly visualized two distinctive palatal roots, their relation to the two buccal roots, the adjacent anatomic structures and, most importantly, the quality of the obturation of all four root canals (Figs. 5-9, arrows).

The endodontic procedure, 2.2% sodium hypochlorite and 10% citric acid solutions were used as irrigants, successively, in all four root canals. Each of the four canals was finally irrigated with 40 ml of a 2.2% NaOCl solution, dried and obturated using Acroseal (Septodont) and a single gutta-percha cone with an adequate taper (DENTSPLY Maillefer; Fig. 5).

The intra-oral, retro-alveolar radiograph captured post-treatment was of relatively poor quality owing to superimposition and interference of the infra-structural arch and adjacent bone structures, and failed to show the most important apical portions of the roots with the correct root canal fillings (Fig. 4).

In agreement with the patient, a CBCT scan was obtained, primarily to check the treatment outcome, but also to document this extremely rare case with much more accurate and reliable images. The small field of view (90 x 50mm) was recommended, and the data was acquired by SCANORA 3Dx (SOREDEX) immediately after the treatment and at the six-month recall.

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Editorial note: This article is based on the work presented at the 16th congress of the European Society of Endodontology in Lis- bon in Portugal in 2013 and was published in cone beam – international magazine of cone beam dentistry No. 02/2015.