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Editorial

DENTAL ASSOCIATION OF MALTA
The Professional Centre,
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By Dr David Muscat

Dear colleagues,

As we near the end of 2013 we remember our colleague Dr Alfred Magri Demajo who passed away suddenly at the end of last year.

By 25 October 2013 DAM members should have arranged dental professional indemnity insurance. (Legal Notice 388 2013).

The following are the most recent Dental events- correct at time of writing this article.

The photo on the front cover was taken by Dr Kristian Vella. It is a Morita dental unit from the Second World War and the photo was taken in a museum in Thailand.

The DAM committee wishes you all a great Christmas and a Happy New Year.

Best regards,

David

Dr David Muscat B.D.S. (LON)
Editor / President, P.R.O., I.R.O. D.A.M.

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RECENT/PLANNED EVENTS

16 OCTOBER
MFPB Allcare event

23 OCTOBER
Tarragon Prof Attard lecture GI disease sponsored by KIN

13 NOVEMBER
Smile For Health – Westin

20 NOVEMBER
Guze-Hypnosis lecture by Dr Alan Kendall sponsored by Sanofi

6 DECEMBER
Christmas Party Excelsior

15 JANUARY
Lecture by Dr Edward Sammut Consultant Periodontist

29 JANUARY
Keral event with implants lecture.

JANUARY
Din L-Art Helwa/ DAM event

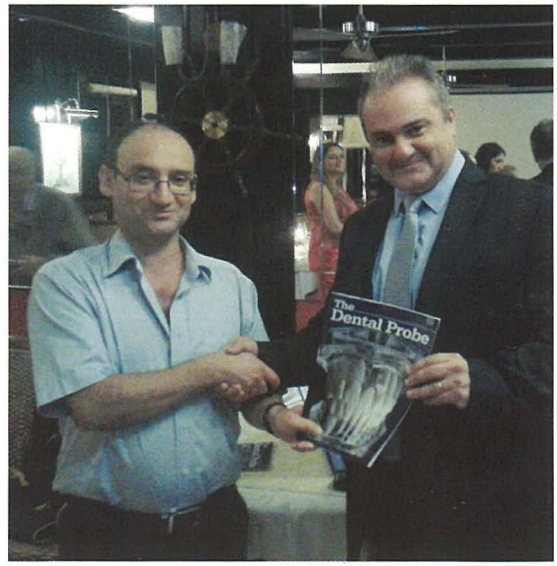
JANUARY/FEBRUARY
Chemimart event

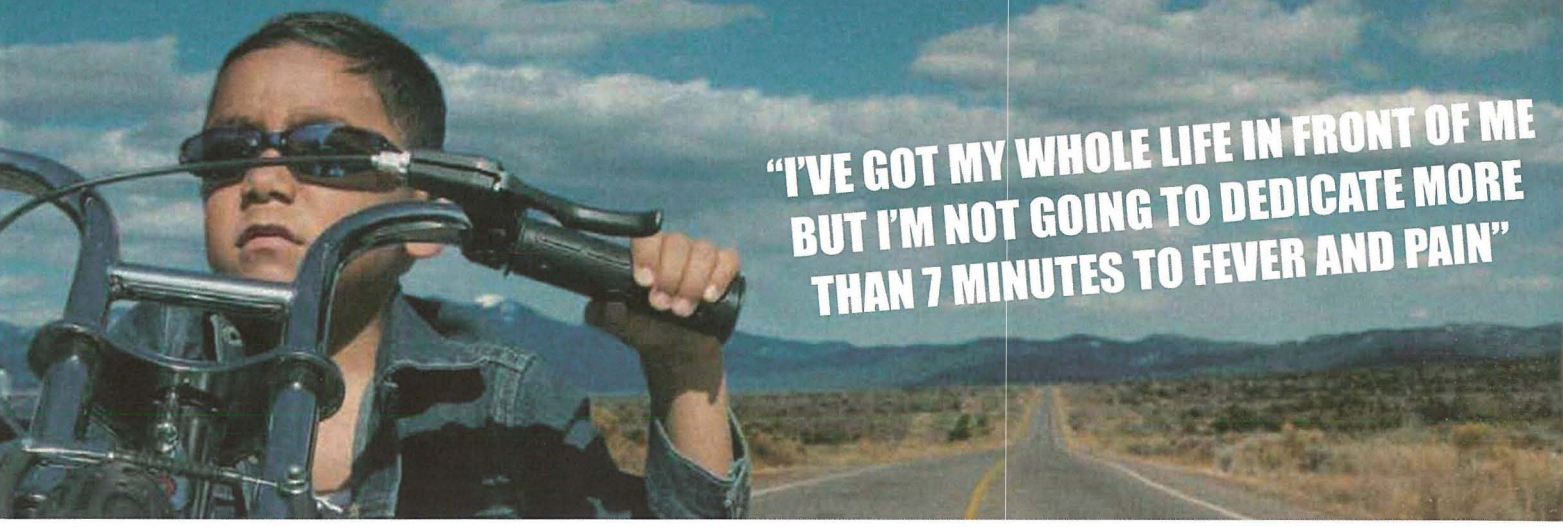
FEBRUARY
Lecture by Mr Alex Manche Cardiac Surgeon

MARCH
Lecture by Dr Adrian Agius ENT surgeon on Facial Pain

Dr David Muscat presenting the Probe to Mr Tsepas Yerasimos ,Ivoclair Vivadent Business Development Manager, and Mr Christos Tsioligas, Ivoclair Vivadent Product Specialist in the presence of Mrs Elisa Camilleri from Bart Enterprises Ltd, local agents for Ivoclair Vivadent.

Dr David Muscat President of The Dental Association of Malta presenting the Dental Probe to Professor Thomas Attard ,President of the Association of Paediatric Doctors and Consultant in Paediatrics and Gastroenterology at the DAM lecture at The Tarragon on Wednesday 23rd October 2013.





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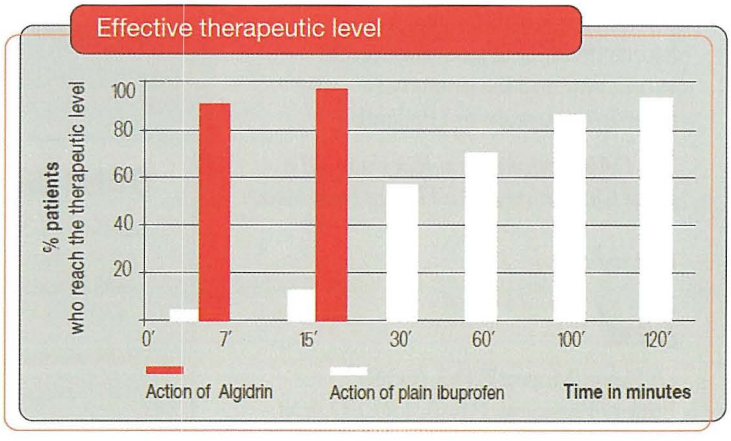

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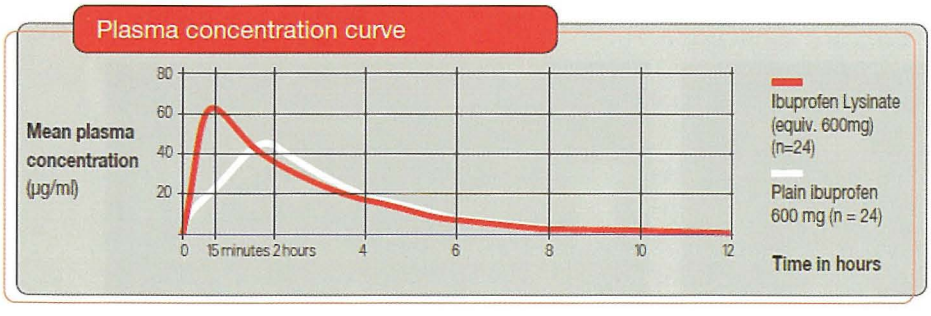

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(1) Portolés A, Vargas E, García M, Terleira A, Rovira M, Caturla MC, Moreno A. Comparative Single-Dose Bioavailability Study of Two Oral Formulations of Ibuprofen in Healthy Volunteers. Clin Drug Invest 2001; 21 (5): 383-389.

Endodontic Irrigation Update

PART ONE: IRRIGATION/AGITATION SYSTEMS

By Daniel M. Keir, DDS

Diplomate, American Board of Endodontics

Successful endodontic treatment requires an effective and efficient irrigation regimen. This regimen needs to combine an appropriate irrigant and a delivery system to remove pulpal remnants and instrumentation debris as well as the smear layer and microbacterial components from the root canal system. Several irrigation systems have been developed to deliver irrigants to all regions of root canal system especially the apical portion.

Endodontic irrigation systems can be divided into either manual or machine-assisted irrigation. Manual irrigation involves positive pressure irrigation commonly performed with a syringe and a side vented needle. Machine assisted irrigation techniques include sonics, ultrasonics, negative apical pressure such as EndoVac (SybronEndo), irrigation agitation systems such as the plastic rotary F File (Plastic Endo), the Vibringe (Cavex), RinsEndo (DurrDental AG) and the Endo Activator (Dentsply)

MANUAL IRRIGATION/ AGITATION TECHNIQUES

The most common irrigation technique is manual irrigation using a syringe and a side vented needle to deliver the irrigant into the root canal system either passively or with agitation by moving the needle in an up and down manner in the canal space without binding on the canal walls. This technique allows for good control over the depth of needle penetration into the canal space and volume of irrigant used to flush the root canal system. It is important with this technique to avoid wedging or locking the needle in the root canal space or forcibly expressing irrigant from the syringe especially with the needle tip in the apical portion of the root canal system. The result can be disastrous with extrusion of irrigant beyond the apex and into the periapical tissues.

MANUAL DYNAMIC AGITATION TECHNIQUE

This technique produces a hydrodynamic effect within the root canal system by using a specially design hand instrument to agitated the irrigant. The V-Clean Endodontic Agitator (SS White) is a polymer hand instrument developed to be used in the root canal system to clean the surface of the prepared root canal. The V-Clean instrument is designed to remove the smear layer, dislodge and remove debris and create an agitating action in the root canal when used with an irrigant.

MACHINE ASSISTED IRRIGATION/ AGITATION SYSTEMS

Sonic activation of the irrigant has been shown to an effective method for disinfecting and cleaning the root canal space after instrumentation. The Vibringe and the EndoActivator are two sonic irrigation devices on the market. The Vibringe employs a two piece syringe that allows delivery and sonic activation of the irrigation solution in one step. The irrigant is sonically activated by the needle through a cordless handpiece that connects to a disposable 10ml syringe containing the irrigant. The EndoActivator System uses a polymer tip attached to a portable battery powered handpiece to vigorously agitate the irrigant. The EndoActivator improves debridement and disruption of the smear layer and biofilm through cavitation and acoustic streaming of the irrigant (Ruddle 2008). The activated irrigant promotes deep cleaning and disinfection of the root canals system.

Ultrasonic irrigation/agitation uses higher frequencies that sonic irrigation/ agitation techniques but at lower amplitudes. Ultrasonics have been shown to be more advantageous after completion of canal preparation as opposed to use in canal preparation (Gu et al. 2009, Zehner 2006, Weller et al 1980). Ultrasonic energy is transmitted from an oscillating smooth file to the irrigant thus generating ultrasonic waves within the root canal system. Ultrasonic agitation of the irrigant is more effective than syringe needle irrigation in removing pulpal tissue remnants, dentinal debris including the smear layer (Sabins et al 2003, Goodman et al 1985, Cameron 1987, Lee et al 2004, Huque et al 1998). Ultrasonic irrigation/agitation has been shown to result in a significant reduction in the number of bacteria in the root canal system after hand and rotary instrumentation compared to syringe needle irrigation (Huque et al 1998, Spoleti et al 2003).

The plastic Rotary F File is an endodontic polymer based rotary finishing file designed for single use to remove dentinal wall debris and agitate the irrigant without enlarging the canal. This system was developed to overcome the common reasons many clinicians are reluctant to incorporate sonic or ultrasonic irrigation/agitation techniques. Objections to ultrasonic and sonic irrigation are cost of the equipment, time required to set up the equipment and a lack of awareness to the benefits of ultrasonic and sonic irrigation/agitation of the irrigating solution.

The RinsEndo system consists of a handpiece, a special disposable cannula and a syringe containing the irrigant. This system irrigates the canal by using pressure-suction technology to achieve a hydrodynamic function to remove canal debris from the root canal system. This system has shown promising results in cleansing the root canal system, but periapical extrusion of irrigant has been report with this system (Desai et al 2009)

The Endo Vac Apical Negative Pressure System uses suction to pull irrigant down the root canal system and then evacuating the irrigant through specialized cannulas. The EndoVac system consists of three components: a Master Delivery tip, a Macro Cannula and a Micro Cannula. The Master Delivery tip is used to delivery irrigant to the pulp chamber and evacuate excess irrigant simultaneously.

Continues on page 9.

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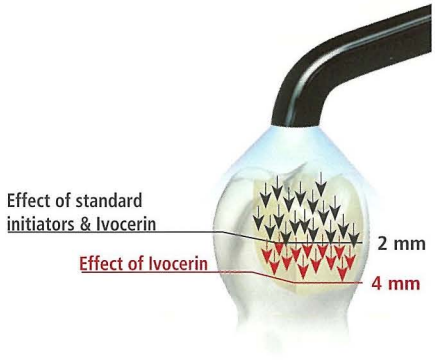
Until recently, the two-millimetre incremental filling technique has been used in direct restorative treatments. With the introduction of Tetric EvoCeram® Bulk Fill, change has come. The material is based on the proven universal composite Tetric EvoCeram. Given its patented composition, it enables cavities of up to 4 mm to be filled and contoured in a single step and to be polymerized in 10 seconds.

Tetric EvoCeram Bulk Fill streamlines a procedure that dentists apply several times a day: cavity restorations. The conventional 2-mm incremental filling technique used to date is relatively time-consuming. With the single-increment filling technique, the same result can be achieved, using up to 60 per cent less time. This has been proven in a hands-on workshop involving 32 dentists.[1]



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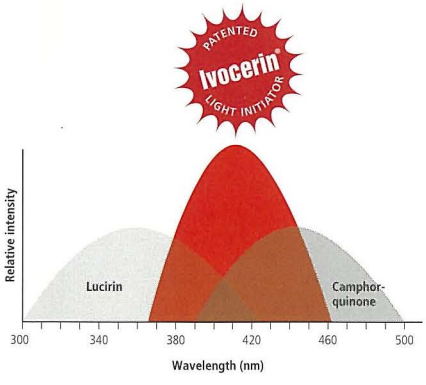
Leading-edge bulk-fill technology

Tetric EvoCeram Bulk Fill allows voluminous 4-mm increments to be light-cured in 10 seconds (≥ 1,000 mW/cm²) due to the light initiator Ivocerin developed by Ivoclar Vivadent R&D. Ivocerin is a polymerization booster incorporated into the standard initiator system. It is several times more reactive to the light of polymerization devices than camphorquinone and Lucirin.

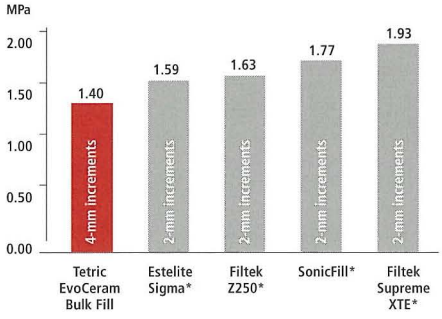


Esthetics and curing depth are not compromised in the process, as is often the case with composite restoratives containing only conventional photoinitiators. The reactive property of Ivocerin allows the material's translucency to be established at a level that ensures maximum esthetics. Three enamel-like universal shades facilitate shade selection: universal A shade (IVA), universal B shade (IVB) and white shade (IVW) for deciduous teeth or light-coloured permanent teeth.

Low shrinkage and low shrinkage stress

To achieve an effective marginal seal, shrinkage and shrinkage stress should be kept low. A special shrinkage stress reliever is integrated into the filler composition of Tetric EvoCeram Bulk Fill. During polymerization, the shrinkage stress reliever reacts like a microscopic spring and thus moderates the shrinkage stress. If the shrinkage forces occurring in Tetric EvoCeram Bulk Fill are compared with those of other established composites, the favourable effect of the shrinkage stress reliever is clearly evident.

Shrinkage stress: 4 mm vs. 2 mm
In MPa: pulling forces acting on the cavity walls via the surface



Measurement acc. to Watts in 2-mm and 4-mm layers, R&D Ivoclar Vivadent AG, Report February 2013
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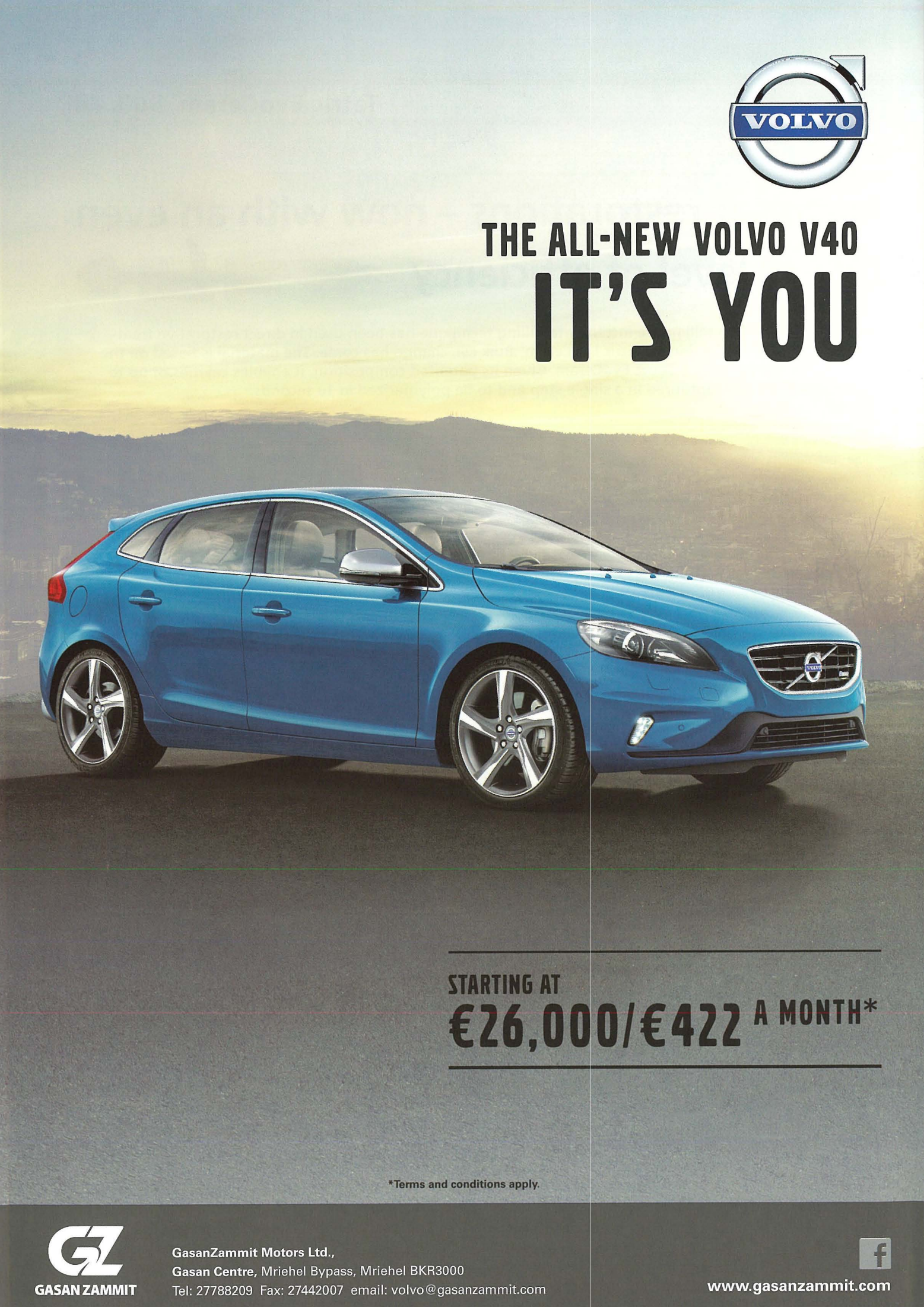
Long working and modelling time

With its stable yet packable consistency, Tetric EvoCeram Bulk Fill allows even extensive defects including cusp build-ups to be conveniently reconstructed. Owing to the light sensitivity filter, Tetric EvoCeram Bulk Fill offers ample modelling and working time also under ambient and operatory light. The light sensitivity filter acts like a protective shield that does not delay the polymerization process initiated with a curing light. Due to the well-balanced filler composition, Tetric EvoCeram Bulk Fill restorations are fast and easy to polish.

[1] 32 experienced dentists from 21 countries layered, sculpted and polymerized cavity restorations first by using the 2-mm incremental technique with Tetric EvoCeram and then by using the 4-mm bulk fill technique with Tetric EvoCeram. ICDE Ivoclar Vivadent AG, 2011.

For more information, please visit www.ivoclarvivadent.com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Endodontic Irrigation Update

PART ONE: IRRIGATION/AGITATION SYSTEMS

Continues from page 5.

The MacroCannula and MicroCannula create negative pressure through suction to pull irrigant down the canal to the tip of the cannula and then out of the canal through the cannula resulting a continuous flow of fresh irrigant in the canal. The MacroCannula is used first to suction the irrigant from the pulp chamber to the coronal and middle segments of the canal whereas the MicroCannula is used in the apical third. While using these cannulas, irrigant is continuously delivered to the pulp chamber by the Master Delivery tip. The EndoVac system has been shown to be significantly better in removing debris at 1mm from the working length than needle irrigation.(46). Overall, the EndoVac system has been shown to produce cleaner canals than other irrigation/agitation systems (Klyn et al 2010, Susin et al 2010, Siu et al 2010).

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SOFT TISSUE BIOTYPE
AND ITS IMPLICATIONS FOR PERIODONTICS AND IMPLANT DENTISTRY

Soft tissue biotype was previously called gingival biotype or morphotype (Oschenbien and Ross 1969), but since the advent of implants, this has been renamed to encompass tissue around both teeth and implants. The term refers to a composite or aggregate of four features of the soft tissues and the teeth they surround that build up to a specific picture. These are:

1. The gingival width (keratinised tissue width) – which refers to the width of the keratinised tissue when measured from the gingival margin to the mucogingival junction. Some patients have a wide band of keratinised tissue that frequently ends in a relatively flat mucogingival junction, while others have a narrower band of keratinised tissue and the mucogingival junction may be wavy so that it follows the papillary contours.

2. Gingival thickness (thick or thin) – the thickness of the tissue in a bucco-palatal dimension. If you insert a probe into the mid-buccal sulcus of the maxillary central incisor and you can see it through the tissue then it is thin by this definition. If you can't see it, it is thick.

3. Papilla height/proportion – see my last article in PPD.

4. Crown width/height ratio – long, slender teeth tend to be associated with contact points distant from the alveolar crest and long papillae that fill the embrasures. Of course when dentistry has altered the shape of the teeth or the contact points, these last two features may de-link.

Classically, therefore, we spoke of a thick or thin soft tissue biotype. A thick flat biotype (Figure 1) is associated with a wide band of keratinised tissue, thick gingivae, short papillae and squarish teeth. Seen from the occlusal view, the alveolar housing of the teeth forms a broad, even ridge. The thin scalloped biotype patient (Figure 2) has a narrow band of keratinised tissue which may end in a wavy mucogingival junction, thin gingivae, long teeth and long papillae which result in a highly scalloped gingival margin. When seen from the occlusal view, the alveolar housing will follow the shapes of the roots and it may be possible to visualise the outlines of the roots under the tissue (Lindhe et al 2008). Of course the position of the tooth within the ridge will have a considerable influence on the thickness of the overlying tissue (Muller and Kononen 2005).

More recently, a third common soft tissue biotype was identified – the thick scalloped which has thick gingivae but also has a narrow band of keratinised tissue and high scalloped margins (De Rouck et al 2009).

The tissue biotype is frequently reflected in the thickness of the alveolar bone (Becker et al 1997). If you look at a cross section of a maxillary central incisor with a thick tissue biotype the buccal plate may be thick enough to accommodate a separate bundle bone around the tooth (Figure 3) while in a thinner biotype the bone is usually (very) thin resulting in the bundle bone and the buccal plate being one and the same bit of bone (Figure 4).

Ok so what's the big deal? Well the biotype has a profound influence on how the periodontal structures respond to various processes including inflammation, periodontal surgery of all sorts, extraction of teeth and implant treatment. This means that in the maxillary anterior dentition, especially so in cases with a high smile-line, the soft tissue biotype has a big impact on the final pink aesthetics of the case. Knowing the behaviour of the tissue will therefore help you predict changes and advise patients accordingly about the possible final outcome, before you start treating them.

Inflammatory periodontal disease
In the development of periodontal disease, the inflammation generated by plaque on the root surface extends into the tissue for a distance of 2mm in all directions (Waerhaug 1979). In patients with a thin biotype, the distance from the root surface to the oral epithelial surface (that is the thickness of the whole periodontium encompassing cementum, periodontal ligament, bone and gingivae) can be less than 2mm. Inflammation will therefore involve all the structures rapidly resulting in recession. On the other hand, in thick biotype patients with a thick alveolar housing around the teeth, the 2mm radius of inflammation will damage cementum, ligament and bundle bone only, producing a periodontal pocket. Of course around each tooth, there will be variations in

By Dr Edward Sammut
BChD, MSc, MClinDent, MFDS MRD RCSEd


FIGURE 1

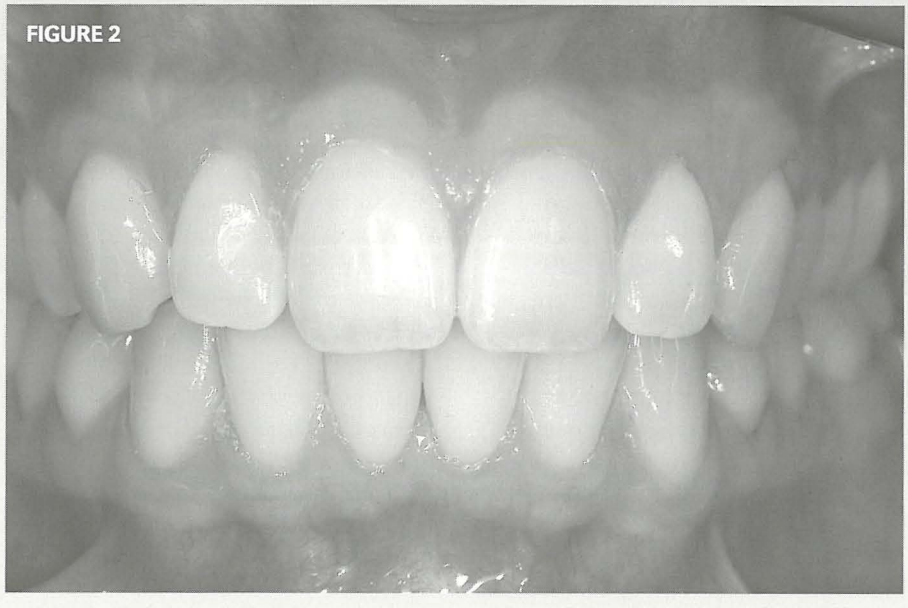


FIGURE 2

the thicknesses of the different layers, but this somewhat oversimplified approach may help you to understand how the same periodontal disease processes result in different effects. Thin tissue is also more likely to recede following non-surgical periodontal treatment (Claffey and Shanley 1986).

CROWN LENGTHENING SURGERY

Patients with a thick tissue biotype are likely to get more rebound of the gingival margin after crown lengthening surgery is performed (Ponteriero et al 2001). When treating these cases it is essential that the correct amount of bone removal is performed so that the biological width is correctly set-up. While this has not been explicitly reported, it is not unreasonable to expect that patients with a thin biotype may be more prone to additional recession following crown lengthening surgery.

ROOT COVERAGE SURGERY

In patients with a thick soft tissue biotype, healing following root coverage surgery is predictable (Huang et al 2005), whereas the opposite is true for those with thin tissue. Unfortunately, recession is usually found in those with the thin biotype, where it has been a contributory factor in the development of the recession. Because of this, inter-positional connective tissue grafts are used between the pedicle and the root surface to increase the thickness of the tissue. Various reports have suggested that for optimal root coverage, the tissue needs to be augmented to a minimum thickness (Hwang and Wang 2006).

Continues on page 12.

FIGURE 3

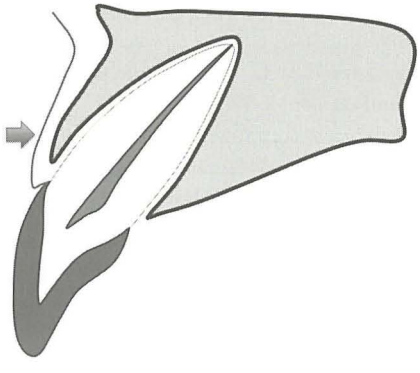
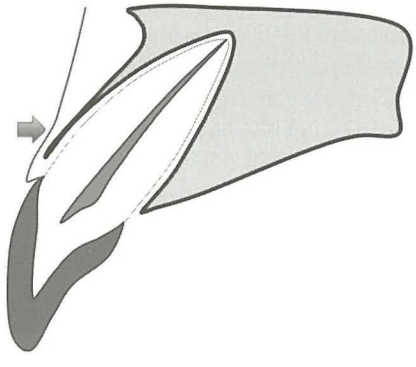


FIGURE 4



SOFT TISSUE BIOTYPE
AND ITS IMPLICATIONS FOR PERIODONTICS AND IMPLANT DENTISTRY

Continues from page 11.

Some also suggest a reduction of the buccal root surface with burs and stones. This attempts to move the root surface into the alveolar envelope and reduce the mesio-distal distance cells need to grow over to achieve coverage.

TOOTH EXTRACTION

The bundle bone will resorb after extraction, regardless of the method of extraction and socket preservation procedures (Araujo and Lindhe 2005, 2011), (Araujo et al 2008). Unfortunately in thin biotype patients the bundle bone is very likely to also be the buccal plate, and we can therefore expect considerable collapse of the socket, resulting in a contour deficiency, which will need to be addressed through bone grafting or compromise in the implant angulation especially so if the patient is getting implant treatment in the aesthetic zone. Patients with a thicker soft tissue biotype may end up with less alveolar deficiency and therefore their restorative treatment can be viewed as being more predictable and less demanding.

IMPLANTS

This really follows on from above. Once the implant is placed and the alveolar form is hopefully re-established, this situation needs to be maintained. Peri-implant tissue health seems to depend, in some part at least, to there being immobile keratinised tissue around the emergent restoration (Schrott et al 2009). As around the teeth, thin peri-implant soft tissue seems to be more prone to recession and less likely to develop nicely formed papillae around the implant restorations (Nisapakultorn K et al 2010). In my clinical opinion, tissue recession around implants seems to result in absence of immobile, keratinised tissue more quickly than around teeth, possibly because the shoulder of most implants are placed more apical to the CEJ of the tooth they replace. Mobile tissue around an implant is associated with increased risk of development of peri-implant disease (Roos-Jansaker et al 2009) and some authors actually recommend augmentation of the keratinised tissue as one of the treatment strategies in managing peri-implantitis (Allen 2011).

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Flap thickness as a predictor of root coverage: a systematic review. Hwang D, Wang HL. J Periodontol. 2006 Oct;77(10):1625-34.

Dimensional ridge alterations following tooth extraction. An experimental study in the dog. Araújo MG, Lindhe J. J Clin Periodontol. 2005 Feb;32(2):212-8.

Socket grafting with the use of autologous bone: an experimental study in the dog. Araújo MG, Lindhe J. Clin Oral Implants Res. 2011 Jan;22(1):9-13. doi: 10.1111/j.1600-0501.2010.01937.x. Epub 2010 Nov 22.

The influence of Bio-Oss Collagen on healing of an extraction socket: an experimental study in the dog. Araújo M, Linder E, Wennström J, Lindhe J. Int J Periodontics Restorative Dent. 2008 Apr;28(2):123-35.

Factors affecting soft tissue level around anterior maxillary single-tooth implants. Nisapakultorn K, Suphanantachat S, Silkosessak O, Rattanamongkolgul S. Clin Oral Implants Res. 2010 Jun;21(6):662-70. Epub 2010 Apr 5.

Five-year evaluation of the influence of keratinized mucosa on peri-implant soft-tissue health and stability around implants supporting full-arch mandibular fixed prostheses. Schrott AR, Jimenez M, Hwang JW, Fiorellini J, Weber HP. Clin Oral Implants Res. 2009 Oct;20(10):1170-7. Epub 2009 Aug 30.

Nine- to fourteen-year follow-up of implant treatment. Part III: factors associated with peri-implantlesions. Roos-Jansåker AM, Renvert H, Lindahl C, Renvert S. J Clin Periodontol. 2006 Apr;33(4):296-301.

Significance of keratinized mucosa in maintenance of dental implants with different surfaces. JChung DM, Oh TJ, Shotwell JL, Misch CE, Wang HL. J Periodontol. 2006 Aug;77(8):1410-20.

Minimally invasive surgery for soft tissue problems at implant sites. Allen E. Forum Implantologicum 2011 7(2); 86-92

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Patients request dental restorations that are functional and reliable. In addition, the restorations should be biocompatible and highly esthetic. All-ceramic restorations should be cemented appropriately to meet these expectations.

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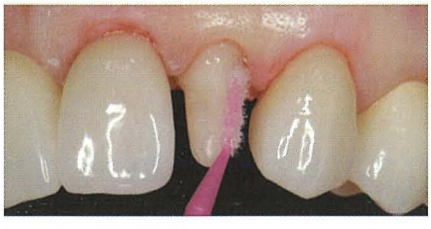
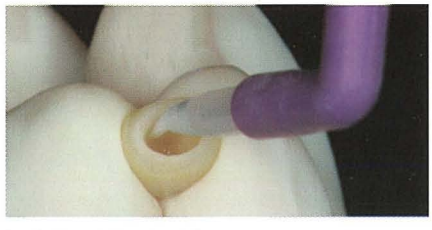
Numerous long-term studies back it up: Multilink Automix is particularly suitable for seating lithium disilicate crowns. This universal adhesive luting system has been successfully used in millions of restorations. It is comprised of two components: a self-curing luting composite with light-curing option and a coordinated self-etching, self-curing primer. Given its hydrolytically stable phosphonic acids and "balanced performance" initiator system, Multilink Automix provides an excellent and balanced bond, no matter whether it is applied in the light-curing or purely self-curing mode. In combination with the Monobond Plus universal primer, the luting composite ensures a reliable and strong bond in restorations made of glass-ceramics, oxide ceramics, metal and composite as well as in metal-supported restorations.



Application of Multilink Primer



Application of Monobond Plus

Insertion of crown

(Pictures: Dr Ronny Watzke, Franz Perkon)

Highly versatile lithium disilicate

IPS e.max is an innovative all-ceramic system that covers a wide field of applications ranging from thin veneers, inlays, and hybrid abutments to twelve-unit bridges. Lithium disilicate glass-ceramic (LS_2) materials are part of this system. These user-friendly ceramics are suitable for a diverse range of indications and meet the highest demands in esthetic dentistry. With a high strength of 360 to 400 MPa, they can be used for single-tooth restorations and three-unit bridges up to the second premolar. Lithium disilicate crowns offer a higher degree of strength than veneered zirconium oxide (ZrO_2) crowns. As an additional advantage, lithium disilicate glass-ceramics (LS_2) facilitate minimally invasive procedures that help preserve healthy tooth structure.

Metal-ceramic restoration with dark crown margins and discoloured gingival tissue

New crown made of IPS e.max lithium disilicate glass-ceramic

Final result: highly esthetic IPS e.max restoration

(Pictures: Courtesy of Dr Andreas Kurbad, Kurt Reichel)

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SAVINA DENTAL CLINIC
CPR AND EMERGENCY MANAGEMENT DAY COURSE

Twelve staff members attended a full-day course organised by the Savina Clinic administration dealing with the management of medical and dental emergencies and cardio-pulmonary resuscitation.

The course was held at the new Savina Dental Clinic at SkyParks Business Centre at Malta International Airport.

The speaker was Dr Adam Bartolo, a recognised expert in the field, who dedicated a full day to take both the professional as well as the nursing and ancillary staff through the theoretical and practical aspects of dealing with emergency situations in the dental practice and the administration of cardio-pulmonary resuscitation.

The morning session was dedicated to lectures on the various situations one might encounter during dental treatment – simple faints and other causes of sudden loss of consciousness, acute chest pain and cardiac arrest, anaphylactic shock, fits and asthmatic attacks. Immediate management, drugs and equipment used in treating these conditions and summoning assistance were all dealt with.

After lunch, a practical demonstration was carried out using a state-of-the-art Resusci-Annie and a defibrillator kindly made available by the Dental Association of Malta.

All members of staff were given the opportunity to practise CPR individually.

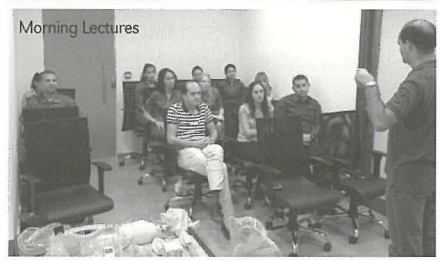
This was followed by groups of three simulating the management of an emergency situation outlined by Dr Bartolo and timed to add a sense of urgency and reality.

The course was brought to a close with a lively Q&A session and discussion. Dr Joseph Xuereb thanked Dr Bartolo for his excellent presentations and selfless dedication to conducting the course and the Council of the Dental Association of Malta for their kind support. All attendees were presented with CPE certificates.

The day was rounded up with dinner at Ciappetti Restaurant in Mdina.


Team Training


Individual Practice


Morning Lectures


Group photo with Resusci-Annie

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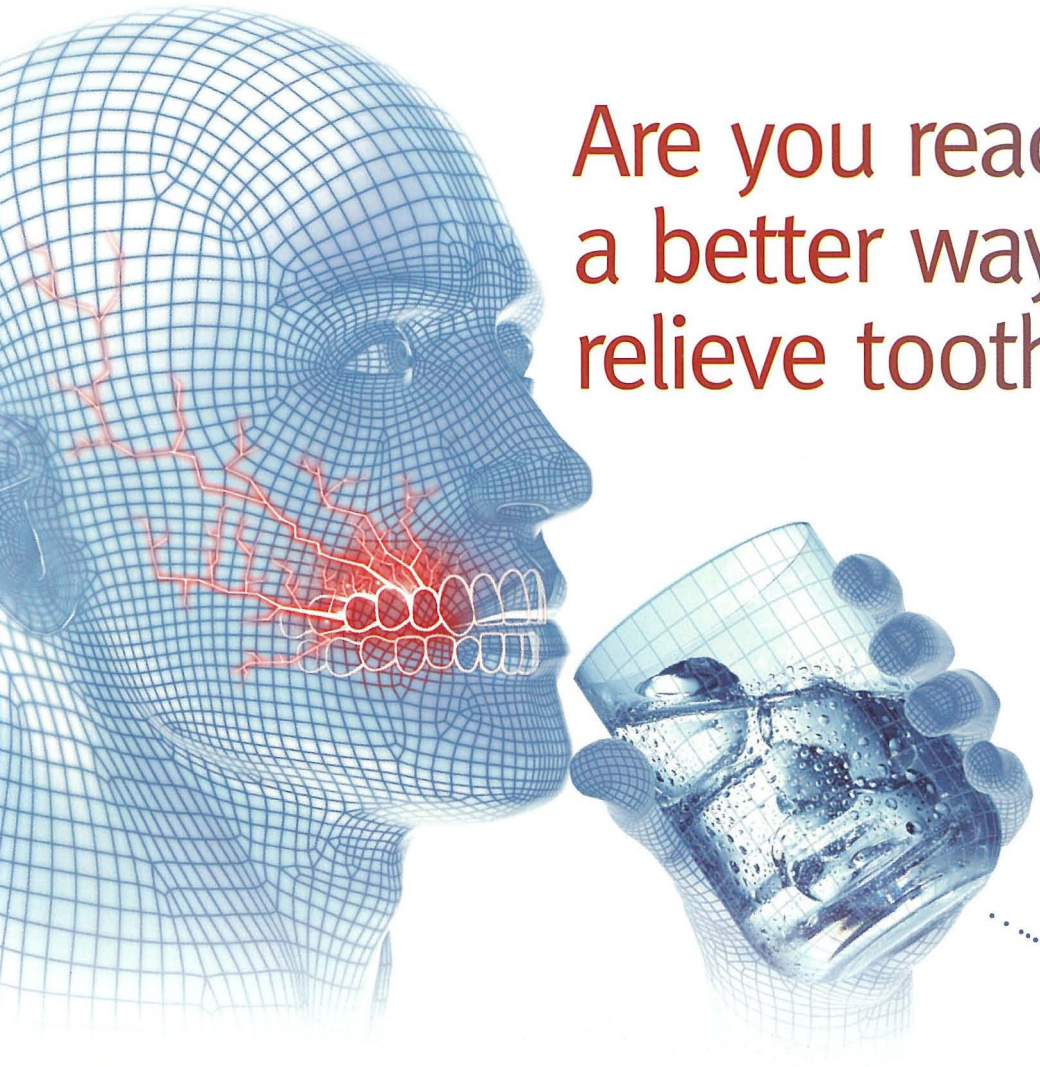

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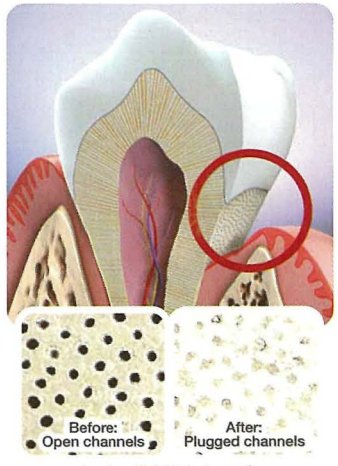

In vitro CLSM photographs

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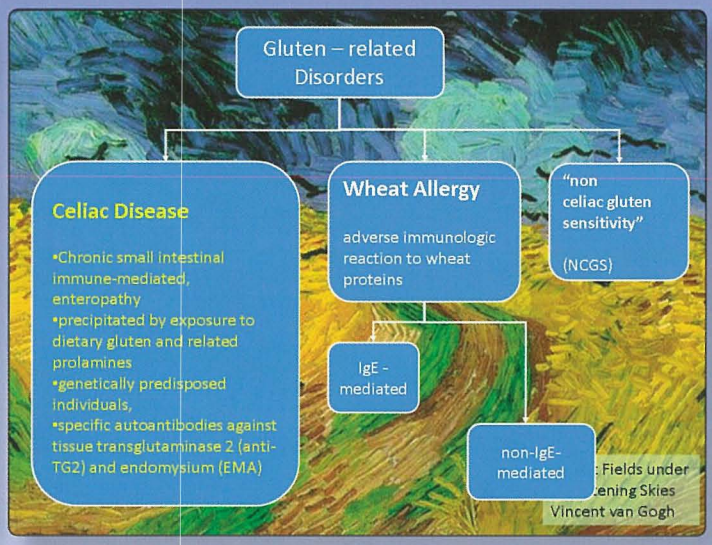
DENTISTRY AND GASTROENT
DIFFERENT STOPS ON THE SA

Overview

- Celiac Disease
- Acid reflux / rumination
- Inflammatory Bowel Disease
- Polyposis Syndromes
  - Familial Adenomatous polyposis
  - Peutz-Jeghers Syndrome
  - PTEN Hamartoma Syndrome
- The intestinal – oral Microbiome



NICE clinical guidelines: Coeliac Disease (2009) - Recommendations When to consider (serologic) testing

- Amenorrhoea / unexplained subfertility / recurrent miscarriage
- *aphthous stomatitis (mouth ulcers)*
- *dental enamel defects*
- autoimmune liver disease
- persistently raised liver enzymes with unknown cause
- microscopic colitis
- persistent or unexplained constipation
- lymphoma
- metabolic bone disease (such as rickets or osteomalacia)
- reduced bone mineral density
- low-trauma fracture
- depression or bipolar disorder
- Polyneuropathy / epilepsy
- sarcoidosis
- Sjögren's syndrome
- Addison's disease
- Autoimmune thrombocytopenia
- unexplained alopecia
- *Turner / Down's syndrome*

Oral and Dental Manifestations of Celiac Deisease

- Enamel Defects (DED)
- Delayed Eruption
- Recurrent apthous ulcers
- Cheilosis
- Oral lichen planus
- Atrophic glossitis

Dental Enamel Defects in Celiac Disease

- DED in celiac patients more likely symmetrical c.f. control patients (72 / 49%), and extensive; incisors > molars most frequently affected
- In patients with celiac disease, DR7, DR3, and DQ2 were the most commonly observed human leukocyte antigens
  - JM Aguirre et al. Oral Surg. Oral Med. Oral Path. Oral Radiol. And Endodont. 1997
- Dental enamel defects (DED) more common (83 c.f. 4%) and more extensive (69 c.f. 19%) in adult patients with CD than controls
  - L Aine et al. Oral Pathology and Medicine 2006
- DED in CD range from discoloring, pitting, grooving and total

Oral and Dental Manifestations of Celiac Deisease

Grade I enamel defects: multiple white and cream opacities with clearly defined margins.

Grade II enamel defects: rough enamel surface with patchy symmetric opacities and discolouration.

Grade III enamel defects: deep horizontal grooves with large pits and linear discolouration.

Aphthous ulcers in the buccal mucosa.

Rashid M et al. J Can Dent Assoc 2011

EROLOGY: ME ROAD

By Thomas M Attard MD FAAP FACG
Pediatric Gastroenterologist
Associate Professor Pediatrics, University of Malta
President Malta Pediatric Association

Screening for Celiac Disease in Children with Dental Enamel Defects

- CD in 17.86% of the screened patients with DED compared to 0.97% of normal children
- More advanced DED (grades 2,3) in pediatric CD c.f controls
- Greater improvement / normalization of grades of DED in CD than nonceliac patients maintained on routine dental care.
- Significantly ↓serum calcium ↑ serum alkaline phosphatase in patients with CD c.f controls
- *consideration of pediatric DED patients as candidates for screening for CD*

El-Hodhod MA, et al. ISRN Pediatr. 2012

Recurrent Oral Apthous Ulcers in Celiac Disease

- 16% of children (< 16 years of age) and 26% of adults with biopsy proven CD reported having recurrent oral ulcers
  - Rashid M et al. Pediatrics. 2005
- Comparison of prevalence of recurrent aphthous stomatitis (RAS) between (72) CD patients with and (162) controls.
- 33% CD patients c.f. 23% controls with RAS ($p > 0.05$)
- 1/3rd CD subjects suffering from RAS received benefit from GFD
  - Bucci P et al. Acta Pediatr. 2006

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Differentiating GER and GERD

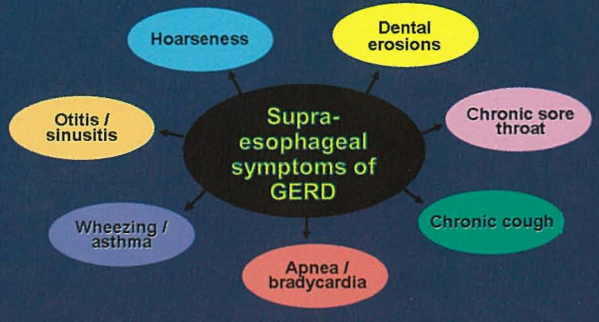
GER	Gastroesophageal Reflux. Passage of gastric contents into the esophagus
Regurgitation	Passage of refluxed gastric contents into oral pharynx
Vomiting	Expulsion of refluxed gastric contents from mouth
GERD	Gastroesophageal Reflux Disease. Symptoms or complications that occur when gastric contents reflux into esophagus or oropharynx

Presenting Symptoms and Signs of GERD

Infants	Older child/adolescent
• Feeding refusal	★ Recurrent vomiting
• Recurrent vomiting	★ Heartburn
• Poor weight gain	★ Dysphagia
• Irritability	★ Asthma
• Sleep disturbance	★ Recurrent pneumonia
• Apnea or Apparent Life-Threatening Event (ALTE)	★ Upper airway symptoms (chronic cough, hoarse voice)

Rudolph, et al. *J Pediatr Gastroenterol Nutr.* 2001;32:S1.

Supra-esophageal Symptoms of GERD in Children



El-Serag, et al. *Gastroenterology.* 2001;121:1294.
Tasker, et al. *Laryngoscope.* 2002;112:1930.

Continues on page 20.

DENTISTRY AND GASTROENT
DIFFERENT STOPS ON THE SA

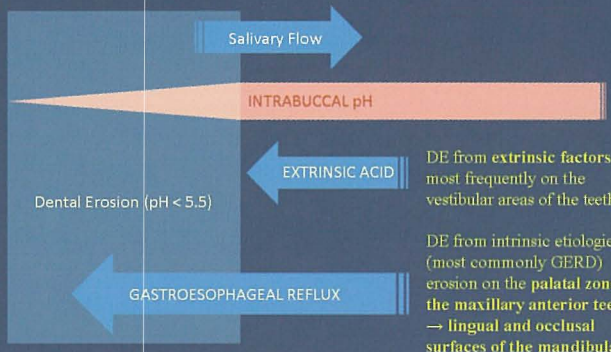
Dental Erosion in Gastroesophageal Reflux Disease (GERD)

Enamel and dentin loss at the occlusal surfaces in mandibular premolars and molars in a 55-year-old patient with GERD

Extreme erosion of the four maxillary incisors in a 32-year-old patient diagnosed with GERD

- Bargen and Austin (1937) linked GERD to dental erosion
- classic reflux symptoms are absent more than half patients with GER associated with airway and ENT presentations

Dental Erosion; Etiologic Patterns of Involvement



DE from **extrinsic factors** most frequently on the vestibular areas of the teeth

DE from intrinsic etiologies (most commonly GERD) erosion on the **palatal zones of the maxillary anterior teeth → lingual and occlusal surfaces of the mandibular teeth.**

- Bartlett et al. reported 60% of patients with pathological tooth wear had pathological levels of GER upon ambulatory pH monitoring
  - Bartlett DW et al. J Oral Rehabil 1996.
- Oginni et al. reported tooth wear index (TWI) scores higher in GERD patients than in controls - Patients with TWI scores ≥ 3 usually had symptoms > 10 years
  - Oginni A et al BMC Oral Health 2005
- Holbrook et al. demonstrated a significant association between indicators of gastric reflux and presence of tooth erosion (odds ratio 2.772)
  - Holbrook WP et al. J Dent Res 2009
- **only 40% of general physicians are aware of the relationship between dental erosion and GERD →Management of GERD should include dental checkup and appropriate dental therapy.**
  - Ranjitkar S et al. J Gastroenterol Hepatol 2012

Dental Erosions in GERD – Management

- Investigation or empiric therapy
- Lifestyle modification incl. decrease/eliminate extrinsic acid exposure (white wine, citrus)
- Trial of PPI Rx *vs* pH or impedance pH probe / endoscopy with biopsy
- Close follow up and monitoring

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Oral Involvement in Inflammatory Bowel Disease

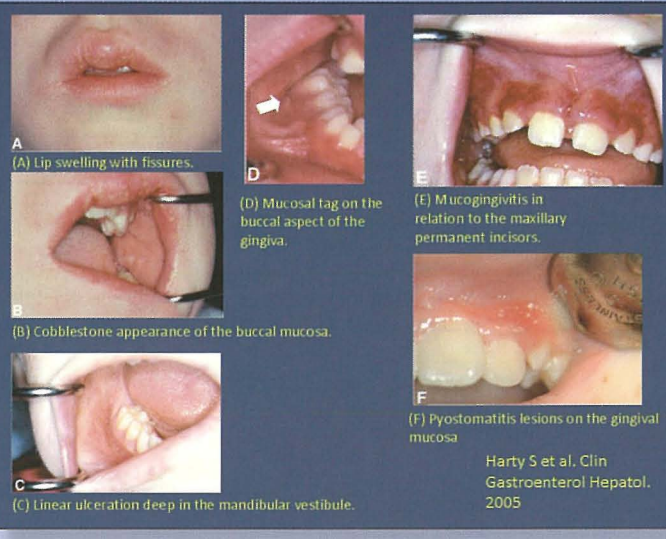
- Chronic idiopathic inflammatory process potentially involving the entire (Crohn's Disease) GI tract or limited to the colrectum (Ulcerative Colitis) with variable extra-intestinal involvement patterns
- Increasing incidence in Western societies incl. Maltese Islands (CD > UC)
  - Bondin R et al. MMSC 2012
- Incidence of oral involvement in CD varies widely 0.5 - 32% (including aphtae 80%)
- Nutritional impairment in IBD/CD impacts dental health (calcium absorption) and oral lesions (Zn / Fe deficiency)

EROLOGY:
ME ROAD

Continues from page 19.

Oral Involvement in IBD

- Oral Apthous Ulcers
- cobblestoning of the buccal mucosa
- linear ulceration
- angular cheilitis
- mucogingivitis
- mucosal tags
- Orofacial Granulomatosis (OFG)
  - Cheilitis granulomatosa (CG)
- Rikardsson et al compared 1943 CD patients with 1,000 controls: individuals with CD reported significantly more mouth-related problems than controls (OR 3.2) incl. caries and gingival bleeding
  - Rikardsson et al. Oral Health Prev Dent.2009
- Altered healing following mucogingival surgery in patients with CD
  - Andersen J et al J Peridontol 2003



(A) Lip swelling with fissures.

(B) Cobblestone appearance of the buccal mucosa.

(C) Linear ulceration deep in the mandibular vestibule.

(D) Mucosal tag on the buccal aspect of the gingiva.

(E) Mucogingivitis in relation to the maxillary permanent incisors.

(F) Pyostomatitis lesions on the gingival mucosa

Harty S et al. Clin Gastroenterol Hepatol. 2005

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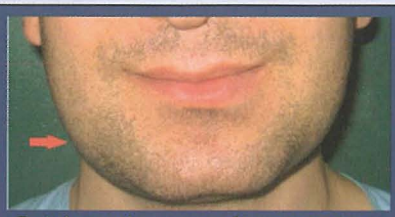
Familial Adenomatous Polyposis

- Hereditary (Autosomal Dominant) predisposition for intestinal (colorectal, duodenal) and extraintestinal (CNS / thyroid / liver) CA
- Associated (80 – 95%) with mutation in APC gene on chromosome 5q21
- General population incidence 1:8,000
- CF: Formerly described as *Gardener's Syndrome* incl. jaw osteomas and delayed eruption of permanent teeth
- ? Mutation spectrum association to tooth eruption abnormalities



- Typical external appearance of jaw osteoma in a patient with FAP

Cankaya AB Int J Med Sci.

- Panoramic view of the patient presenting multiple osteomas - large lobulated osteoma present in the right condyle and coronoid process impacting both permanent and deciduous teeth.

Familial Adenomatous Polyposis – Management

- Patient Education – Genetic Counseling / genetic testing
- Polyp screening / Cancer surveillance: intestinal and extra-intestinal
- Chemoprevention: Selective COX-2 inhibitors (celecoxib)
- Colectomy (IPAA / IRA)

Continues on page 23.

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DENTISTRY AND GASTROENTEROLOGY: DIFFERENT STOPS ON THE SAME ROAD

Continues from page 21.

Peutz-Jeghers Syndrome

- Autosomal Dominantly inherited cancer predisposing syndrome (STK 11 gene mutations ~ 60 – 80%)
- Incidence 1:60,000 – 300,000 / gen. population
- Hamartomatous jejunal → panintestinal polyposis (polyps in any hollow viscus)
- Frequent presentation with polyp intussusception → SB obstruction → resection → (short bowel / intestinal failure)
- high overall risk of intestinal and extraintestinal esp. genitorinary malignancy (15-fold increased risk over gen. pop)
- Pathognomonic perioral, (mucocutaneous border) pigmented areas (freckles)
- Nail bed (subungual) freckling

←perioral and muco-cutaneous lentigenes in Peutz-Jeghers Syndrome

←oral pigmented lesion from a patient with Peutz-Jeghers syndrome

Attard TM Medscape 2013

Peutz-Jeghers Syndrome – Management

- Patient Education & genetic counselling
- Surveillance: intestinal & extraintestinal
- Clean sweep endoscopy – enteroscopy + polypectomy
- Surgery (emergent – obstruction / resection of tumor or malignancy)
- *Chemoprevention (MTOR inhibitors COX 2 inhibitors)*

PTEN Hamartoma Syndrome

- hamartomatous overgrowth syndromes
- germ-line mutations in the tumor suppressor PTEN gene located on 10q23.3
- Increased risk of breast, thyroid, endometrial, and ? renal cancers, colorectal polyps
- Associated with macrocephaly, neurodevelopmental delays / autism

Facial trichilemmomas and oral papules in PTHS

Tooth Agenesis and Colorectal Cancer

- Tooth agenesis affects ~20% of the general population
- Several genes have been shown to be associated with cases of tooth agenesis including *AXIN2*, *IRF6*, *FGFR1*, *MSX1*, *PAX9*, and *TGFA*
  - Lammi L et al. Am J Hum Genet. 2004
  - Callahan N et al. Arch Oral Biol. 2009
- *AXIN2* (axis inhibition protein 2) is a negative regulator of the *Wnt signaling pathway.*
- In a cross-sectional study investigating the epidemiological and molecular association between tooth agenesis and self-reported family history of cancer - Individuals with tooth agenesis had an increased risk of having a family history of cancer OR = 2.7 and were more likely harboring variants in AXIN2, FGF3, FGF10, and FGFR2.
  - Küchler EC et al. J Dent Res. 2013

Continues on page 25.

new

1 COMPLETE SENSITIVITY TOOTHPASTE

SPECIALLY DESIGNED WITH 7 BENEFITS**

Sensodyne® understands that dentine hypersensitivity patients have differing needs

Sensodyne® Complete Protection, powered by NovaMin®, offers all-round care with specially designed benefits to meet your patients' different needs and preferences, with twice-daily brushing.

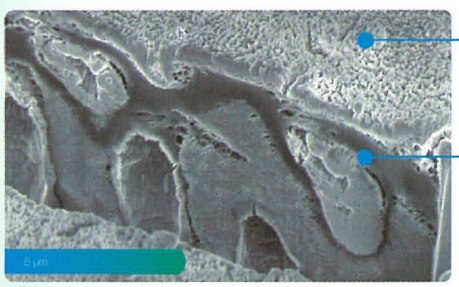
Sensodyne® Complete Protection:

- Is clinically proven to provide dentine hypersensitivity relief[1-3]
- Contains fluoride to strengthen enamel
- Helps to maintain good gingival health[4-6]

Sensodyne® Complete Protection, powered by NovaMin® – an advanced approach to dentine hypersensitivity relief

- NovaMin®, a calcium and phosphate delivery technology, initiates a cascade of events on contact with saliva[7-12] which leads to formation of a hydroxyapatite-like restorative layer over exposed dentine and within dentine tubules[7, 9-13].
- *In vitro* studies have shown that the hydroxyapatite-like layer starts building from the first use[7-9] and is up to 50% harder than dentine[9,14].
- The hydroxyapatite-like layer binds firmly to collagen within exposed dentine[10,15] and has shown in *in vitro* studies to be resistant to daily physical and chemical oral challenges[9,14-17], such as toothbrush abrasion[16] and acidic food and drink[14-17].

In vitro studies show that a hydroxyapatite-like layer forms over exposed dentine and within the dentine tubules[7,9,10,12,13]



Adapted from Earl *et al*, 2011 (A)[13]. *In vitro* cross-section SEM image of hydroxyapatite-like layer formed by supersaturated NovaMin® solution in artificial saliva after 5 days (no brushing)[13]

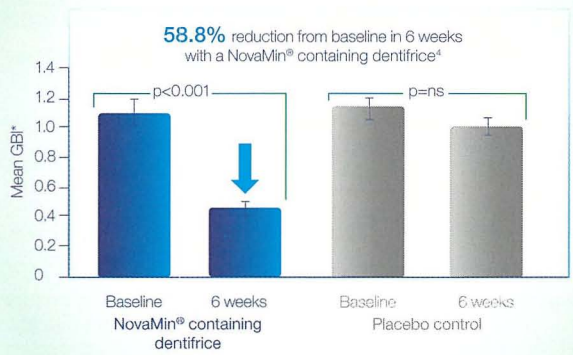
**With twice daily brushing.

Sensodyne® Complete Protection helps maintain good gingival health[4-6]

Good brushing technnique can be enhanced with the use of a specially designed dentifrice to help maintain good gingival health[18,19].

In clinical studies, NovaMin® containing dentifrices have shown up to 16.4% improvement in plaque control as well as significant reduction in gingival bleeding index, compared to control toothpastes[4-6].

Significant reduction in gingival bleeding index (GBI) over 6 weeks with a NovaMin® containing dentifrice[4]



Adapted from Tai *et al*, 2006[4]. Randomised, double-blind, controlled clinical study in 95 volunteers given NovaMin® containing dentifrice or placebo control (non-aqueous dentifrice containing no NovaMin®) for 6 weeks. All subjects received supragingival prophylaxis and polishing and were instructed in brushing technique. *GBI scale ranges from 0–3.

All-round care for dentine hypersensitivity patients[1-6]

gsk GlaxoSmithKline

References:
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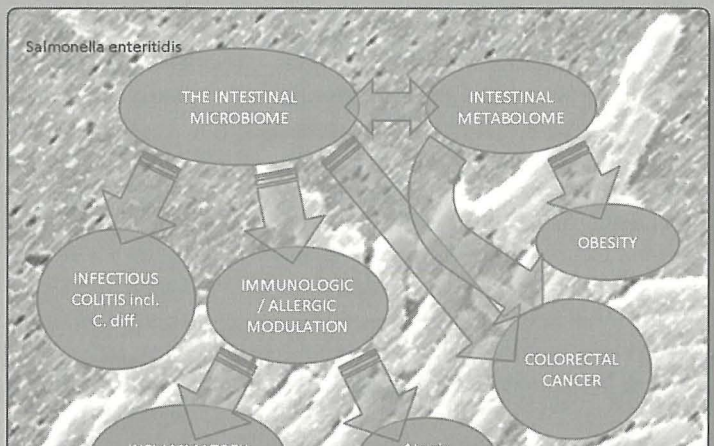
DENTISTRY AND GASTROENTEROLOGY: DIFFERENT STOPS ON THE SAME ROAD

Continues from page 23.

Overview

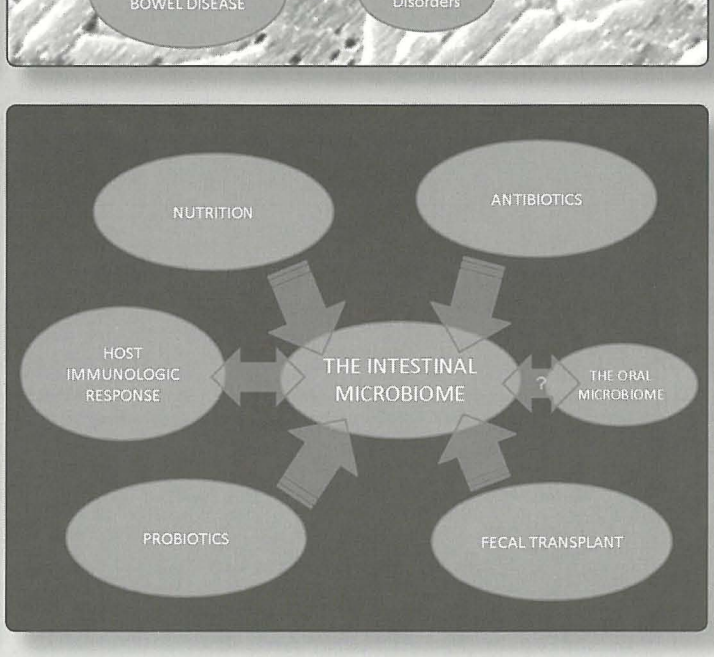
- Celiac Disease
- Acid reflux / rumination
- Inflammatory Bowel Disease
- Polyposis Syndromes
  - Familial Adenomatous polyposis
  - Peutz-Jeghers Syndrome
  - PTEN Hamartoma Syndrome
- The intestinal – oral Microbiome



The Human Oral Microbiome

- The human mouth harbors one of the most diverse microbiomes in the human body, including viruses, fungi, protozoa, archaea and bacteria.
- The bacteria are responsible for the two commonest bacterial diseases of man: dental caries (tooth decay) and the periodontal (gum) diseases.
- Individual oral microbiomes are highly specific at the species level.
- Around 1000 bacterial species have been found, with representatives from the phyla Actinobacteria, Bacteroidetes, Firmicutes, Proteobacteria, Spirochaetes, Synergistetes and Tenericutes
- The human oral microbiome database (HOMD, www.homd.org) is a comprehensive resource consisting of descriptions of oral bacterial taxa, a 16S rRNA identification tool and a repository of oral bacterial genome sequences.

Wade WG. Pharmacol Res. 2013



The Oral Microbiome in Breastfeeding Infants

- Breast feeding is recognized as a protective determinant of the risk of atopic disease, acute gastroenteritis in infancy, risk of IBD in later life.
- The protective role of breast feeding may relate, in part from positive modulation (↑ Lactobacilli spp.) of the oral microbiome in breastfed c.f. formula fed infants .
- The microbiota of breast-fed infants differed based on vaginal or C-section delivery

– Holgerson PI et al. J Pediatr Gastroenterol Nutr. 2013

The Oral Microbiome in Pediatric Inflammatory Bowel Disease

- In pediatric CD patients there is a significant decrease in overall diversity of tongue samples compared to controls,
- Loss of diversity relates to decreased Fusobacteria and Firmicutes spp
- overall diversity was not significantly altered in UC when compared with healthy controls
- a lack of diversity is a common finding in IBD microbial studies - the intestinal microbiome in diseased states appears to lose commensal organisms that typically characterize health

– Docktor MJ et al. Inflamm Bowel Dis. 2012

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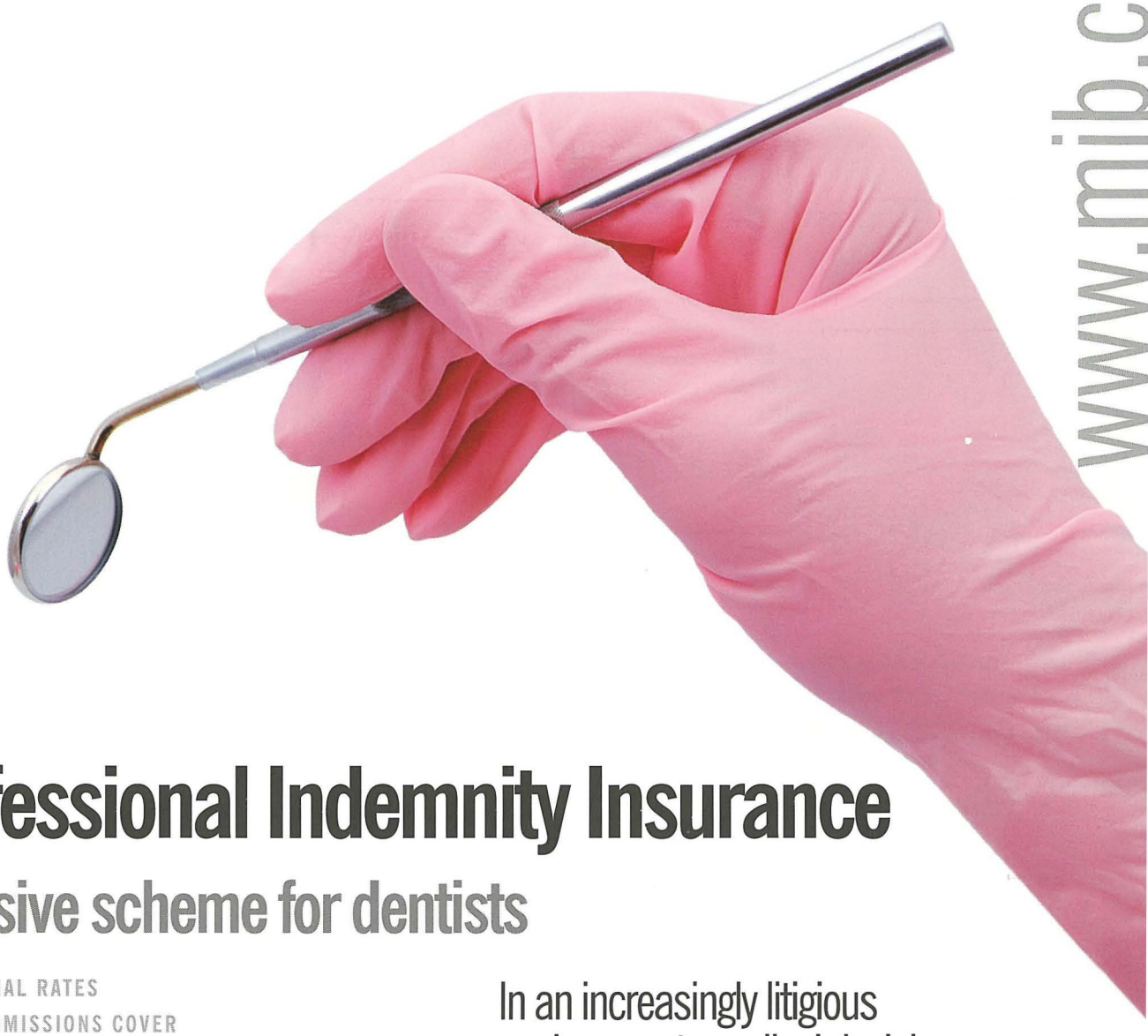

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8 -12 yrs: Two 5ml spoonfuls (200mg) three to four times a day

For further information about the product, please refer to the full summary of product characteristics.

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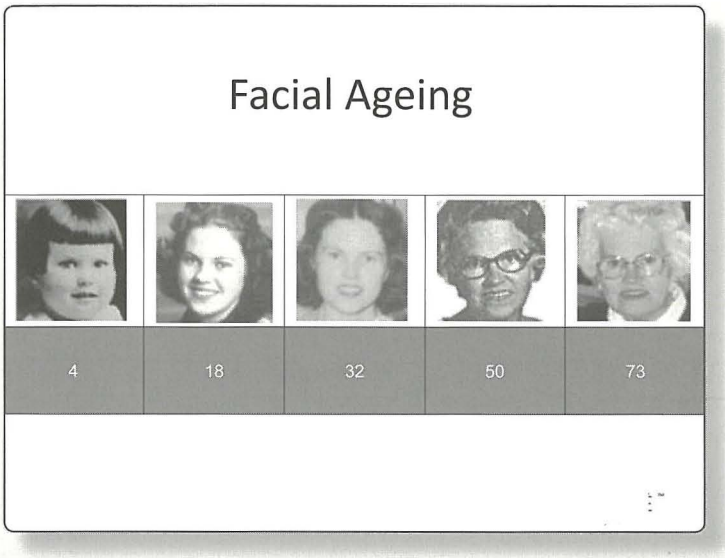
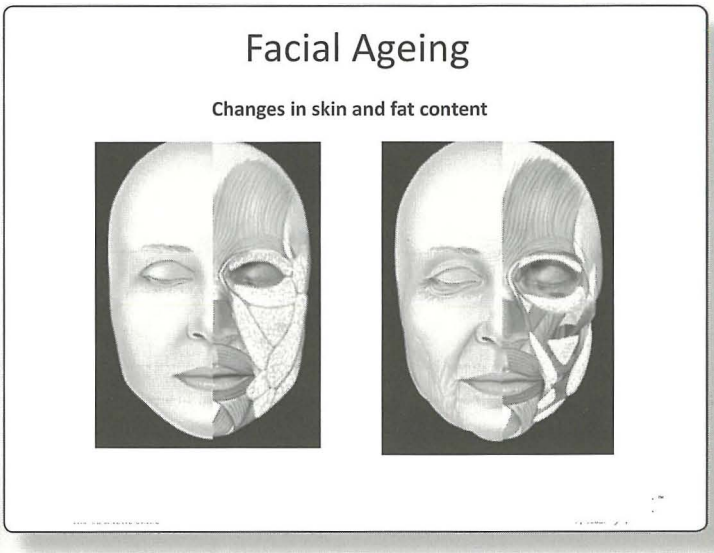
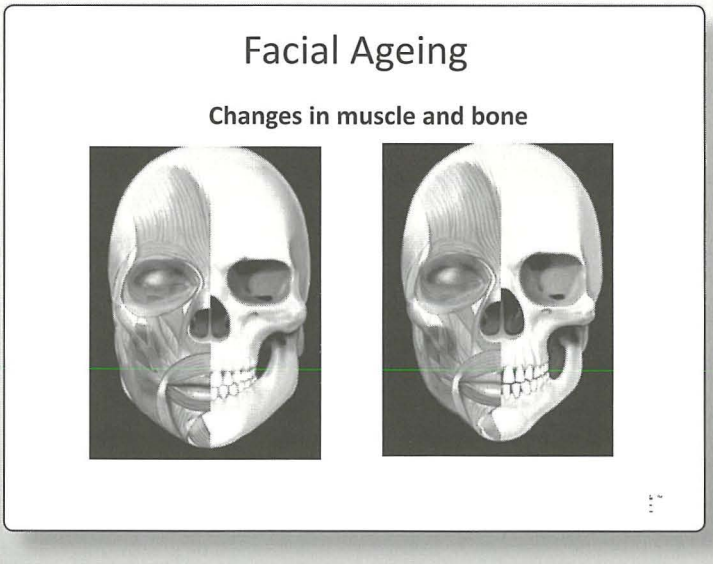
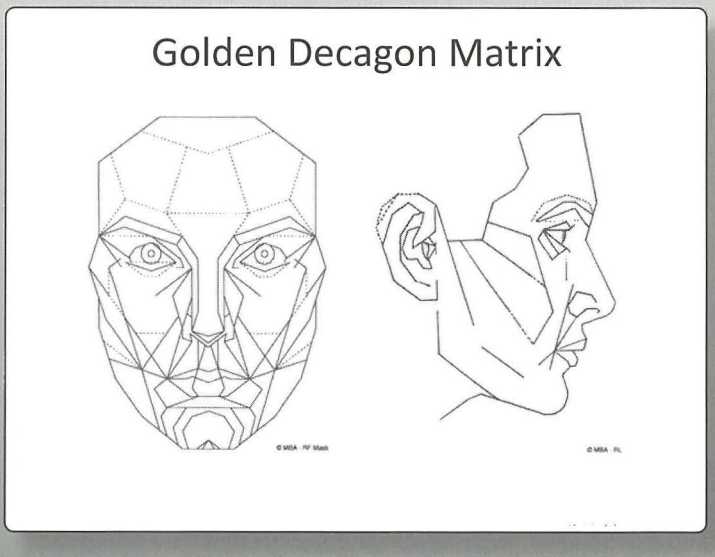
MID-FACE AND TEMPORAL HOLLOWS:
DEMONSTRATING PEARLS AND TECHNIQUES

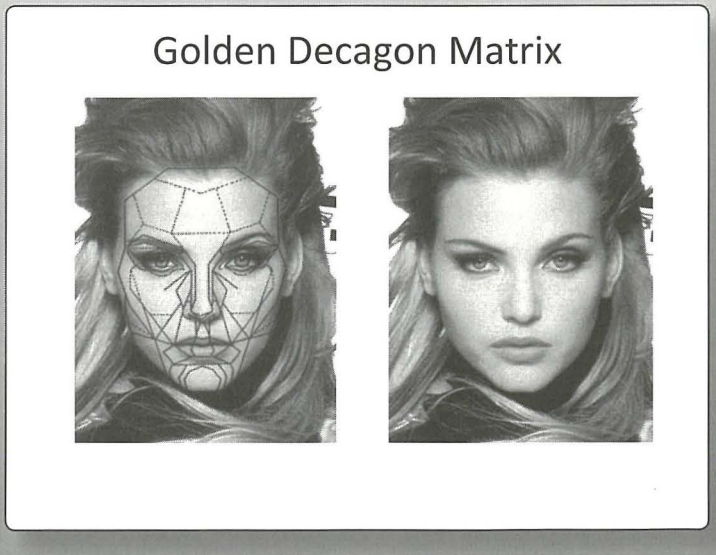
By Dr. David Grech MD









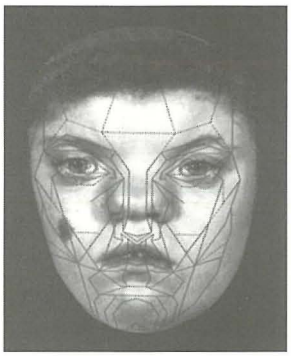


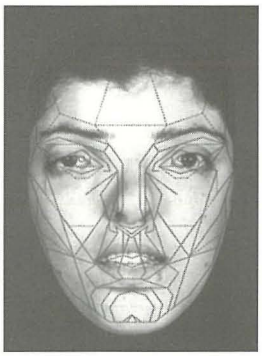
Continues on page 30.

MID-FACE AND TEMPORAL HOLLOWS:
DEMONSTRATING PEARLS AND TECHNIQUES

Continues from page 29.

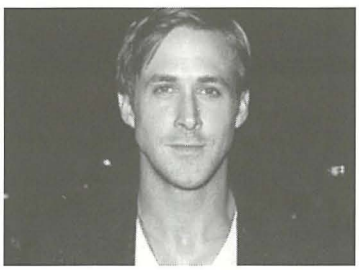
Golden Decagon Matrix





Patient Classification

- Group 1- Triangular Shaped Face
- Group 2- Round Shaped Face
- Group 3- Rectangular Shaped Face



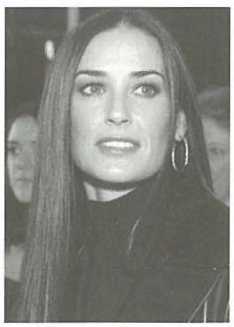
Group 1- Triangular Shaped Face

Face is widest at the jaw and more narrow at the cheekbones and forehead. Usually present with early wrinkles. Subcutis is thin and friable and prone to atrophy, often before menopause in women

Group 2- Round Shaped Face

Face is just as wide at the cheekbones as it is long. Yet the forehead and jawline are slightly narrower.

Usually present with displacement of surface fat in middle third. Deep fat



Group 3- Rectangular Shaped Face

Angular face shape with length slightly longer than the width.

Midface fat migration causes deep N/L folds. Subcut. Fat on edge of mandible tends to hypertrophy and displace. Subcut. Fat in chin area results in double chin

Glogau Classification of Photoaging

Group	Classification	Typical Age	Description	Skin Characteristics
I	Mild	28-35	No wrinkles	Early Photoaging: mild pigment changes, no keratosis, minimal wrinkles, minimal or no makeup
II	Moderate	35-50	Wrinkles in motion	Early to Moderate Photoaging: Early brown spots visible, keratosis palpable but not visible, parallel smile lines begin to appear, wears some foundation
III	Advanced	50-65	Wrinkles at rest	Advanced Photoaging: Obvious discolorations, visible capillaries (telangiectasias), visible keratosis, wears heavier foundation always
IV	Severe	60-75	Only wrinkles	Severe Photoaging: Yellow-gray skin color, prior skin malignancies, wrinkles throughout - no normal skin, cannot wear makeup because it cakes and cracks

Facial Lipotrophy

"Loss of facial fat due to aging, trauma, or disease, manifested by flattening or indentation of normally convex contours"

Facial Lipotrophy Panel, 2006.

- Inherited lipodystrophy
- Acquired lipodystrophy
- HIV- associated lipodystrophy
- Ageing patients

Ascher's levels of ageing and facial tissue depression

- Grading scale
  - Grades 1, 3, 5 represent mild, moderated and severe changes
- 3 criteria
  - Contour

⊙ Time management is making good choices and using the time you have effectively.

⊙ It is a learned and acquired skill and something that has to be practiced every day.

Ascher Grade 1

- Mild flattening or shadowing of one or more facial regions (including the cheek, temple, preauricular, periorbital, and periorbital areas).

- Ascher Grade 1

- Ascher Grade 2

Ascher Grade 3

- Moderate concavity of one or more facial regions
- May have prominentbony landmarks.
- May have visible underlying musculature.

- Ascher Grade 3

- Ascher Grade 4

Continues on page 32.

MID-FACE AND TEMPORAL HOLLOWS:
DEMONSTRATING PEARLS AND TECHNIQUES

Continues from page 31.

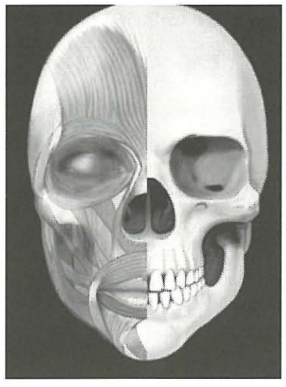
Ascher Grade 5

- Severe indentation of one or more facial regions
- Severe prominence of bony landmarks.
- Clear visibility of underlying musculature.

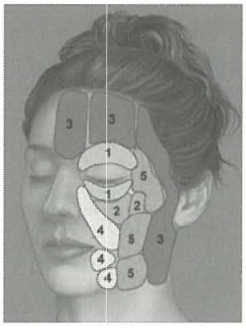
New concepts in facial filling – "less is more"

- Increased patient safety - no risk for ischemia
  - Dot vs. Bolus techniques
  - No risk for hypervolumization
  - Controlled cost spent on product
- Good knowledge of facial anatomy
  - Thin vs. thick tissues
  - Bone - fat - muscle
  - Volume loss
  - Fat migration

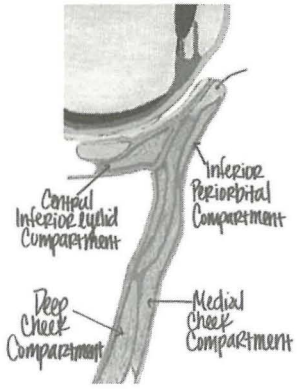
- Increasing popularity of the "dot" method:
- place smaller filler amounts where the face bones are closest to the skin, and the soft tissues therefore thinnest



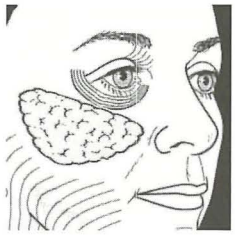
Facial Fat Compartments

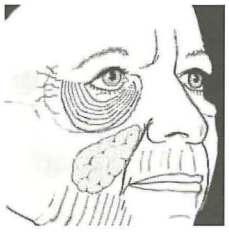


- Injecting filler into the deep medial cheek compartment, as opposed to superficially in the area of the N/L fold, produces positive changes in the whole malar and N/L area



Facial fat compartments





- Correction of displaced / herniated fat thru the bolus technique

Continues on page 36.

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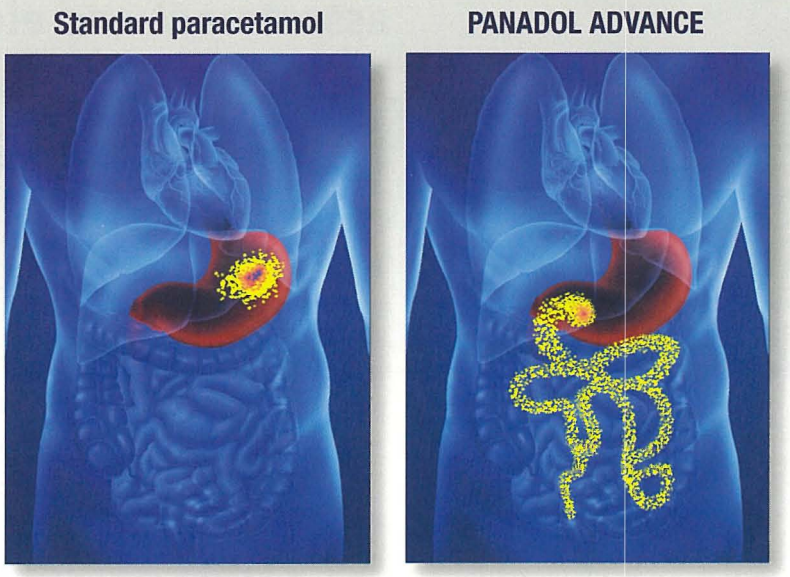
PANADOL ADVANCE disintegrates significantly faster than standard paracetamol tablets.[1]*



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*Representation of actual gamma scintigraphy images of paracetamol in the gastrointestinal (GI) tract.

References

1. Wilson CG, Clarke CP, Starkey YY, Clarke GD. Comparison of a novel fast-dissolving acetaminophen tablet formulation (FD-APAP) and standard acetaminophen tablets using gamma scintigraphy and pharmacokinetic studies [Epub ahead of print January 11, 2011]. *Drug Dev Ind Pharm.* 2. GSK. Data on file. Bioequivalence Studies A1900260, A1900265. 3. Clarke GD, Adams IM, Dunagan FM. Using suitability profiles to better inform consumers' choice of commonly used over-the-counter analgesics. *Int J Pharm Pract.* 2008;16(5):333-336. 4. Singh G. Gastrointestinal complications of prescription and over-the-counter nonsteroidal anti-inflammatory drugs: a view from the ARAMIS database. Arthritis, Rheumatism, and Aging Medical Information System. *Am J Ther.* 2000;7(2):115-121.

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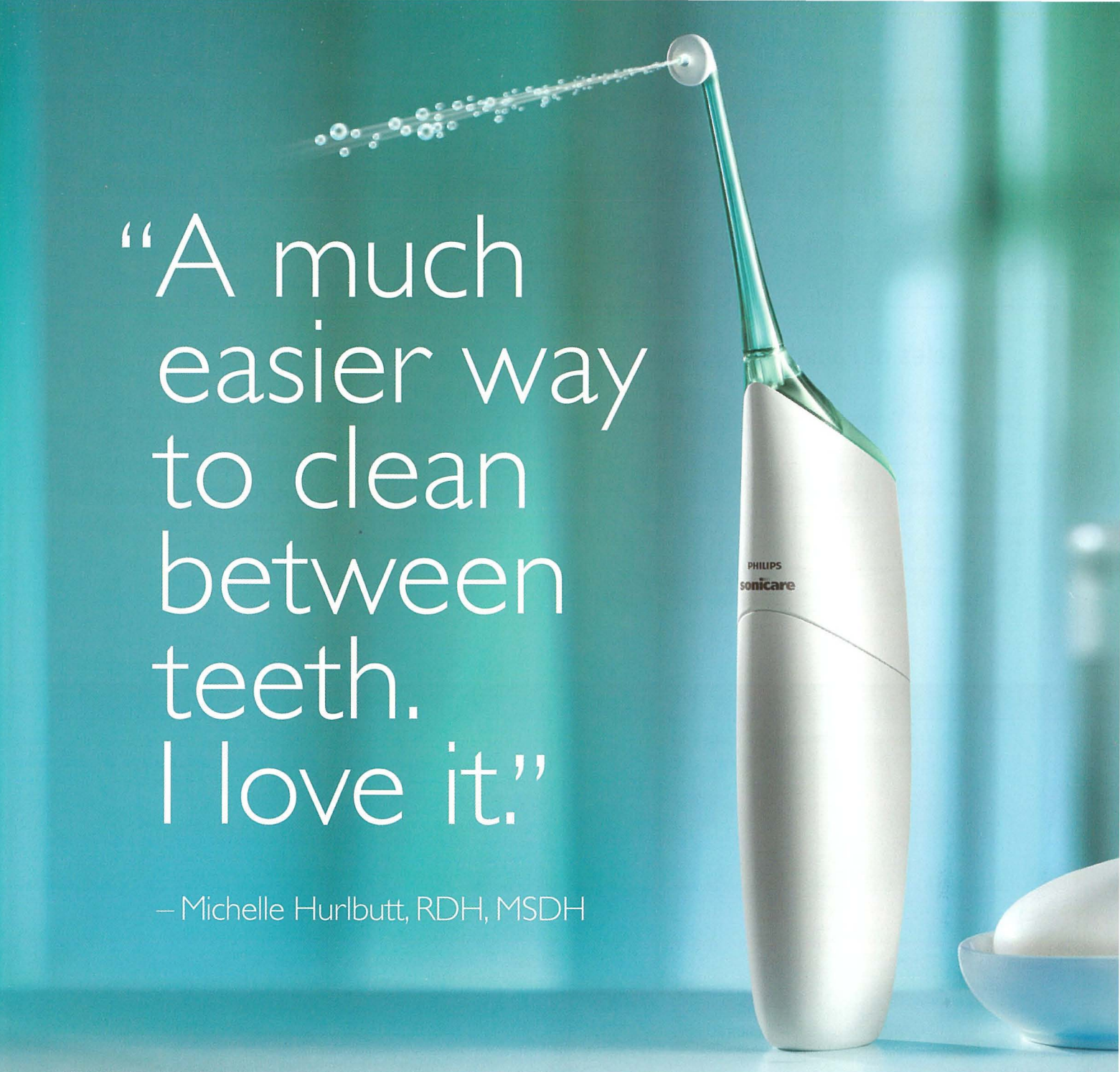

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1. de Jager M, Jain V, Schmitt P, DeLaurenti M, Jenkins W, Milleman J, et al. Clinical efficacy and safety of a novel interproximal cleaning device. *J Dent Res.* 2011;90(special issue A). 2. Krell S, Kaler A, Wei J. In-home use test to evaluate ease of use for Philips Sonicare AirFloss versus Reach string floss and Waterpik Ultra Water Flosser. Data on file, 2010. 3. Krell S, Kaler A, Wei J. In-home use test to assess compliance of Philips Sonicare AirFloss. Data on file, 2010.

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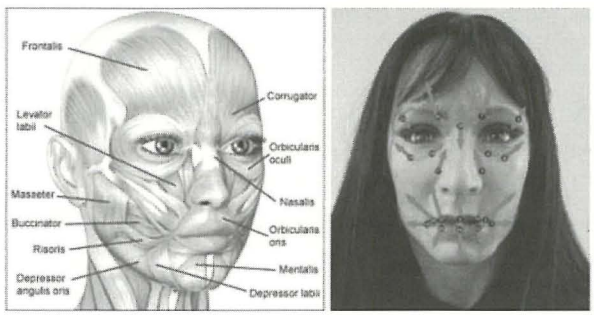
MID-FACE AND TEMPORAL HOLLOWS:
DEMONSTRATING PEARLS AND TECHNIQUES

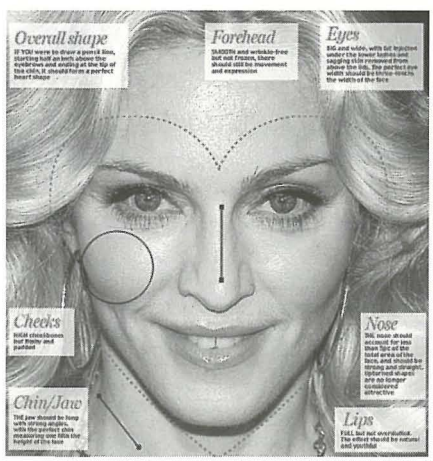
Continues from page 32.

Muscles of Facial Expression



3-D Vectoring

- Aim for a corrective procedure which creates positive vectors acting laterally and cranially so as to restore the youthful facial proportions
- Aim to restore the anterior cheek projection to both upper medial and lateral cheek areas

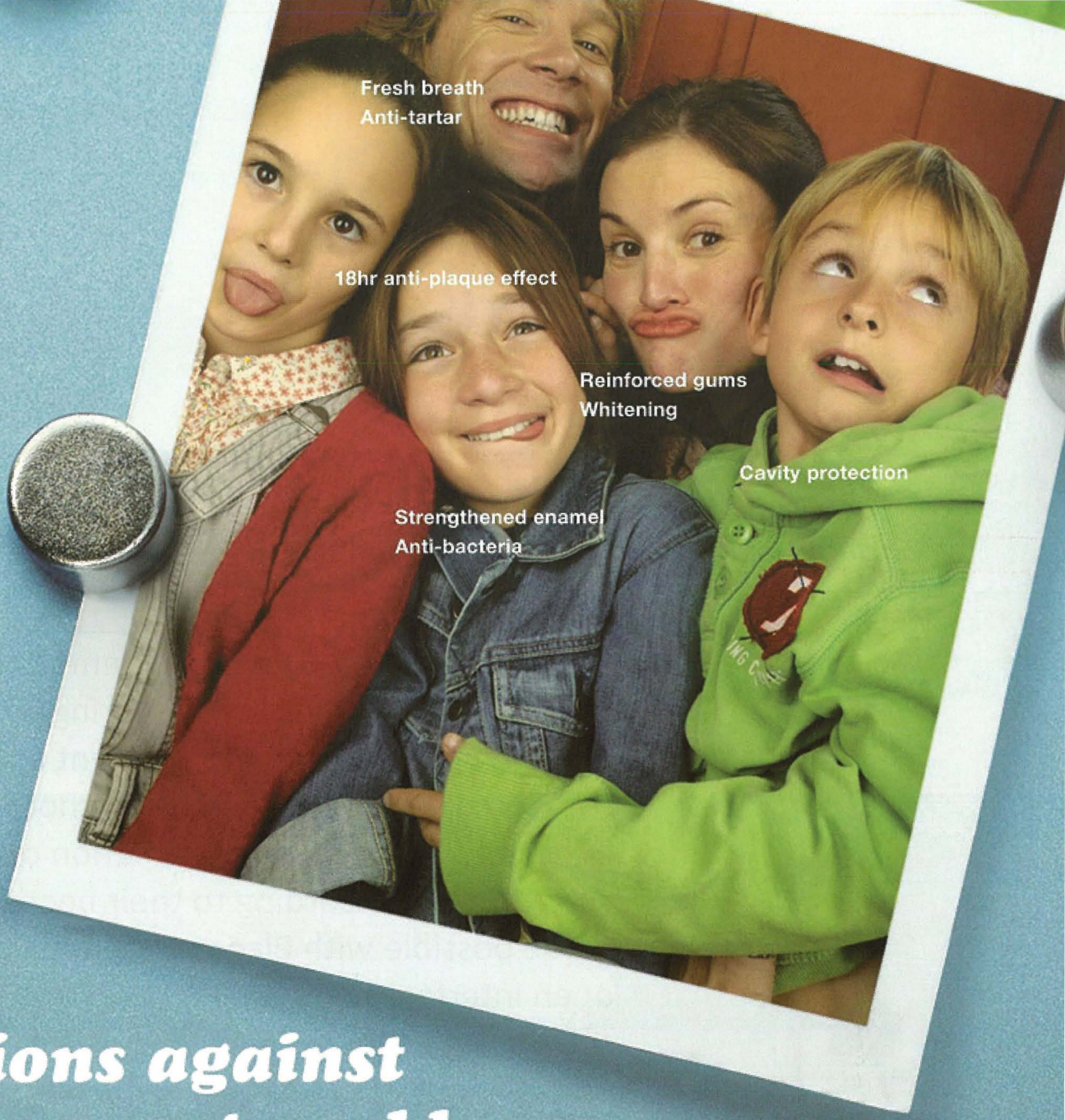


Safa E. Sandoval, M.D., Joshua A. Cox, B. A. , John C. Koshy, M. D., Daniel A. Hatef, M.D., and Larry H. Hollier, Jr., M.D., F.A.C.S. Facial Fat Compartments: A Guide to Filler Placement. Seminars in Plastic Surgery/Vol 23, No 4 2009

Benjamin Ascher, MD, Sydney Coleman, MD, Tina Alster MD, Ute Baurer, MD, Cheryl Burgess, MD, Kimberly Butterwick, MD, Lisa Donofrio, MD, Peter Engelhard, DO, Mitchell P. Goldman, MD, Philippe Katz, MD and Danny Vleggaar, MD. Full Scope of Effect of Facial Lipoatrophy: A Framework of Disease Understanding. Understanding Facial Lipoatrophy, August 2006

Alexander Turkevych MD, PHD, Irina Kapshuchenko MD, The Lift Concept - A New Trend in Full-Facial 3D Rejuvenation, Facial Volumisation . Prime October 2012

Sabine Zenker, MD , Mid-Facial Augmentation with a Volume Filler. Facial Volumisation – Prime October 2012



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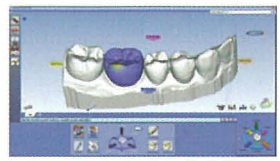

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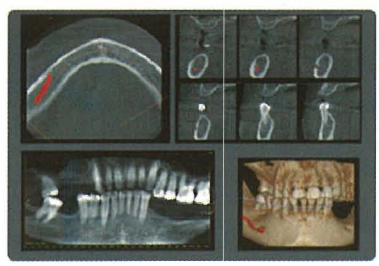

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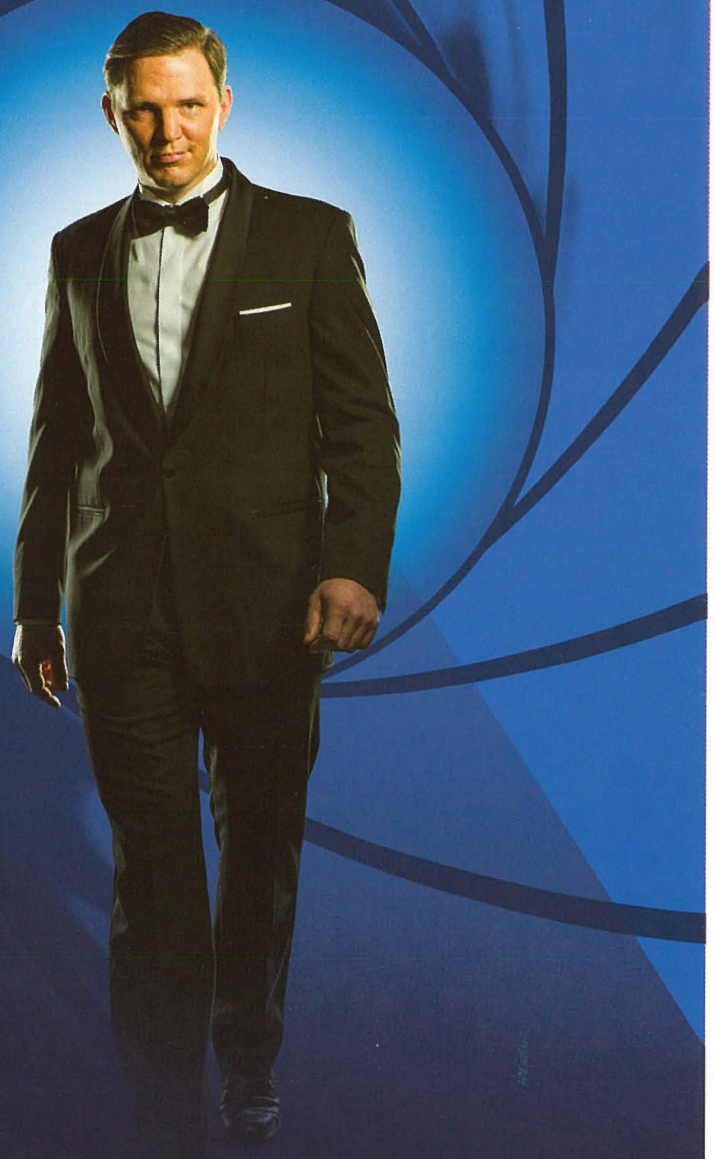

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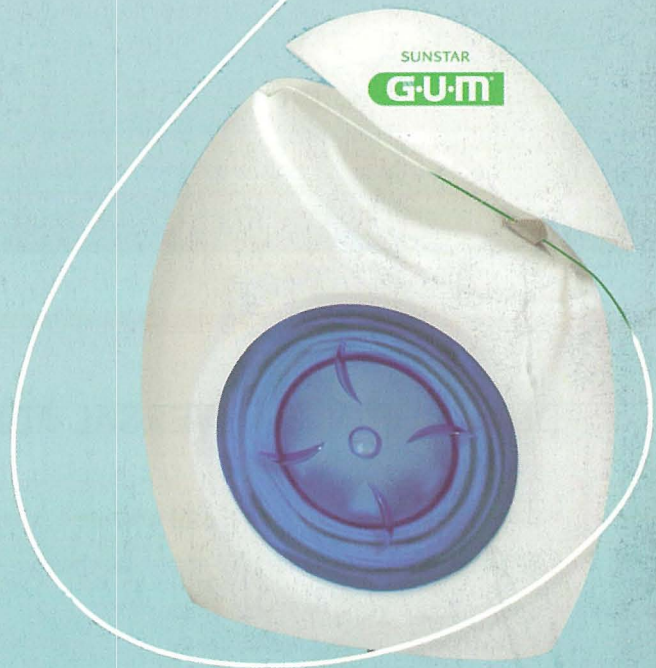
PRACTICAL USE AND MAXIMUM HYGIENE

IDEAL FOR ORTHODONTIC APPLIANCES, BRIDGES, IMPLANTS AND LARGE INTERDENTAL SPACES



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