Rare oral condition declared an autoimmune disease

Daniel Zimmermann

NEW YORK, USA/LEIPZIG, Germany:

Patients suffering from a very rare condition that affects the oral mucosa may soon be offered some relief by new research conducted in the US. In a recent study, scientists from Tufts University near Boston claim to have found evidence that chronic ulcerative stomatitis (CUS), characterised by recurring and painful ulcers, is mainly caused by an autoimmune response by the body that destroys the hindering of cells inside the surface tissue layer of the mouth.

According to the scientists, only a dozen cases of CUS have been reported worldwide since the condition was first clinically identified in 1989 but the number may be higher, as patients may remain undiagnosed owing to the extensive testing procedure and low awareness amongst dental clinicians. While it was known that patients with CUS have specific auto-antibodies, researchers had not been able not to determine the extent to which these contributed to the condition. With help of the new findings, CUS could now be classified as an autoimmune disease in order to allow better management of the symptoms.

Owing to its unique resistance to standard medication like corticosteroids, successful treatment of CUS has been achieved only in some cases through hydroxy-chloroquine, a prescription drug primarily used to prevent malaria, as well as to treat rheumatoid arthritis and lupus. By better understanding the mechanisms linking the autoimmune response to ulcerative sores, new approaches could be developed to treat patients suffering from the condition, the scientists said.

So far, CUS has been found chiefly in middle-aged Caucasian women. It can only be perceived as a treatable rheumatic condition, the scientists said.

The findings confirm results of earlier studies that showed that Hong Kongese generally lack knowledge of the consequences of bad oral health. The last national survey on the matter conducted in 2001 revealed that only 50 per cent of adults seek regular dental check-ups. Over 50 per cent also considered tooth loss a nature-inevitability in life. In terms of oral health, Hong Kong currently ranks similar to other developed countries in the region.
HONG KONG/LEIPZIG, Germany: DTI
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in other countries
will be committing an addi-
tional AU$1.7 million (US$1.78
million) to the project.

According to a government-
tal survey, teenage children in Australia have an increased
risk of developing dental dis-
esases. Every year, over 20,000
children are admitted to hos-
pitals for dental work, a sig-
ificantly higher number com-
pared with other countries
like the UK, where slightly
over 5,000 admissions were
recorded in 2009.

Researcher Professor John
Spencer from the Australian
Research Centre for Popula-
oral Health, who will also
lead the study, said that it will
look at the organisation and
delivery of dental services for
children, as well as compare
the use and clinical outcomes
of school dental services and
private dentists. He said that
his institute will be partnering
with eight state and territory
dental authorities, who
will be committing an addi-
tional AU$1.7 million (US$1.78
million) to the project.

“Public programmes like
the school dental services are
not reaching as many children,
yet private dental services may
be out of the financial reach of
many families,” Prof Spencer
said. “The challenge is to
identify and eliminate barriers
to dental health services in
Australia, improving service
delivery, reducing risks and
promoting healthy diets.”
Australia currently spends
less than the US and countries
in Asia and Europe on public
dental care, a 2009 study by the
Organisation for Economic Co-
operation and Development has
found. The funding for a univer-
sal dental health scheme, a key
motivation for the Green Party
forming a coalition with Labor
in the last national election, was
recently scrapped from the fed-
eral budget by the Ministry of
Health.

Australia spends millions
on kids oral health study
Four times more children admitted to dental
hospitals than in the UK
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COMMITTED TO SIMPLY DOING MORE FOR DENTAL PROFESSIONALS
An interview with Eiichi Nakanishi, President and CEO of NSK Nakanishi, Japan

Eiichi Nakanishi is relieved. His company NSK Nakanishi and its staff were unharmed by the 11 March earthquake and subsequent tsunami. Like most Japanese companies, the manufacturer of handpieces and other dental equipment has an obligation to serve its customers in any circumstances. This is the reason Nakanishi says the company is currently working overtime, despite the occasional black-outs, which are still restricting business operations in the country.

Established in the 1950s, NSK has had to face a number of obstacles during its 80-year history, in addition to natural disasters. Production of dental handpieces, for example, had to be stopped in 1945 owing to World War II and was not resumed until 1951. Since then, the small company from Tokyo has evolved into a major international dental player with several business branches outside of Japan. NSK operates not only in major markets like the US, China, Germany, France, Italy and Japan, but also in China, Dubai, France, Spain, Australia and the UK. Recently, a representative office was established in Singapore to enhance sales and services to customers in the Southeast Asian region.

Since NSK conducts most of its sales overseas, the recession that hit the Japanese economy in 2009 had little impact on overall business results. This relative independence of domestic sales also gave the company the opportunity to invest in new technologies. As a result, NSK launched seven new products at this year’s International Dental Show (IDS) in Cologne.

How has the disaster influenced business life in general?

We expect to see some effects in our business operations, particularly in those areas most affected by the earthquake and the tsunami. However, the best we can do right now is to help the population affected by the disaster and work together to recover from these events, which have had severe results.

In your opinion, will this catastrophe have any long-term impact on the dental industry in Japan?

It is too early at the moment to make predictions about the long-term effects on our industry, as we are still in the process of recovery. We believe that the Japanese people will recover from this disaster quickly owing to the Japanese spirit, which embraces such characteristics as endurance, perseverance and dignity.

You have just returned from this year’s IDS in Cologne. What are your general impressions regarding your exhibition there and the state of the whole industry?

I believe that this year’s IDS was very successful for us. We had many visitors to our booth and received great feedback on our new products. Unfortunately, we only met a few visitors from Japan, probably owing to the current situation in our country.

You exhibited seven new products, including new handpieces, sealers and hygiene solutions. In your opinion, what product or products will be of the most benefit to dental practitioners?

All our new products are extremely useful, but if I had to choose key products, the Z series contra-angle handpieces, as well as the Surgic Pro surgical micro-motor with excellent durability, reliability and great torque accuracy, will be of most benefit to practitioners.

Are these products already available worldwide?

We will launch these products in Europe first and gradually expand to other regions. Customers will first be able to purchase them this summer.

You home market, Japan, was hit hard by the recession. How important are overseas markets to your company?

Historically, our business has grown steadily all over the globe. Our overseas operations already contribute 85% to our overall business and, therefore, the economic conditions in Japan only had little impact. Actually, our domestic business has grown lately in spite of the recession.

In Europe, we have increased our business thanks to re-organisation of sales and the establishment of our new headquarters in Frankfurt/Main, Germany. We recently expanded our sales network in emerging markets, with new offices in Dubai, Moscow and Singapore. We are also improving our operations in China through our subsidiary in Shanghai and have started to re-organise our sales network in Latin America.

NSK has been on the market for more than 80 years. What business goals do you want to see accomplished by 2016, for the company’s 100th anniversary?

In accordance with our corporate philosophy—by offering high performance and durable products at reasonable prices, NSK contributes to the health and well-being of people throughout the world—our ultimate goal is to be the No. 1 global dental company.

Thank you very much for this interview.

...the best we can do right now is to help the population affected by the disaster...
Bugs threaten health of orthodontic patients
One in two retainers found to host array of harmful bacteria

Daniel Zimmermann

LONDON, UK/LEIPZIG, Germany: Orthodontic retainers are a potential source of harmful microbes if not properly cleaned, scientists in the UK have warned. In a series of tests conducted at the UCL Eastman Dental Institute in London at least 50 per cent of all tested retainers contained species of Candida and Staphylococcus micro-organisms, including MRSA, a multidrug-resistant bacterium that can be fatal to patients with a compromised immune system.

The Candida yeast, found universally on human skin and other areas, can also cause infections. Amongst other conditions, it has been associated with oral candidiasis, a condition often related to ill-fitting dentures. Both species do not normally occur in the oral cavity.

The researchers said that the high number of harmful bacteria found in retainers is most likely the result of poor cleaning, allowing microbes to build up a resistant biofilm and spread to other areas of the oral cavity such as interior cheeks and tongue. The potential for transmission is also high, as retainers are frequently removed and replaced in the mouth by the person who uses it, they added.

They recommend wearers wash their hands thoroughly before and after inserting their retainers.

Proper dental hygiene through tooth brushing and the use of mouthwash also helps to keep harmful bacteria from entering the mouth.

WHO takes on influenza threat

From news sources

GENEVA, Switzerland/LEIPZIG, Germany: Members of a working group set up by the World Health Organization have agreed upon an international framework to improve preparedness for influenza pandemics that threaten public health worldwide. The agreement, which is expected to provide clear legal regimes and responsibilities for all stakeholders involved in the prevention and management of pandemics, is the result of more than three years of negotiations. It is expected to be ratified during the World Health Assembly in Geneva, Switzerland, in May.

According to a joint statement, one of the key elements of the agreement will be improved cooperation and exchange of information between key players such as the WHO, national laboratories and pharmaceutical manufacturers. Access to life-saving vaccines and other resources for low-income countries, which often cannot produce or afford the required anti-viral medication for their population, is also supposed to be improved.

“This agreement promotes global health security and solidarity in pandemic times,” said Ambassador Bente Angell-Hansen, who also chairs the working group. “It also reflects a unique partnership with industry and contains concrete measures of cooperation with both industry and civil society.”

Owing to increasing global transportation, locally active influenza viruses exhibit an increasing potential to become global pandemics, placing many at risk, especially medical and dental professionals. According to the latest estimates from the WHO, the H1N1 virus or swine flu that first occurred in Mexico has killed almost 20,000 people worldwide.
Periodontal treatment no harm to newborns

From news reports:

SAINT PAUL, USA/LIEPZIG, Germany: Pregnant women with gum disease may undergo non-surgical periodontal treatment without fear of consequences for their baby’s health. In a large trial involving 400 infants between the ages of two and three from different pediatric clinics in the US, dental clinicians found that treating periodontitis during pregnancy did not affect the children’s cognitive, motor or language capabilities later in life.

In the study, clinicians from universities in Minnesota, Kentucky, Mississippi and New York compared development data of children born to women who were treated for gum disease before and after their deliveries. However, the results between the control and experimental groups only differed slightly. Higher motor and cognitive scores were observed in the children of women who saw an improvement in their periodontal health.

Earlier studies indicated that paternal periodontal treatment may be linked to different medical problems including low birth weight, preterm birth and long-term development delays, as bacteria released during treatment may enter the mother’s bloodstream and harm the baby. According to research, pregnant women are prone to gingival bleeding, which is caused by a hormonal imbalance that encourages the growth of certain oral bacteria.

If the new data is verified, pregnant women throughout the US could have their gum conditions treated, confident in the knowledge that it will not have a clinically significant effect on their child’s development, the researchers said. A spokesperson of the American Academy of Periodontology said that although the data remains inconclusive, the organisation generally recommends women to maintain their periodontal health during pregnancy.

From World News:

LONDON, UK: King’s College London Dental Institute can look forward to three more years of collaboration aimed at the development of the dental workforce in Brunei Darussalam after the renewal of the agreement with the Government of Brunei.

Professor Stephen Dunne, Head of Dental Practice & Policy at the Dental Institute, and Mrs Mabel Slater, Head of Dental Care Professionals Centre for Education and Learning, will take this collaboration forward. In welcoming the news of the signing of the renewal of the agreement, Professor Dunne said: “I am delighted that we are continuing this highly successful collaboration. It is a great pleasure to work with Ministers and colleagues in Brunei Darussalam. Much has been achieved during the past three years, in particular, the establishment of a Brunei Diploma in Dental Hygiene and Therapy Programme.”

“In addition, foundations have been laid for other areas of workforce development, including Dental Technology and a Dental Hygiene Therapy Conversion Programme,” he added. “Discussions are also underway to establish a National Survey of Oral Health Brunei Darussalam to fully inform dental workforce requirements for the future. Thus, I am confident that the next three years of our collaboration will be just as successful as the last.”

In the meantime, discussions led by the Dean continue with the University of Brunei Darussalam in respect of the possibility of collaboration in respect of BDS (Bachelor of Dental Surgery) training.

According to the Brunei Ministry of Health, the country’s dental service is facing a serious shortage of staff as only 28 dental officers serve the total population of 381,000 people under the Primary Oral Health Care Scheme. There is also a low number of local graduates as well as foreign dentists with suitable qualifications for the post of Dental Officer.

(Edited by Daniel Zimmermann, DTI)
China imports caries detection from Europe

Daniel Zimmermann

London, UK/Leipzig, Germany: Beijing Focus, one of China’s largest dental dealers, has signed an exclusive distribution agreement with 3-D Diagnostic Imaging, the UK developer of the CarieScan PRO device, through its subsidiary Wisdom International Medical and Science and Technology. The agreement will take effect immediately and be 3-D’s first step into the Asian market.

The company, which is based in Dundee in the UK, is already distributing the device in North America and all German-speaking markets through distribution agreements. Beijing Focus currently represents a number of Western dental companies, including Straumann, Bien-Air (both Switzerland) and SciCan (Canada).

Manufactured in Scotland, CarieScan PRO is an award-winning diagnostic device that utilizes alternating current impedance spectroscopy technology for the early detection of dental caries. It is claimed to be more than 92% accurate in detecting sound and carious teeth. Regulatory approval for CarieScan PRO by Chinese officials is anticipated in the last quarter of 2011, a company spokesperson told Dental Tribune Asia Pacific. She said the device will be displayed earliest at the DenTech exhibition in Shanghai in late October.

5-D’s stocks climbed by 0.25 points on the London Stock Exchange after the agreement had been announced.

IDEM executive resigns

Yvonne Bachmann

Leipzig, Germany: Oliver P. Kuhrt, Executive Vice-President of Koelnmesse GmbH in Germany and responsible for marketing, has announced that he will be resigning in order to pursue a new professional challenge. Mr Kuhrt, who has overseen the marketing of five editions of the International Dental Exhibition & Meeting in Singapore and many other exhibitions, formally informed the Chairperson of the group’s Supervisory Board, Jürgen Roters, of his desire to resign at the Supervisory Board meeting in April.

The responsibilities of Kuhrt’s management division will provisionally be taken over by Gerald Böse, CEO of Koelnmesse. “Gerald Böse has a lot of experience in the organisation and marketing of trade shows,” Guido Gudat, Koelnmesse spokesperson, told Dental Tribune Asia Pacific. According to Mr Gudat, the company is looking for a new executive vice-president, who, amongst other duties, will take over the marketing for the next IDEM in 2012.

Mr Kuhrt, who has worked for Koelnmesse since 2009, has not yet disclosed the details of his future plans. During his time at the company, he established Koelnmesse’s subsidiary Koelnmesse Service GmbH and was appointed Executive Vice-President of the parent company Koelnmesse GmbH. He managed more than 20 international trade fairs, including the world’s largest dental show IDS. “I am looking back at ten years of very interesting and multifaceted work at Koelnmesse, for which I am profoundly grateful. I wish the group, its management and all of its employees continued professional success and all the best for the future,” Mr Kuhrt stated.

Gerald Böse added: “In recent years, Mr Kuhrt has generated strong momentum for our trade fair portfolio and continuously refined the leading global trade fairs for which he was responsible. I would like to thank him for his extraordinary dedication and wish him every success for his new challenges.”

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Preserving Health, Enhancing Smiles

Patients today are much more educated and demanding regarding dental treatments. Amalgam is a perfect example. A high percentage of patients demand not to have amalgam fillings for cavities, but a tooth-color material. Dr Koirala explains that “in the past, a restoration with amalgam required cutting a lot of tissue, but the new direct tooth-colored restorative materials cause less damage to the teeth and provide better aesthetics.”

“Many patients are now going for direct aesthetics: restorations, non-prep veneers, minimally prepared indirect restorations, and mini-implants, which are less invasive,” says Patrick Loke, SHOFU’s General Marketing Manager for Asia Pacific. “The trend is growing.”

The goal now is achieving good aesthetics with minimally invasive treatments with the support of MiCD instruments and bio-aesthetic materials,” he continues.

“We are the official partner of the MiCD movement, which motto is ‘Preserving Health, Enhancing Smiles’. We are fully committed to support their educational events for both public and dental professionals, such as workshops and symposia,” he adds. SHOFU’s advanced restorative materials use S-PRG Technology (Surface Pre-Reacted Glass Ionomer), which provides predictable aesthetics and better function. These are bio-aesthetic materials that allow fluoride release and recharge. You can reduce a small cavity removing only the affected area because the S-PRG fillers help re-mineralize the tooth structure.

Studies have shown that the dental pulp of Asian patient is generally wider, in comparison with European or American patients, and Dr Koirala points out that “preparations with wide shoulders could be a hazard to the pulps in Asian patients.” Even so, many dental technicians follow Western standards for non-Western patients with different facial features.

Dr Koirala warns that “you need to decide whether you are choosing the right technology for your practice, as technology may not always be health-oriented.” As a sample, he thinks that CAM/CAM restoration technology still has to be refined in order to be adopted fully in restorative dentistry. “CAM/CAM presently demands extension for insertion, Strength and Aesthetics,” thus, “we are compromising health for technology.”

“Clinicians still believe that articulating paper mark gives them ideal force component in occlusal adjustment,” he continues. “The big mark big force, small mark small force” concept has no scientific evidence, but most cosmetic dentists rely on articulating paper marks to do occlusal force adjustment. Computerized Occlusal Analysis System, which can objectively measure occlusal forces of each tooth with the time sequences of occlusal contact, was developed almost 5 years ago. Dr Koirala points out that clinicians neglect scientific facts about articulating paper marks and still believe in it for balancing the force component in smile design. This is why I advocate consciousness in dentistry, because technological information is not enough; you need consciousness to rightly use it for mankind.”

This is the background against which Dr Koirala revolved and led him to develop the MiCD treatment protocol, which he summarizes “as bringing consciousness, nature and technology together.” Rather than inflicting one’s own definition of beauty on the patient, the dentist must listen to and understand the personal and cultural desires of the individual undergoing the dental work, he says. Dr Koirala strives to preserve the definition of beauty set forth in the cultural tradition of the patient rather than following the status quo of a broad, one-size-fits-all plan.

Regarding teeth whitening for instance, Dr Koirala says that while some people may need it, “more often than not the coloring of the teeth is a perfect balance designed by nature. The eyes, teeth and skin tone should be in harmony. If the teeth are too white, it may look awkward and unnatural.”

Changing the Mindset

While the principles of MiCD may seem complicated, the protocol is easy to follow and very practical. Dr Koirala says that it doesn’t require changing clinical techniques, but using them in a conscious manner ensures that both for the patient and the dentist.

“We don’t say, ‘Don’t cut the tooth this way,’ we say, ‘Cut less,’” explains Dr Koirala. In fact, the MiCD protocol does not reject any contemporary material, but by finding full crowns or bridges, it just asks the dentist to use their conscious properly to think if invasive options can be avoided, and to use them only as a last resort. In other words, the only thing a dentist has to do to comply with MiCD is to change the priorities for a given procedure, to alter his consciousness. He says to do this, you must conscious the right technology for the patient.

The framework of MiCD establishes five golden principles:
1. “Sooner the Better”—early exploration of diseases and defects to minimize possible invasive treatment in future.
2. “Smile Design Wheel”—follow these principles, and respect the psychology, health function and aesthetics of the patient.
3. “Do no Harm”—select treatment procedures that maximize preservation of healthy tissue.
4. “Evidence-Based Approach”—select materials and equipment must be based on evidence.
5. “Keep in Touch”—focus more on regular maintenance, timely repair and strict evaluation, which should be understood by the patient.

As Dr Koirala says, they are simple and straightforward, so that every treatment in a dynamic protocol Because science constant changes.

“A good protocol should incorporate changes based on scientific evidence,” he continues. “The philosophical part may be the most difficult because it’s subjective, which is why we give a question— namely the patient, whereby he decides what he wants. We give him the science and inform him about it.”
the technique, but he decides what type of aesthetics he wants.”

High-quality materials
When Dr Koirala published his MiCD protocol in 2009, he not only gained a following among dentists, but also the respect of high-quality dental manufacturers.

“I met with Mr. Patrick Loke,” Koirala says referring to SHOFU’s Asia-Pacific Marketing Director, “who told me he liked the concept that is good for the patient, good for the dentist, and good for society. The MiCD protocol is in its preliminary stage worldwide, but the conferences he gave in South East Asia and South Asia have been widely accepted. “This is the right time to come out with this new philosophy”, he explains, “so that in four or five years a new generation can start talking about the preservation of health in the long run.”

Non-Invasive Health
The medical sciences are moving towards non-invasive procedures, and adequate ways of health promotion to avoid oral diseases. In dentistry, however, minimally invasive procedures are being used routinely only in carries management.

“In the medical sciences it is inherent not to cutissue,” Dr Koirala continues. “If patients knew that to place a crown you need to cut the tooth’s enamel, they probably would not accept the treatment. You need to start at an early age, like 6 or 7, in order to detect serious smile defects like orthodontic problems, everything that can affect oral health, including cosmetics, should be thought at an early age.”

“Dentists may use MiCD or not,” he adds, “but they all agree it’s the right approach. I want to encourage everybody to join the MiCD mission. Our MiCD Global Network (a web-based organization) is a group of dedicated professionals who wish to improve the knowledge of the clinician and the patient. Information technology can help promote these ideas through networks of dentists, people, and like-minded companies. We need to change our mindset.”

Dr Koirala plans to change the mindset through more international lectures, collaborating with like-minded clinicians and academicians, creating study clubs to exchange knowledge, and providing internet-based educational seminars.

“We are changing protocols for the health of the patient, and ultimately, dentists will win too, because it saves time on procedures and provides aesthetics and function. The type of material used is secondary to me, as long as it preserves health, a harmonious function (the force component), and promotes aesthetics. We are not promoting a company here, but promoting health. And that is our first responsibility as clinicians. It is something that can be the pride of the profession.”

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A young female patient was dissatisfied with the appearance of her upper teeth, which resulted from an accident-related injury to tooth #11 a few years prior. After the dental trauma, the tooth was restored with composite resin but the patient wished to have corrective work done. Compared with the adjacent teeth, the remaining natural part of tooth #11 appeared yellowish, while the composite build-up appeared greyish and translucent. The clinical examination revealed that the tooth did not show any signs of decay and were in good condition overall in relation to the patient’s age. In addition, the patient also practised excellent oral hygiene (Fig. 2). With the exception of tooth #11, all teeth reacted to the sensitivity test. The probing depth of the gingival sulcus measured less than 5 mm. Tooth #11 also showed minimal percussion sensitivity. The peri-apical X-ray revealed traces of an apical lesion (Fig. 2). The root canal appeared to be extensively calcified.

After discussions with the patient, root-canal treatment was planned for tooth #11. Subsequent internal bleaching was proposed in preparation for a new composite build-up. The oral cavity was isolated with a rubber dam before the root canal was opened. The root canal appeared to be extensively calcified. Some fragments of dentine were removed with a diamond bur. The canal was shaped with a No. 12 ProTaper hand file and the root canal was filled with calcium-hydroxide medicated fillers. This was repeated after two weeks. The canal filling was finally found at a depth of 13 mm. The root canal was prepared and a calcium-hydroxide medicated filling placed for a period of two weeks. Subsequently, the root canal was filled with thermoplastic gutta-percha points and sealed. The cervical structure of tooth #11 was internally bleached with sodium perborate until the tooth structure acquired the shade of the adjacent tooth.

Analysis of the tooth shape and shade
A closer look at the two central incisors revealed that they were somewhat asymmetrical (Fig. 1). As the crown of tooth #11 appeared somewhat wider. When the patient was asked about this, she stated that she had had a mandibular trauma that was closed after the restorative work on her dental trauma had been finished. The main aim of the anatomic layering technique is to create an artificial “enamel shell”, which establishes the palatal and proximal contour of the original tooth. In this case, a small amount of transparent enamel material (A2 Enamel) was placed in the trimmed silicone matrix and thinly distributed with a spatula. The defect had to be covered as far as possible. Some flowable Tetric EvoCem was applied to the palatal defect to allow a full invisibility of the final restoration (Fig. 4). The tooth was placed over the anterior teeth (up to the first premolar) to allow a full view of the operating area. Ligatures were used to isolate the anterior teeth and no further treatment was necessary to replace the rubber dam towards the gingival margin. A three-step system of etching was used (e.g. Syntac Classic) for the adhesive pre-treatment of the tooth. Thus, the approximal contact was made to the two anterior teeth and the proximal contact of the original tooth.

Preparation, adhesive pre-treatment and adjustment to the adjacent tooth

The composite resin restoration was completed with remaining instruments and the enamel margins were bevilled. A wide area was prepared in the region of the palatal gingiva (approximately 2 mm) to ensure the invisibility of the final restoration margin (Fig. 4). A rubber dam was placed over the anterior teeth (up to the first premolar) to allow a full view of the area. The tooth was isolated with a rubber dam before the root canal was opened. The root canal appeared to be extensively calcified. The root canal was prepared and a calcium-hydroxide medicated filling placed for a period of two weeks. Subsequently, the root canal was filled with thermoplastic gutta-percha points and sealed. The cervical structure of tooth #11 was internally bleached with sodium perborate until the tooth structure acquired the shade of the adjacent tooth.
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thin composite layer significantly enhanced the appearance of the incisal, palatal and proximal contours of the tooth (Fig. 3).

**Build-up of the dentine core**

The subsequent layers were placed with opaque dentine material (IPS Empress Direct Dentin, A3) and the dentine core was built up (Fig. 4). Compared with natural teeth, this part of the tooth was larger. As a result, the space available for the enamel coating was very limited, so it made sense to cover the enamel level with dentine material as well. This measure prevents the restoration margin from becoming visible on the gingival line. Towards the incisal part, the dimensions and the morphology of the dentine core were determined by the neighbouring and contralateral teeth. In this case, mamelons were created. In the incisal area, enough space was provided for the translucent enamel material (IPS Empress Direct Opal). A natural opalescent appearance was created with this technique. In addition, a white staining material (Tetric Color white) was selectively applied in order to re-create the white opaque areas of the enamel.

The restoration was completed by applying a final thin enamel layer (IPS Empress Direct Enamel A2) on the labial side (Fig. 8). While the resin composite was still soft, the final surface texture of the restoration was created with a brush. The tooth shape was modelled such that it would help to reduce the subsequent finishing work to a minimum.

**Finishing and polishing**

Excess material was removed with a scalpel (size 12). Suitable finishers and polishers were used to adjust the surface gloss and micro-morphology of the tooth in that of the adjacent teeth. Restorative margins were finished and adjustments to the proximal and incisal areas were made with flexible discs. It must be noted that in labial areas these instruments have to be used with great care to prevent the destruction of the morphology and the accidental removal of enamel material. Concave areas in the buccal surface were deepened with silicone polishers. High-gloss polishing was performed with silicon-carbide-impregnated brushes (Astrobrush, Fig. 9).

Four weeks after treatment, the clinical situation looked healthy. The restoration in tooth #11 was virtually invisible and symmetry was restored in the anterior den-

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**Contact Info**

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A comparison of Roxolid with Ti Grade 4 implants
A one-year follow-up report on a randomized double-blind multi-center study

Bilal Al-Nawas et al
Germany

Small diameter implants are beneficial in daily practice but they have limits based on the choice of implant material or surface. In order to increase confidence and enhance the treatment options for narrow diameter implants, an alloy composed of titanium and zirconium (Roxolid) has been developed by Straumann. This material shows better tensile and fatigue strength as compared to pure titanium and possesses excellent osseointegration properties in combination with the SLActive surface.

Based on the results of previous studies, a clinical multi-centre study was initiated with the aim of a direct comparison between pure titanium and Roxolid implants (Fig. 1).

Materials and methods
A randomized, controlled, double-blind, split-mouth study was started in the beginning of 2008 in eight centres.

- Indication: Fully edentulous mandible
- Test: BL implant Ø 3.3 mm SLActive Roxolid
- Control: BL implant Ø 3.3 mm SLActive Ti
- Solution: Removable denture on 2 LOCATOR abutments
- Specific: Double-blind study for the first year

Each patient was treated with two implants (one test implant and one control implant), which were placed intraforaminally. Abutment and prosthesis placement was performed 8–10 weeks after surgery (Fig. 2). Twelve months after surgery, the following parameters were analysed:

- Crestal bone loss (standardized X-rays)
- Bleeding on probing
- Plaque index

Results
One year after surgery, the study was un-blinded and the data of 89 patients or 178 implants were evaluated respectively. Three early implant failures were recorded. The implant failures occurred in both implant material groups (one test implant and two control implants) and in three different study centres.

Crestal bone change
Implant surgery was the baseline for the crestal bone loss evaluation. The evaluation was made for the per protocol population. No statistically significant differences were found between the two groups (Table I).

Frequency analysis of the crestal bone change did not show any statistically significant difference between the two groups (Fig. 3).

Plaque index and sulcus bleeding
The plaque index and sulcus bleeding data was taken from the intent-to-treat population. No differences were found between study implant and control implant (Figs. 4a & b).

Conclusions
This study did not show any statistically significant differences (bone change, sulcus bleeding, plaque) between Roxolid and titanium implants. Very low bone loss (0.3 mm control and study group) was observed one year after surgery. Higher mechanical strength and uneventful one-year follow-up indicate that small diameter Roxolid implants are a valid alternative to pure titanium implants and may offer a wider spectrum of clinical applications.

References
1. Data on file, tensile strength of material used for all Straumann® titanium and Roxolid® implants
2. Norm ASTM F67 (states min. tensile strength for annealed titanium)

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