Physicists shed light on geographic tongue

Research provides new insights into dynamics of inexplicable condition

REHOVOT, Israel: Physicists at the Weizmann Institute of Science in Israel have clarified the intricate dynamics underpinning a tongue condition that has puzzled the medical community for decades. Known as benign migratory glossitis or geographic tongue (GT), the condition affects around 2 per cent of the global population and is characterised by evolving red patches on the surface of the tongue that may resemble a map.

The red patches appear due to loss of one of the four types of lingual papillae, tiny hair-like protrusions that cover the surface of the tongue. The affected type, called filiform papillae, is mainly distributed in the anterior two-thirds of the tongue. Despite extensive research, the exact cause of GT, a benign and mostly painless condition, remains unknown.

In their study, the researchers performed a number of numerical simulations to closely examine and visualise the development of GT, and devised a new way of identifying the severity of individual cases. “We hope these results can be used by physicians as a practical way of assessing the severity of the condition based on the characteristic patterns observed,” said lead author of the study Dr Gabriel Seiden, a researcher at the Weizmann Institute of Science in Rehovot in Israel.

Benign migratory glossitis affects around 2 per cent of the global population. (Photo: Angel Simon / shutterstock.com)

Graphene slows dental diseases

Chinese researchers have found that graphene oxide, a compound of carbon, oxygen and hydrogen, is effective against a number of pathogens that cause dental caries and periodontitis. As previous studies have demonstrated that graphene oxide can inhibit the growth of some bacterial strains without harming mammalian cells, they investigated the material’s antimicrobial properties for three specific oral bacteria that are associated with tooth decay and certain forms of periodontal disease.

For the study, the researchers used graphene oxide nano-sheets and observed that they significantly slowed the growth of dental pathogens. Tests using electron microscopy showed that the cell walls and membranes of the bacteria had lost their integrity. They thus concluded that graphene oxide nano-sheets could have potential application in dental care and therapy.

Given the rise in antibiotic resistance over the past decade, they also believe that their findings could help address the need for a new approach to treating bacterial diseases.

AP slow in adoption of CAD/CAM

The latest report by international market research and consulting group iData Research shows that the penetration rate of CAD/CAM prostheses in the Asia Pacific region has been limited by difficult economic circumstances in countries like Japan, South Korea, Australia and China. In particular, the economic recession has slowed unit sales growth as dental laboratories increasingly prefer stand-alone scanners that laboratories increasingly prefer over high-priced milling systems in order to expand their networks of scanners to support their full in-lab CAD/CAM system, the report states. The Asia-Pacific market for dental prostheses and CAD/CAM devices is currently valued at over US$10 billion.

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SPIRALS EVOLVE IN REGIONS OF THE
TONGUE'S EDGE ADJACENT TO THE
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SEARCHERS.

In their study, they give the example of GT observed in a
1-year-old boy who developed the characteristic lesions on
multiple occasions along the tongue’s edge adjacent to the
growing teeth, implying that the continuous rubbing of the
tongue against the gingiva may trigger the condition.

“Going forward, we intend to collaborate with physicians and dentists who treat GT patients to
test the accuracy and—of course—empirical data regard-
ing the dynamic evolution of GT,” Seiden explained.

“This will allow for further, more quantitative explorations of GT, and may eventually lead to a
 firmer understanding of what causes the condition.”

The study concluded that GT can spread across the tongue in two different ways, each of which has
distinctive characteristics that could be used to diagnose severity. The researchers also dis-
covered that the condition, which typically starts as small spots on the tongue, can con-
tinue to gradually expand in circular patterns until the whole

tongue becomes affected. Once affected, the tongue then heals itself. Alternatively, the condition
can develop through the forma-
tion of spiral patterns. The simulations showed that these
spiral evolutions in regions of the
tongue that are still recovering, causing regeneration of that par-
ticular region.

“While the propagation of small circular lesions results in the whole tongue being gradual-
ally affected and subsequently healed, the propagation of spiral patterns involves a continuous,
self-sustaining excitation of re-

covering regions, implying a more acute condition that will linger for a relatively long period of

time,” Seiden explained.

Just as the development of forest fires can be strongly af-
fected by external conditions, such as the strength of the
wind, conditions surrounding the tongue may have important con-
sequences for the dynamics of
GT, according to the re-
searchers.
One system for better restoration
DENTSPLY exhibits premium material collection at APDC congress in Singapore

According to the company, the “one” collection consists of ceram.x one, a composite available in different translucencies for everyday aesthetics (ceram.x one UNIVERSAL) and highly aesthetic restorations (ceram.x one DENTIN & ENAMEL). It also contains two bonding systems, one for total-etch applications (prime&bond one ETCH & RINSE) and one for self-etch, selective enamel etch and total-etch applications (prime&bond one SELECT).

Covering the full VITA (VITA Zahnfabrik) shade range with just seven shades, ceram.x one UNIVERSAL is extremely simple and easy to use, the company said. With intermediate translucency ranging between natural enamel and dentine, ceram.x one UNIVERSAL offers a powerful chameleon effect to facilitate natural, lifelike restorations and is ideal for everyday use. While many composite systems offer a myriad of shades and translucencies, making it difficult to match the colour of the natural teeth, ceram.x one DENTIN & ENAMEL replicates the structure of natural teeth utilizing just two translucencies: dentine shades that mimic natural dentine and enamel shades that mimic natural enamel. Also covering the full VITA shade range, it enables highly aesthetic, natural restorations with only four dentine and three enamel shades.

It is difficult to achieve an optimum level of dentine moisture prior to the application of an adhesive. Overwet or overdry dentine can lead to insufficient sealing, resulting in microleakage and post-operative sensitivity. Prime&bond one ETCH & RINSE offers a technique-tolerant solution, providing high bond strength and reliable performance even on overwet or overdry dentine, according to DENTSPLY.

The literature often recommends using a self-etch adhesive in cavities with a large proportion of exposed dentine in order to minimise the risk of post-operative sensitivity. However, etch-and-rinse adhesives have shown superior long-term results on enamel. Prime&bond one SELECT combines the advantages of both techniques. It provides high bond strength with all etching techniques (self-etch, etch and rinse, and selective enamel etch) and delivers reliable performance even on overdry dentine, resulting in virtually no post-operative sensitivity.
Difficulties mastered are opportunities won

Daniel Zimmermann

These words from one of Britain’s most famous statesman Winston Churchill aptly describe the recent relaunch of Dental Tribune UK. The new edition is the result of months of reorientation and repositioning that will see the return of an active participant in the British dental publishing scene. At this opportunity, we would like to thank our former partners for their years of commitment and wish them best of luck for their future endeavours.

Our publishing group has come a long way since the first edition of Dental Tribune UK was launched in 2007. From a few publishers operating in key markets only, it has grown into a large-scale global operation with offices and representatives in almost every corner of the globe; to borrow a famous historical phrase, the sun never sets on the Dental Tribune International (DTI) network, as somewhere in the world a Dental Tribune publisher or partner is always working. And our expansion is still far from over; coinciding with the relaunch of the UK edition, Dental Tribune has introduced its first-ever Nordic edition at the SCANDFA show in Copenhagen in Denmark to serve all markets in Scandinavia and Finland. Developed as a pan-regional title, the new edition will cover and analyse everything dentistry in the region, as well as internationally. With four editions per year and published in English only, it builds on the substantial knowledge and publishing expertise that has distinguished Dental Tribune partners in almost every corner of the world for the last two decades.

While remaining a print publisher at heart, DTI is constantly venturing forward in other areas, most notably continuing professional education and events. While the Dental Tribune Study Club has been providing free online education at an international and local level for the last seven years, the new Clinical Masters series will offer high-quality CE in selected areas, including implantology, endodontics and aesthetic dentistry. Moreover, last year saw the successful premiere of the Digital Dentistry Show, a show within a show expo format that will see further geographical and topical expansion in 2015.

For information and updates on all our exciting new projects, I invite you to visit our website at www.dental-tribune.com.

Sincerely,
Daniel Zimmermann
Group Editor
Dental Tribune International

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Increasing number of European adolescents brush teeth twice a day

DTI

Ghent, Belgium/Jyväskylä, Finland/Copenhagen, Denmark: An international team of researchers has studied the daily frequency of toothbrushing in adolescents from 20 different countries and regions in Europe between 1994 and 2010. The researchers found that the prevalence of brushing more than once a day has increased in most of the surveyed countries and regions over time, with the highest increase observed in Estonia, Latvia, Russia, Finland and Flemish Belgium.

“From a public health perspective, improvement of toothbrushing habits is important in preventing the most common dental diseases, but even more so in reducing common risk factors for the main non-communicable diseases,” the researchers stated in the study. According to them, brushing twice a day is one of the most important self-care methods and has become a universal recommendation worldwide in order to maintain good oral health. In light of recent findings regarding the association between oral disease and the four main non-communicable diseases—diabetes, cancer, cardiovascular disease and respiratory disease—the importance of regular toothbrushing has increased even more.

For their study, the researchers from the University of Jyväskylä in Finland, Ghent University in Belgium and the National Institute of Public Health in Denmark used data from five consecutive Health Behaviour in School-aged Children (HBSC) surveys conducted between 1994 and 2010.

The HBSC research network is an international alliance of researchers that collaborate on the survey of schoolchildren. The HBSC collects data on 11-, 13- and 15-year-old boys' and girls' health and well-being, social environments and health behaviours. The researchers choose these age groups because they mark a period of increased autonomy that can influence how a person's health and health-related behaviours develop. The cross-national survey, initiated in 1982, is conducted every four years in 44 countries and regions across Europe and North America in collaboration with the World Health Organization's Regional Office for Europe.

The scientists determined the frequency of toothbrushing by analysing the adolescents' answers to the mandatory HBSC question in this regard, including study year, country, sex and age as variables. The 20 countries considered in the study included various central, eastern and northern European countries, as well as Russia and Canada.

In most of these countries, the prevalence of brushing twice a day has increased significantly, while the cross-national differences have diminished. In 1994, the rate of adolescents brushing their teeth twice a day ranged from 30% to 86% per cent. In 2010, between 50 and 81% per cent of the surveyed children said that they brushed twice every day.

In 1994, the countries with the lowest prevalence of brushing twice a day included Lithuania (30 per cent), Latvia (54 per cent), Russia (58 per cent), Finland (56 per cent), Estonia (42 per cent) and Flemish Belgium (45 per cent). By 2010, between 50 and 60 per cent of the children in all of these countries brushed twice a day.

The countries with the highest rate of adolescents brushing their teeth twice a day in 1994 were Sweden (86 per cent), Denmark (80 per cent), Norway (75 per cent) and Germany (75 per cent). By 2010, Sweden's rate had decreased to 81 per cent and Denmark's to 78 per cent. Norway's rate remained at 75 per cent, while Germany's increased to 80 per cent.