New study links poor oral health to respiratory disease

By DTI

TOKYO, Japan: In oral and maxillofacial surgery and other fields of dentistry, the use of 3-D patient-specific organ models is increasing, and this has raised the cost of obtaining them. To design and produce inexpensive patient-specific dental models, researchers at the Tokyo Dental College recently developed an environment they call the “one-stop 3D printing lab”.

The “one-stop 3D printing lab”, in imitation of the term “one-stop shop” as a business or office where multiple services are offered, is an environment that can complete everything, from design to fabricating, in one facility. One of its merits is that it is possible to fabricate the model while communicating with the surgeon to determine which parts are critical in the 3-D model.

In the process of experimentation, the researchers fabricated over 300 mandibular models from polylactic acid filaments. It was possible to quickly print a 3-D model while greatly reducing the cost burden using the low-cost desktop 3-D printer in the “one-stop 3D printing lab”. The results suggested that adjusting the laminating pitch (layer thickness) may lead to further reduction of model print time and cost. Furthermore, as the laminating pitch increased, no significant reduction in geometric accuracy was observed.

“Although it is a low-price desktop 3-D printer, we have created an environment to fabricate the practical 3-D models that seem necessary and sufficient for the daily clinical practice. The ‘one-stop 3D printing lab’ can complete the whole process, from designing to obtaining a model, within one facility,” said lead author Dr Takashi Kamio, assistant professor at the college’s Department of Oral and Maxillofacial Surgery.

According to Kamio, the printing laboratory has many advantages for dentist and patients: “The costs for obtaining 3-D models is low, which is why these models can be applied to more cases. It is also easier to fabricate multiple 3-D models (for example according to the surgical technique). Presenting such a 3-D model to patients contributes to deepening their understanding of the process. Furthermore, it is very useful for the operator to visualise the teeth and the jawbone, and actually touch them.”

The study, titled “Utilizing a low-cost desktop 3D printer to develop a ‘one-stop 3D printing lab’ for oral and maxillofacial surgery and dentistry fields”, was published on 13 August 2018 in 3D Printing in Medicine.
Researchers find possible link between bruxism and periodontitis

By DTI

OKAYAMA, Japan: In a recent study, researchers from Okayama University investigated whether involuntary masseter muscle activity showed any specific pattern concerning the severity of periodontitis. According to their results, after performing detailed measurements in a group of people with various degrees of periodontal disease, they found that bruxism might be related to its acuteness.

A total of 31 participants took part in the study, 16 of whom had no or mild periodontitis (NMP), with the remaining 15 having moderate to severe periodontitis (MSP). To ensure researchers were able to attain as in-depth results as possible, participants were equipped with a portable electromyography (EMG) device and monitored both day and night.

In addition to wearing the device, participants of the study were also required to keep a diary— noting activities such as when they ate their meals, which enabled researchers analysing the data to filter out all muscular activity not related to involuntary teeth grinding. Teeth movement due to speech was filtered out by monitoring voice activity from a microphone attached to the EMG device.

According to the study’s results, during both waking and sleeping hours, the duration of masseter muscle activity was significantly longer in the MSP group than in the NMP group. However, due to oral conditions such as missing teeth or the use of removable partial dentures not being taken into account, as well as the limited capabilities of the EMG setup, researchers stated that bruxism leading to periodontitis could not be concluded.

The study, titled “Relationship between severity of periodontitis and masseter muscle activity during waking and sleeping hours”, was published in the Archives of Oral Biology on 1 March 2018.

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Orthodontists concerned about the emergence of DIY clear aligners

SYDNEY, Australia: Dental tourism and do-it-yourself veneers have been contentious topics of debate in dentistry for some time. For dentists, DIY orthodontic kits could be added to this list of disruptive and dangerous practices too. However, for some people, the cost of in-office orthodontics is simply too high and recent alternative methods of tooth straightening are becoming more and more popular.

EZ Smiles is an Australian-based tooth straightening company that delivers clear aligners to patients across the country. Speaking to Dental Tribune International, EZ Smiles Director Ed Ambrosius said, “We only treat mild to moderate cases from patients. We started owing to the success of ‘tele-dentistry’ in the US and Europe and the fact that Invisalign had entered the market via Smil劍Directclub; we know this was the way of the future based on the technology revolution we are seeing.” Ambrosius said. He also noted that EZ Smiles is looking to partner with dentists around the country who are willing to treat patients EZ Smiles cannot. “We have more than 1,000 patients on our database—and this number is rapidly growing—that we have declined based on small amounts of interproximal reduction being required.”

In a statement given to Dental Tribune International, Federal Coun-
cillor for the Western Australian Branch of the Australian Society of Orthodontics (ASO) Dr Howard Holmes said, “The recent emergence of entrepreneurial start-up companies tailoring ‘mail-order’ or DIY clear plastic aligner tooth straightening directly to the public has raised significant concern among Australian orthodontists. The ASO is also deeply concerned about the apparent lack of regulation of this new disruptive industry. As there are no actual dentists or orthodon-
tists providing the service or ‘treating’ a patient, DIY orthodontics does not fall under traditional regula-
tory frameworks. This leaves the public in a very vulnerable position and with a risk of recourse if prob-
lems arise.”

Speaking about the tension between traditional orthodontists and the emerging industry of DIY tooth straightening options, Ambrosius said: “I think most orthodontists have come to realise that we are only for the lower cosmetic end of the spectrum and are not the threat to them that they may have originally thought."

The emergence of DIY clear aligners on the Australian market is a matter of concern for some orthodontists. However, those driving the business believe they are not a threat to patients’ health or orthodontic clinics.

Pricing for the aligners differs depending on the payment process. The initial impression kit costs $499; however, a full refund is provided if aligners are found not suitable for a particular patient. For those who are eligible, a payment plan of $423 a week is possible (total of $2,499.00) or an upfront payment of $2,149.00.

“The response has been terrific from patients. We started owing to the success of ‘tele-dentistry’ in the US and Europe and the fact that Invisalign had entered the market via Smil劍Directclub; we know this was the way of the future based on the technology revolution we are seeing,” Ambrosius said. He also noted that EZ Smiles is looking to partner with dentists around the country who are willing to treat patients EZ Smiles cannot. “We have more than 1,000 patients on our database—and this number is rapidly growing—that we have declined based on small amounts of interproximal reduction being required.”

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