Aussie scientists develop new coating to improve implants

By DTI

MELBOURNE, Australia: Prebiotic compounds, whose origin can be traced back billions of years, have been studied intensively since their discovery several years ago. Now, a team of researchers in Australia has found that these prehistoric molecules can be used to modify surfaces of medical implants, reducing the risk of infection and rejection.

The new coating method was developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in collaboration with microbiologists at Monash University.

Although surface modification methods span a wide variety of applications, ranging from solar cells to implantable medical devices, there are very few simple generic aqueous coating methods that are both robust and versatile, as well as easily applicable over a range of substrate materials, the researchers reported in their paper. Therefore, they examined the suitability of the amino-lidonitrile polymerisation process for the formation of coatings on a range of substrate materials.

Victims of Pompeii had excellent teeth

By DTI

NAPLES, Italy: To this day, researchers have not been able to scan and analyze the world-famous plaster casts of the people and animals of Pompeii who died in the volcanic eruptions of Mount Vesuvius in AD 79. Now, with the help of a 16-layer scanner, an interdisciplinary team was able to create digital 3-D reconstructions of the skeletons and dental arches of the volcano’s victims for the first time.

Among other things, the scientists used a special multi-layer CT scanner, laser imaging and DNA sampling, revealed that the city’s inhabitants had nearly perfect teeth.

“We discovered the absence of cavities in the teeth. This is very interesting and not that surprising, because we all know about the healthy Mediterranean diet and that has really shown up in the early analyses,” said Massimo Osanna, superintendent at the archaeological site.

According to the experts, the lack of sugar in the Pompeian diet and the high levels of fluoride in the air and water near the volcano are all accountable for the perfect state of their teeth. In addition to an excellent oral health, the researchers found that most of the victims still had all their teeth.

However, the scans further showed that the teeth wore away, because they were used for cutting, orthodontist Dr Elisa Vanacore said.

The interdisciplinary research project that began in April brought together archaeologists, restorers, radiologists, anthropologists and many others. According to Osanna, many more findings will emerge from the analyses on most of the known 86 Pompeian casts.

“This will be a great step forward in our knowledge of antiquity,” Osanna said.

Dr Richard Evans has helped develop a coating for medical devices using prebiotic molecules.
In September this year, DENTSPLY International and Sirona Dental Systems announced that they have entered into a definitive merger agreement, creating probably the world’s largest dental manufacturer, DENTSPLY SIRONA. Dental Tribune spoke with Sirona President and CEO, Jeffrey T. Slovin, who will assume the role of CEO of the newly combined company, about the merger and its impact on the global dental market.

As you know, the global dental industry is in the midst of a transformation. The market is moving toward more integrated solutions and practitioners across the globe. Furthermore, many practitioners in new emerging markets are rapidly adopting digital dentistry. Combining DENTSPLY and Sirona will create the world’s leading manufacturer of professional dental products and technologies, strengthening our collective ability to be at the forefront of key industry trends, help dental professionals improve patient care and grow our business.

DENTSPLY and Sirona both have strong commitments to innovation and research and development. In fact, we have collaborated very successfully on product development with DENTSPLY in the past. This merger is about harnessing those shared strengths to create new products with the aim of advancing patient care. Additionally, Sirona’s technology and equipment offerings are complementary with DENTSPLY’s consumables platform, enabling us to offer a more robust product platform to dental professionals and distributors.”

The merger is expected to be completed in the first quarter of 2016. Which regulations or closing conditions could still prevent a definitive merger? The transaction is currently on track with the aim to complete the process in the first quarter of 2016. There are, as with any transactions, certain regulatory approvals and other customary closing conditions that we must achieve first. These include anti-trust clearance in the US, Europe and other countries, all of which are outlined in our SEC filings. We are confident that we will receive these approvals and the approval of our shareholders and we look forward to closing the transaction. Until then however, both DENTSPLY and Sirona will continue to run their business as usual as separate entities.

Ad

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“the global dental industry is in the midst of a transformation”

An interview with Sirona President and CEO, Jeffrey T. Slovin
In measuring the effect of surgical templates on the accuracy of implant placement, a Chinese study recently found that actual and planned implant positions varied significantly. According to the researchers, errors in computer-guided implant surgery are caused by either the operator during surgery or the surgical template preoperatively.

In order to evaluate the effect of surgical templates on the accuracy of implant placement, jaws from 16 patients were scanned using cone beam computed tomography (CBCT). Fifty-three implants were planned in a virtual 3-D environment, of which 35 were placed in the mandible and 18 in the maxilla.

For the analyses, a stereolithographic surgical template was created. The template was then fitted on a plaster model and both were scanned with a CBCT device. The images obtained were matched to images of the virtual planned implant position. The actual implant position was acquired from the registration position of the surgical template.

In comparing the data, the researchers found significant deviation between actual and planned positions caused by the surgical template. The mean central deviation at the hex and apex was 0.456 mm and 0.515 mm, respectively. The mean horizontal deviation at the hex was 0.193 mm and at the apex was 0.277 mm. The mean vertical deviation at the hex was 0.388 mm and at the apex was 0.390 mm. The mean angular deviation was 0.621°.

The results of the study indicate that clinicians should not rely solely on the safety of surgical templates in seeking to avoid critical anatomical structures.