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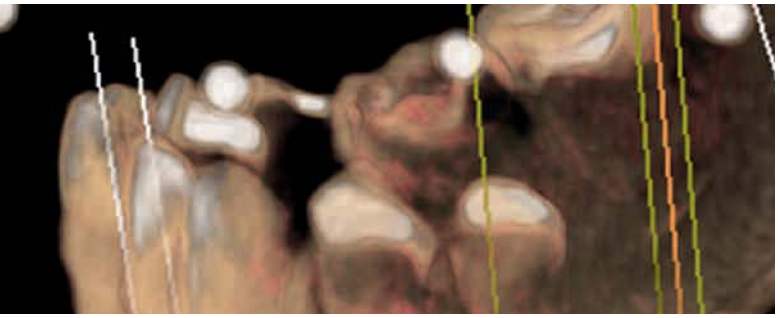
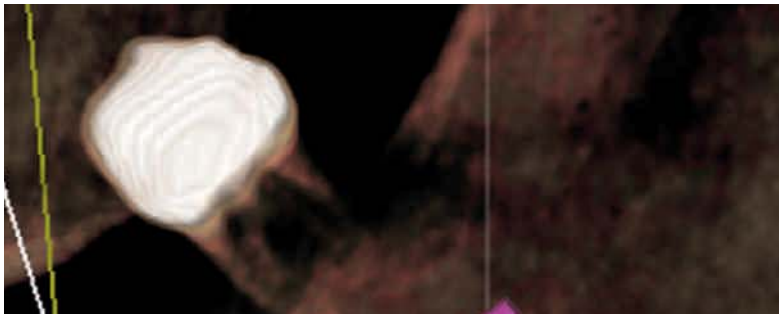
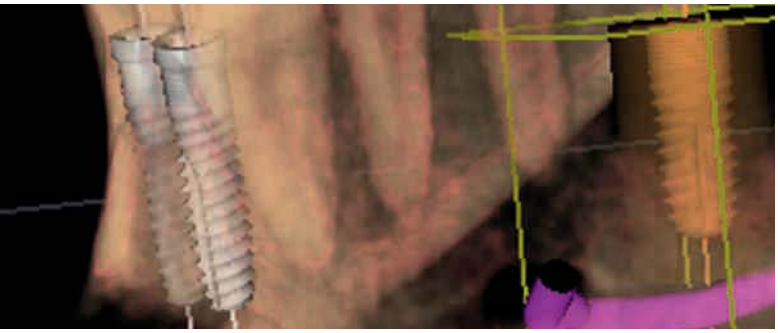




TOPIC

Result-driven 3D implant and bone planning


NBMolecules receives Frost & Sullivan Technology Innovation Leadership Award

Promising dental implant technology

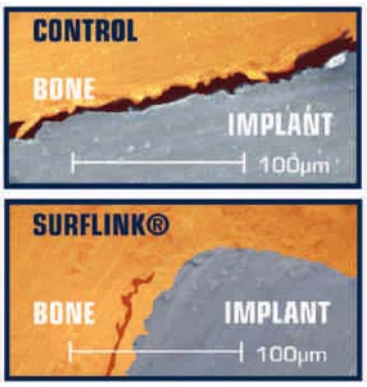
NBMolecules is the recipient of the 2013 Frost & Sullivan Technology Innovation Leadership Award in the dental implant sector. Its patented SurfLink technology is likely to bring a major revolution to bone-anchored implants by significantly reducing the technical challenges associated with conventional implant technologies.

Improving implant fixation in bone is a key priority for the dental industry. Some of the world's leading authorities in dental implantology are convinced that SurfLink surface treatment is the answer to the long-running clinical challenge in the field of bone-anchored implants – to achieve true, improved osseointegration. Scientific studies have shown that NBMolecules's SurfLink technology can revolutionize bone-anchored implants. SurfLink-treated dental implants have successfully been inserted in patients since 2009.

SurfLink produces a monolayer of permanently bound multi-phosphonate molecules on the surface of the implant. This novel phosphonate-rich surface mimics one of the main constituents of bone, providing a significantly more favourable environment for implant integration and bone healing. The biocompatibility and high fixation capacity of SurfLink reduce the need for surgical revisions, increase patient comfort and contribute to cost savings.

The significantly superior bone healing and greater implant integration are explained by the specific characteristics of the multi-phosphonated SurfLink molecule:

- Hydrophilic implant surface – Water, proteins and cells from the blood are attracted to the implant surface, which enables quicker cell adhesion and colonization, resulting in faster bone-matrix formation and osseointegration.
- Stability in a physiological environment – The SurfLink molecule remains permanently bound to the implant surface at pH values between 1 and 9. In contrast, the phosphates currently used on some implant surfaces are unstable and quickly dissolve at pH values below 4, typical for inflammatory and bone-remodelling situations. Unlike phosphates, phosphonated molecules such as SurfLink are enzymatically stable.
- Chemical bonding – SurfLink provides a chemical connection between bone and the implant surface, in addition to the mechanical interlock due to the implant's roughened topography. This results in increased implant stability and fixation compared to implants relying on mechanical interlocking only. Thus, after torque testing, fractures within the bone were observed with SurfLink-treated implants (see figure) rather than at the bone-to-implant interface, meaning that bone did not detach from the implant surface due to the torque forces, as with control implants (see figure). This close attachment of bone to the implant surface greatly contributes towards maintaining functional and aesthetic implant integration.
- Osteoconductivity – Starting from bone contact points, new bone matrix quickly (within two weeks) forms along the SurfLink-treated implant surface, maturing to organized, mineralized bone within eight weeks. The biomimetic characteristics of SurfLink allow for long-term true osseointegration.



These characteristics are expected to enhance the clinical performance also in a patient population with compromised bone quality. The technology, produced under ISO 13485 certification, has already received European CE marking as a dental implant product. ■

More information

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