

Crowning glory: Bonelike coating for dental implants makes everyone smile

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Research present in a forthcoming issue of the *International Journal of Nanomanufacturing* from Inderscience Publishers suggests that coating dental implants with a synthetic bone material prior to implantation allows such implant to become incorporated much more successfully into the jaw, leading to smiles all round.

Titanium is the material of choice for many dental and medical implants. However pure titanium has a biologically inert surface, which makes it biocompatible and so it does not trigger an unwanted reaction from the immune system. However, this inertness also means the metal does not initiate new bone and blood vessel growth around the implant, so it is not necessarily incorporated into the implant site as well as it might be.

Researchers have tried to address this dichotomy of the retaining the benefits and avoiding the disadvantages of biological inertness in implant materials. One approach involved the development of various coating materials for the implants that would not trigger an immune response and so lead to rejection but would lead to better incorporation by living tissue at the implant site.

An example of such a coating material is the commercially available composite materials, such as "Bonelike" which is a synthetic bone material, hydroxyapatite reinforced with tiny glass particles. This material can be used to provide a layer on the surface of pure titanium that its developers hoped will lead to better incorporation of any implant.

Now, J.D. Santos of the Biomedical Engineering Institute in Porto, Portugal, and colleagues have investigated how well 27 titanium implants coated with Bonelike were incorporated. The implant rods, 10 mm long and almost 4 mm in diameter were placed in the maxilla (18) and mandible (9) of seven patients, ahead of attachment of an artificial tooth.

X-rays before and after implant at three and six months allowed the team to assess how well the implants had grown in and showed new bone growth around the implants and no bone loss in surrounding regions of the jaws. "The Bonelike-coated dental implants proved to be highly bioactive with extensive new bone formation and attachment," the researchers say.

Additionally, one implant had to be removed at three months because of bad positioning. This provided the researchers with an ideal opportunity to use light and electron microscopy to study the effects of Bonelike on the implant.

Source: Inderscience Publishers

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