Artificial Bones

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ELE 282
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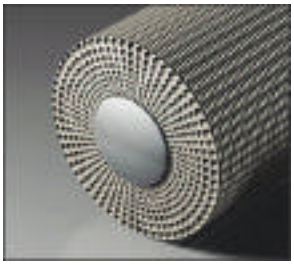
9.21.05

The human body is not designed to last forever. Body parts fail and accidents happen, and this affects daily life. Sometimes the most debilitating losses can be that of bones. Engineers have found ways to replace these missing or infected bones with artificial replicas. Never will these replacements quite live up to the original, natural bones. What we can do is come as close to the same thing, and we are pretty close to that point. The new technologies used to produce and design artificial bone structures help those in need to live as close to a normal life as possible.

In the past, basic replacements were used and held in place any way possible. The most common implants were metal alloys held in place by plates and screws. Grafts from the patient's existing bone, and also from cadavers' bodies are also used. Many issues arise with these methods, and it isn't until now that engineers use materials that replicate the actual original bone. They now behave as real bones do and the body also now accepts them as such. The newer methods are not without their flaws, but they are greatly minimized from past attempts.

Hydroxyapatite is the material commonly used in artificial bones, along with ceramics, and ways of creating compatible metal implants is now possible. Hydroxyapatite is a sodium phosphate mineral that is very close to the actual material live bones are made up of. That is just the base compound.

A man named Antoni Tomsia is making huge leaps toward creating that 'perfect' replacement where the implant performs just as well as the old one did. One of his projects involves using hydroxyapatite as the 'backbone' for his synthetic bone. A protein called Collagen is an integral part to the composition of a bone, providing "molecular cables" that hold things together. Tomsia uses an organic polymer with similar qualities to Collagen to further allow the body to accept the implant. He also took on a project with Eduardo Siaz to design a synthetic bone structure with titanium or cobalt-chromium base. A bioactive silicate glass coating bonds the metal and the existing bone together. There are many advantages to this structure.



The third prominent design was created by NASA, and it has a ceramic base. The ceramic is chemically very similar to actual bone, giving it near perfect attributes. On the other hand, production is very difficult and precise since it needs to be crafted at scorching temperatures.

Artificial bone technology has skyrocketed in the near past, and who knows, maybe they will be perfect soon.

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