Toward the center

Things are getting rougher out there. Or smoother, depending on where you started.

We're talking implant surfaces here.

When we first began using osseointegrated implants, it was like the Model A Ford. You could choose any color you wanted, as long as it was black. In our case, you could have any surface you wanted, as long as it was machined. This surface, now called *turned* by my more erudite colleagues, was produced when screw threads were milled on a blank titanium rod. When the corporate world caught up with Professor Brånemark, they started making modifications to his original design. In my opinion, he should have too; but that is another story. The result was a panoply of surfaces ranging from smooth to rough and everything in between. While all these surfaces established an intimate relationship with the bone, some did so to a greater degree than others. In addition, some surfaces underwent great scientific scrutiny before coming to market; some were just produced in the inventor's garage and sold the next day. To understate, this led to confusion and to the beginnings of the implant wars. These wars continue today.

But science intervened.

I will never forget seeing the first SEM of what was assumed to be an osteoblast laying across a machined surface looking to all the world, like a fried egg.

This was the beginning, along with torque removal tests, percentage of bone-to-implant contact, etc, of a great debate that we all see and read about today.

As I understand it, the happier the osteoblast, the more bone it produces, and the fried egg model does not represent a happy osteoblast. They tell me that these cells need to stand up on their own little legs (*pseudopodia* to the academic types) before they can really turn out the bone we surgeons love, and turn it out faster so we can get the crowns on those implants faster and make the referring dentists and the patients happier more quickly. Again, as legend has it, you need certain surface characteristics to allow this to occur with the rapidity that we all are seeking.

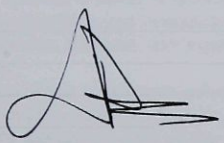
The result of this desire to load faster was the great surface battle.

This battle was fought primarily by the companies and their designated surrogates (remember yours truly is occasionally one of those hired guns–see my May 2001 editorial). We all went out and shot at each other for years; the fact that we had little ammunition did not deter us one whit.

But slowly the tide changed. Science started to come to the fore, and a group of surfaces that osteoblasts like to stand up on were discovered. This improved torque tests and bone-to-implant contact percentages.

And what have we found so far regarding the "optimal" surface? That this surface is somewhere between two extremes. Not overly smooth or overly rough. So now all the large manufacturers feature some type (or many types) of rough surface.

The war continues, but the combatants have reached a general agreement in the surface battle. Gosh, that was hard.



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