Debate on LinkedIn: Dr. Michael Norton and Dr. Gerald Niznick on hybrid surfaces

Gerald Niznick DMD, MSD
Dental Implant Pioneer

Straumann's TLC tissue level implant that Dr. Buser is advocating had a 2.8mm straight, smooth neck. He is using it as a bone level implant to position part of the smooth neck sub-crestal, with the implant's abutment junction supra-crestal. I not only agree with this approach to minimize exposure of the blasted surface that can contribute to peri-implantitis. I incorporated this concept of a hybrid surface into the GEN5 and GEN5+ implants with a 2.5mm smooth neck having 1, 2 and 2.5mm depth gauge lines (Pat.Pend). With an extra 1mm added to the neck of each implant length compared to the Legacy and Tapered Screw-Vent lengths, a dentist can use drills for these Implant Direct and Zimvie implants and automatically accomplish Dr. Buser's goal of the smooth neck partially in and partially above the crest. This design is particularly advantageous in uneven ridges. The advantages of a hybrid surface in minimizing peri-implantitis basically obsoletes Straumann's bone level implants blasted to the top and those tissue level implants with a flared neck. I have created the TriFit implant with the BLT connection, triple lead threads, a hybrid surface and innovative bi-directional cutting grooves (Pat. Pend.). It will launch about July at a 75.% cost savings compared to Straumann's US list price. The GEN5+ implant that will launch by April has the best of both worlds in that it is a true tissue level implant with a 2mm friction-fit, flared extender that can be removed to connect directly to the implant or converted to a variety of abutments.

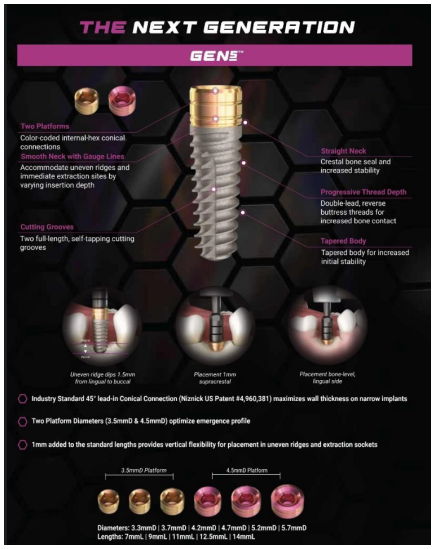
Michael Norton · 2nd
Oral Surgeon at Norton Implants

Hammerle published on [The effect of subcrestal placement of the polished surface of ITI implants on marginal soft and hard tissue] back in 1996 and reported that they **ALWAYS lost bone back to the border between rough and smooth.** In that study they concluded that "From a biological point of view, the placement of the border between the rough and the smooth surfaces into a subcrestal location should not be recommended".
It seems people don't learn from history!!!

Hammerele et al: Clin Oral Implants Res. 1996 June, 7(2):111-9

Gerald Niznick DMD, MSD
Dental Implant Pioneer

The point of your lecture will be that research supports the claim that to minimize bone loss, the implant should be blasted to the top. Of course that would be your position as a KOL for Astra which has a blasted surface to the top. I believed in that concept when I designed Implant Direct's implants, but have since been enlightened to the many advantages of having a smooth neck. According to studies, about 1/3mm more bone loss will result, but that is insignificant because blasting to the top will result in more rough surface exposure due to bone loss from placing implants in thin ridges and extraction sockets. Studies show increased peri-implantitis from exposed rough surfaces (Derks Study). Astra's marketing story has been that micro-threads and a blasted neck reduce bone loss, but this is a simplistic approach to longterm implant success that has become evident from the increasing incidence of peri-implantitis. A longer smooth neck offers vertical flexibility in placement, especially in uneven ridges.



Michael Norton · 2nd
Oral Surgeon at Norton Implants

The point I'm making is simple. History and research all show that you ALWAYS lose all bone at a smooth neck down to the border with the rough surface or the first thread. Stig Hanson revealed this as a bio-mechanical truth back in the 1990s. Every implant placed at that time proved his point. So having a smooth neck will only guarantee an initial bone loss resulting in an established pocket and therefore a deeper point from which your peri-implant inflammation can start. Your argument also ignores the host factor and assumes you can design a piece of metal to mitigate against this and you can't, at least certainly not this way! I think your motivation is genuinely very sound though as we struggle with these biological complications.

Gerald Niznick DMD, MSD
Dental Implant Pioneer

Placing the smooth neck of the Straumann Tissue Level implant subcrestal resulted in 1.04mm loss of clinical bone height while the control lost 0.45mm from 4-12 months .
The question is - which implant ended up with exposed rough surface that could lead to to contamination and further bone loss?
With an Astra implant blasted to the top, what do you do if the Lingual of the ridge is 1.5mm higher than the labial :
1. Leave the rough surface exposed,?
2. Bury the implant to the level of the labial bone height?
3. Graft over the exposed tough surface?

Michael Norton · 2nd
Oral Surgeon at Norton Implants

That is indeed a good question. The answer is none of the above! I use the Astra Profile implant if the discrepancy warrants it.

Gerald Niznick DMD, MSD
Dental Implant Pioneer

You just proved my point that you are too locked in to Astra to give an objective presentation at AO. The Astra Profile implant had a straight body. It took Astra 24 years after I introduced the Tapered Screw-Vent to introduce its own tapered implant. In 2000 I wrote an article showing how a tapered implant, placed in an undersized socket in soft bone could achieve high enough initial stability to allow immediate loading. Rather than use an implant with a smooth neck to accommodate uneven ridges, you fall back on whatever implant Astra sells for this situation, even though it is a straight body and will not achieve high initial stability. You did not answer my question of how you handle bone loss with Astra implants in extraction sockets.
The 2.5mm neck of the GEN5+ along with its 2mm friction-fit extender on the GEN5+ eliminates the need for an inventory of abutments of different heights - another advantage of good design.

Gerald Niznick DMD, MSD
Dental Implant Pioneer

Here is what the Hammerele study say about using 1mm of the smooth neck of the Straumann Tissue Level implants subcrestal:

“On the average, the test implants demonstrated a bone level of 0.38 mm lower than the controls at 12 months. Except for the modified gingival index at 4 months (mean difference 0.21, SD 0.19, $p < 0.05$), no clinical parameters yielded significant differences between test and control implants at any time.

0.38mm of bone loss is a small price to pay to assure that the rough surface of the implant remains buried in bone.

Astra and you obviously recognize the undesirability of exposing the rough surface of the implant to the soft tissue, as evidenced by Astra's sale and your use of its Profile Implant."

Michael Norton · 2nd
Oral Surgeon at Norton Implants

I thought we had ended this debate. It seems you’re not done. Hammerle concluded “that in addition to the crestal bone resorption occurring at implants placed under standard conditions, the bone adjacent to the polished surface of more deeply placed ITI implants is also lost over time. From a biological point of view, the placement of the border between the rough and the smooth surfaces into a subcrestal location should not be recommended.” I am aware there was no significant difference but he points out that this was because the control implants also lost some bone. It didn’t change his conclusion about the role of smooth surfaces. I also showed this in my article published in 1998.

https://pubmed.ncbi.nlm.nih.gov/9663036/

As for the Profile implant it represents a very small percentage of all the implants I place and as I said I only use it when it is warranted. Your new Gen 5 definitely offers some very interesting design concepts which may have merit and are worthy of research. Perhaps instead of boasting about your patents you should work together with me and allow evidence based research to prove you right or wrong!!

Gerald Niznick DMD, MSD
Dental Implant Pioneer

This study by Ann Wienerberg reports that the machined surface over time lost the least amount of bone and bone loss for all surfaces on average was less than 2.0mm.

“The survival rate was 82.9 to 100% for all implants after 10 or more years in function and the marginal bone loss was, on average, less than 2.0 mm for all implant surfaces included, i.e. turned, titanium plasma sprayed (TPS), blasted, anodized, blasted and acid-etched but **the turned surface in general demonstrated the smallest** MBL. However, the survival rates were in general higher for moderately rough surfaces.

”

Michael Norton · 2nd
Oral Surgeon at Norton Implants

This study claims the exact opposite. And this is exactly one of the central points of my keynote lecture! As always I'll give you the final word in this most enjoyable debate…

Three-year Evaluation of the influence of Implant Surfaces on Implant Failure and Peri-implantitis F. Tirone et al: Int J Oral Maxillofac Implants. 2021 Mar-April;36(2):e23-e3-doi:10.11607/jomi. 8638.

Conclusion: Based on the results of this study, no significant differences can be demonstrated in either peri-implantitis or failure rate or in marginal bone loss between rough and machined implants. Marginal bone loss was significantly worse in machined-surface Sweden & Martina than in rough-surface Nobelbiocare

Gerald Niznick DMD, MSD
Dental Implant Pioneer

The study you just cited states: "No statistically significant differences in marginal bone loss were found comparing different surfaces".

My concern is that you have a lot of credibility as past president but have a limited and bias perspective because you only use Astra implants which are blasted with micro-threads to the top. My Implant Direct implants were similar in that regard and as you will recall, I was critical of Buser's lecture in 2022 when he was touting the hybrid surface. When I learned that he was placing more than half the smooth surface subcrestal to accommodate for future bone loss. I understood the advantage of a smooth neck, especially in uneven ridges and immediate placement in extraction sockets. I added 1mm the the length of each implant and added depth gauge lines as well for vertical flexibility to accommodate uneven ridges. I am less concerned about 1/3rd mm difference in bone loss that may occur with smooth neck in the bone as I am with complications from exposed rough surfaces.

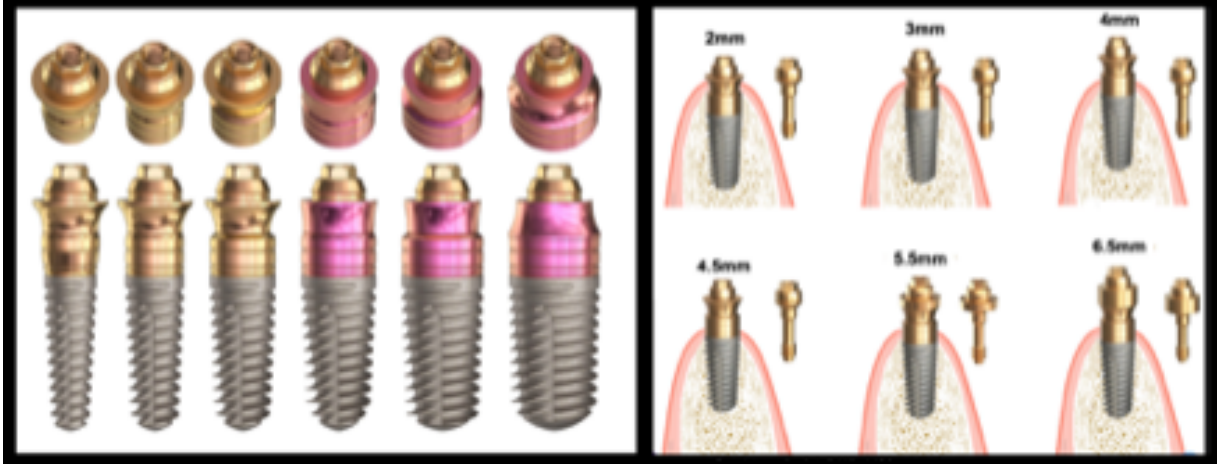
Michael Norton · 2nd
Oral Surgeon at Norton Implants

There you go…let that be the final words then.

Gerald Niznick DMD, MSD
Dental Implant Pioneer

Ok - the picture I attached of the GEN5+ showed that dentists could place the MUA platform 2,3,4 and 4.5mm above the bone, varying the depth to accommodate for different tissue heights. By selecting a 0mm, 1mm or 2mm prosthetic screw, the dentist could further raise the platform to 5.5mm or 6.5mm. It is only by having a smooth neck can you get this much vertical flexibility. Astra is the only company that makes an implant with slopped top that you use on uneven ridges. Having a smooth neck accommodates for uneven ridges without having to use a specially designed Astra implant., Astra's "Profile" implant only is available with a straight body which compromises initial stability. With immediate insertion implants, the exposure of the blasted and micro-threaded neck will inevitable become exposed when resorption takes place. **Now that does it - let's see you give a fair and balanced lecture.**

Varying the depth of placement of the GEN5+ Implant, along with 3 heights of MUA Prosthetic Screws, provides 6 abutment height options with minimal inventory



Conclusion of Debate

Two articles relevant to implant surfaces and bone loss that underscore the dilemma.

1. Crestal Bone Changes Around Titanium Implants. A Radiographic Evaluation of Unloaded Nonsubmerged and Submerged Implants in the Canine Mandible
   -J.S. Hermann, D.L. Cochran, P.V. Nummikoski, D. Buser

   "In 1-part, non-submerged implants, the most coronal bone-to-implant contact followed at all time points the rough/smooth implant interface. In all 2-part implants, non-submerged and submerged, the most coronal bone-to-implant contact was consistently located approximately 2 mm below the micro-gap.

2. Periimplantitis and Implant Body Roughness: A Systematic Review of Literature
   -Fabienne Jordana, MSc, DDS, PhD,* Lea Susbielles, DDS, and Jacques Colat-Parros, MSc, DDS, PhD

Bone loss initially will be better preserved with a rough surface, but only to a very small extend (1/3 mm to 1/2mm). Exposure of the rough surface and threads can lead to peri-implantitis and excessive bone loss with failure of the implant. Placing a 2-part implant subcrestal assures that the bone will be about 2mm below the micro-gap. To address the dilemma, consider what surface will result in the least bone loss and risk of peri-implantitis over the long-term. That argument comes out in favor of using a smooth neck on the implant to accommodate for inevitable bone loss, especially in grafted and immediate insertion sites, and in uneven ridges. Positioning the implant abutment junction supra-crestal will also contribute to reduced bone loss.