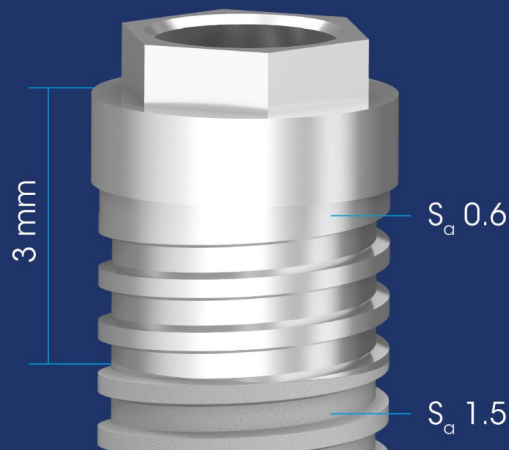


## A research review regarding the MSC surface



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## WHAT ARE MSC IMPLANTS?

In order to capture the advantage of Southern's proven rough surface where it is needed most, the "smoother" coronal machined surface is engineered to reduce bacterial adhesion and thus, decrease the risk of infection which could lead to marginal bone loss.

Indicated for patients with higher risk of coronal bone loss (smokers, history of periodontitis or cardiovascular disease).



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## BONE FORMATION

Osseointegration on turned surfaces demonstrated comparable bone formation to traditional roughened surfaces. A recent study comparing (among others) machined surfaces to SLA surfaces demonstrated a clinically insignificant reduction in BIC of 1.7% at 4 weeks and 4.7% at 6 weeks.

Makary C, Menhall A, Lahoud P, An HW, Park KB, Traini T. Nanostructured Calcium-Incorporated Surface Compared to Machined and SLA Dental Implants-A Split-Mouth Randomised Case/Double-Control Histological Human Study. *Nanomaterials (Basel)*. 2023 Jan 16;13(2):357. doi: 10.3390/nano13020357. PMID: 36678110.

## ADJUSTING THE MACRO DESIGN

Authors Lozano-Carrascal et al. (2016) found that the marginal reduction in short-term Bone-Implant-Contact (BIC) needs to be weighed against the long-term benefits of a machined surface in controlling peri-implantitis.

The authors found that since the manufacturer had compensated for potential implications on primary stability by using a more aggressive macro design, it was possible to preserve mechanical stability while secondary osseointegration is achieved. By using tapered designs, it has shown a positive difference in ISQ of approximately 15 Ncm and a positive difference of approximately 2 Ncm in insertion torque.

Lozano-Carrascal N, Salomó-Coll O, Gilabert-Cerdà M, Farré-Pagés N, Gargallo-Albiol J, Hernández-Alfaro F. Effect of implant macro-design on primary stability: A prospective clinical study. *Med Oral Patol Oral Cir Bucal*. 2016 Mar 1;21(2):e214-21. doi: 10.4317/medoral.21024. PMID: 26827067; PMCID: PMC4788802.



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## **REDUCED PERI-IMPLANTITIS**

As long ago as 2005, systematic reviews have shown that the use of a turned surface did not affect long-term osseointegration but showed a reduction in peri-implantitis of 20% over 3 years.

Esposito M, Coulthard P, Thomsen P, Worthington HV. The role of implant surface modifications, shape and material on the success of osseointegrated dental implants. A Cochrane systematic review. Eur J Prosthodont Restor Dent. 2005 Mar;13(1):15-31. PMID: 15819145.



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## **LESS BIOFILM**

In cases where the implant surface becomes exposed to the oral cavity, implant/abutment materials with a low surface roughness have consistently shown less biofilm accumulation at both early and mature stages.

Herrmann H, Kern JS, Kern T, Lautensack J, Conrads G, Wolfart S. Early and mature biofilm on four different dental implant materials: An in vivo human study. Clin Oral Implants Res. 2020 Nov;31(11):1094-1104. doi: 10.1111/clr.13656. Epub 2020 Sep 29. PMID: 32871610.





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## CONCLUSION

As always, the factors of patient selection and surgical and prosthetic planning will ultimately dictate the success of the restoration, however the use of MSC implants could potentially increase the chance of a successful prognosis.



### DAB Kontakt



**Ninni Teljstedt**  
Försäljningschef Kirurgi,  
Distriktsansvarig Säljare  
Förbrukning  
Tel: 0708-59 34 40



**Tommy Holmén**  
Senior Advisor  
Tel: 0709-51 53 10

**DAB Dental**  
Tel: 08 506 505 00

