Clinical and Laboratory Analisys of the Macro and Microtexturiuzed Surfaces of Dental Implants

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Studies related to dental implants are increasingly seeking better integration between the implant and the bone. Titanium and its alloys are known to be the main metals used in dental implants due to its biocompatibility. In addition, the surface texture and design are factors that contribute effectively to the osseointegration of titanium and alloys implants. The aim of the present study was to assess the influence of the texturing surface of dental implants on the bone formation in rabbit tibiae. In this study the implant-bone interface was evaluated in two different types of surface texturing using scanning electron microscopy (SEM).

For this study, a total of 24 cylindrical internal hexagon implants, manufactured by the company *Implacil* - Dental Material (Implants Debortoli), of which 12 had their surface macrotexturized by blasting with particles of titanium oxide (**Group 1**) , and the other 12 had their surface microtexturized by concentration/time/temperature acid control (**Group 2**). These implants were installed in six adult New Zealand rabbits obtained from Federal University of Santa Maria (UFSM). The study was approved by the Ethics Committee of UFSM.

Eight weeks after the implantation, the animals were sacrificed and the implants removed with a small portion of bone and set-based in a solution of formalin for 3 days. In sequence the bones, with the implants, were dehydrated in alcohol and included in special resin for microscopy. Cuts were made in a microtome to obtain thin slices. The images obtained by scanning electron microscopy (SEM) were analyzed and the groups 1 and 2 compared to verify the contact areas of the implant surface with bone tissue.

We observed that the control of texturing in the implant surface is possible with conditioning use of acids, leaving the waste disposed uniformly and disposing the sandblasting. Beyond that, we observed that the different analyzed areas of the bone contact with the surface of the implants promoted a better ossification in the models where we had a more uniform surface (microtexturized surface), promoted by the control of the texturing.

References

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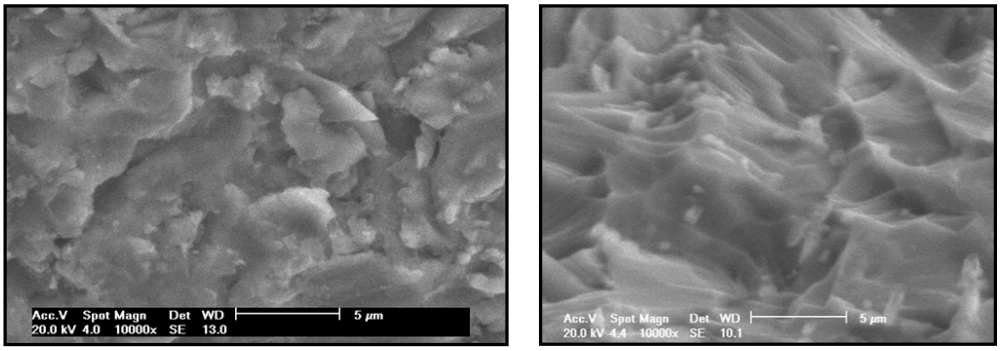
FIG. 1. Topographic analysis of the surface by SEM (a) surface macrotexturized **Group 1** (b) surface microtexturized **Group 2**.



(a) (b)

FIG. 2. Samples of **Group 1**. Few cortical osseous neoformation can be observed on this macrotexturized surface (yellow arrow).

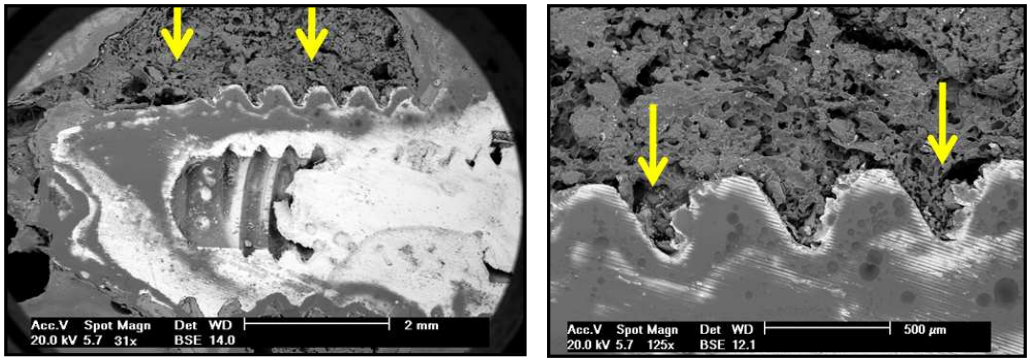


FIG. 3. Samples of **Group 2**. Intense cortical osseous neoformation can be observed on this microtexturized surface (yellow arrow).