Surface morphology analysis of dental implants following insertion into bone using scanning electron microscopy: a pilot study.

Dental implants have become essential in reconstructive dentistry. Primary healing is determined by the design of their surface. The aim of this pilot study has been to investigate whether the morphology of the sandblasted and acid-etched (SLA®) surface remains unaffected after the insertion process into human bone. Two edentulous-atrophied human jaw specimens were used. Six brand new Straumann Standard RN implants with an SLA® surface and having a diameter of 3.3 mm and a length of 12 mm were inserted. Another two implants of the same type, but not inserted into bone, served as a reference. After explantation, the four implants were cleaned in an ultrasonic bath and two were left uncleaned. All eight implants were inspected by SEM for qualitative surface changes. All four implants showed relevant changes of the topography at the apical thread flanks. The non-cleaned implants showed an almost complete coverage of the surface by a honeycomb-like structure, consistent with bone residues. The reference implants showed no changes. The results indicate that, for the osseointegration of dental implants, subtractive modifications of implant surfaces are less important than the reestablishment of the destroyed TiO2 layer. Further studies of other implant surfaces are required to verify the
present results.

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