

Implant Surgery Using Short Implants with Sintered, Porous Surface

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In conjunction with the clinical parameters, the implant surface has a considerable effect on the integration of the implant within the surrounding bone tissues. The use of short, root-shaped implants with porous surface is a predictable treatment method for an implant restoration even in difficult anatomical situations. Our case reports document the very effective function of short (5 mm and 7 mm) sintered press-fit implants with porous surface. In comparison with the majority of screw-type implants^{4,6,9} the sintered implants with porous surface also in short lengths in general show a good performance. This is probably the result of their integration mechanism by ingrowth of the bone into the porous surface.^{8,3}

The Endopore Implant System

A number of surface treatments is available for implants which create a rough surface and thereby enlarge the surface for contact with the bone. The additional porous multilayer of spherical titanium

alloy particles of a defined size enables the ingrowth of the bone into the existing rough structure of the surface. A three-dimensional mechanical bond between bone and implant is achieved (Fig. 1). This mechanism of osseointegration is unique and only possible with a porous surface and was used in orthopedics for iliac endo-prosthetics in early 1970. All other types of surface treatment have only minimal or no porosities, and the implants are stabilized only by friction.⁸ The Endopore implant (Oraltronic/Sybron Implant Solutions, Bremen) was developed in 1983 at the University of Toronto and shows a well-defined surface topograph.⁷ The aim of this development was to create a predictable implant anchorage by bone ingrowth into a porous surface which was produced by a sintering process. The implant consists of a titanium alloy (TiAl6V4), has a conical root shape and achieves primary stability by press-fit. The multilayer generates a significant increase in the surface due to multiple undercuts (Fig. 2) and provides a three-dimensional mechanical connec-

Fig. 1 Histological specimen of an implant with porous surface 18 months post-op. The majority of surface porosities is filled with ingrowing bone substance (magnification 25x).

Fig. 2 Comparison of surfaces: tooth, machined, Endopore implant.

