Documentation on OsseoSpeed™
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OsseoSpeed™ – more bone more rapidly

OsseoSpeed™ was launched in the fall 2004 and is a further development of the moderately roughened (grit blasted with titanium dioxide particles) titanium surface TiOblast™. OsseoSpeed gains its additional surface characteristics via a chemical (fluoride) treatment and a slight topographic modification of the TiOblast surface [1, 2]. Incorporation of small amounts of fluoride ions in the oxide layer, a slight increase on the micrometer scale in surface roughness and the appearance of a nanoscale topography have been reported for the OsseoSpeed surface [3–7].

All but one 8 *in vitro* and animal experiments indicate that the OsseoSpeed surface leads to increased bone formation and stronger bone-to-implant bonding [2, 9–22] at shorter healing times than TiOblast or machined titanium surfaces [2, 14, 23]. The mechanisms for the faster osseointegration have been thoroughly investigated with emphasize on the molecular level. Enhanced osteoblast differentiation [3, 13, 24–29], platelet activation and thrombogenic properties of the fluoride-treated surface have been reported [9, 30].

The OsseoSpeed surface characteristics and properties have been evaluated in numerous review articles revealing positive bone response [31–34]. Results from the extensive OsseoSpeed clinical study program show good functionality [35–53], and predictable and maintained marginal bone levels with a mean marginal bone loss below 0.3 mm after various times of follow-up [54–58]. The maintained marginal bone levels are confirmed in prospective studies with five years of follow-up [59, 60]. There is no significant dip in Implant Stability Quotient values [61] traditionally seen at implants 2–6 weeks after installation. This is interpreted as a continuous gain in osseointegration and stability. Published data shows that the OsseoSpeed implant can be safely used with a reported for survival rate ranging from 94.5% to 100%, including the use of immediate loading protocol [52, 55, 58, 62–67] even in the atrophic edentulous maxilla [68, 69], in sinus lifted maxillary posterior jaw sites [70–73] and for immediate installation in extraction sockets [64, 74–81].

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