

Healing period of titanium implants with sandblasted and acid-etched surface

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Objective

The aim of this multicenter, prospective, randomized controlled trial was to evaluate the healing period of sandblasted and acid-etched (SLA) titanium screw shaped implants in comparison to sandblasted (SL) implants. (WIN SIX L.T.D. London).

Methods

SUBJECTS: 106 females and 70 males; mean \pm SD age 41.8 \pm 11.2; recruited in a five-year period (1995-1999) by three dental practices.

IMPLANTS: 235 SLA and 241 SL randomly placed in the maxilla and mandible of patients who underwent two-stage non-immediate surgery.

BONE RESPONSE: was examined at 1, 2, 3, 4 and 6 months after placement of implants evaluating:

- peri-implant radiolucency (by standardized periapical radiographies)
- implant stability (by Periotest).

Results

Figure 3. Bone response at month 2 (absence of radiolucencies and Periotest > 0) according to the implant surface and class of bone density. SLA vs SL. SL: $p < 0.0001$ for class I; $p < 0.0001$ for classes II, III and IV.

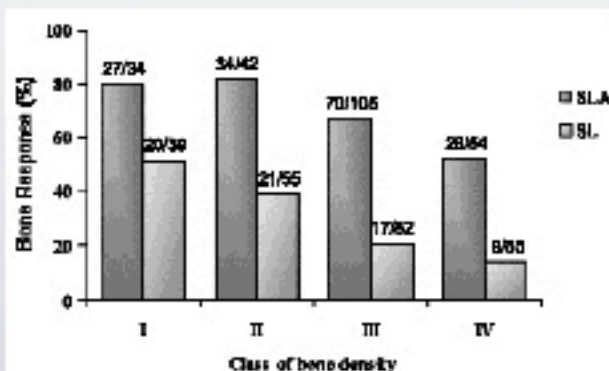


Figure 1. Scanning electron microscope (SEM) 1000x magnification of SL surface

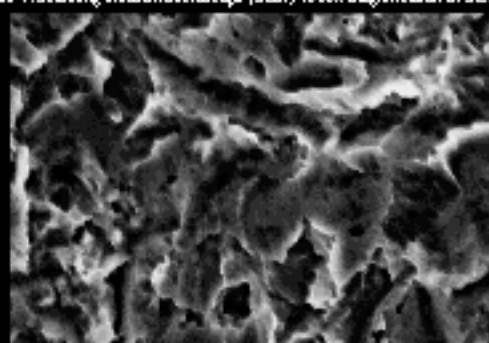


Figure 2. Scanning electron microscope (SEM) 1000x magnification of SLA surface

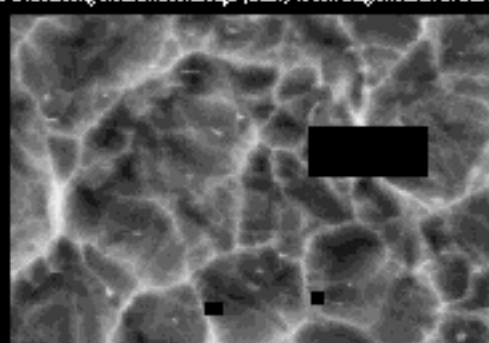


Table 1. Bone response (absence radiolucencies) in two groups of implants

Month after placement of implant	SLA (n=233) n (%)	SL (n=241) n (%)	p †
1	115 (48.9)	35 (14.5)	<0.0001
2	159 (67.6)	67 (27.8)	<0.0001
3	193 (82.1)	121 (50.2)	<0.0001
4	222 (94.5)	155 (64.3)	<0.0001
6	235 (100)	241 (100)	1

† SLA vs. SL, overall comparison $p < 0.001$ (Fisher's test).

‡ Chi-square test.

Multiple Cox regression analysis showed that the SLA surface improved the bone response during the healing period as compared to the SL surface ($p < 0.001$).

Conclusion

Titanium screw shaped implants with SLA surface showed a better bone response during healing period as compared to the SL surface.