Clinical, radiographic and microbiological comparison of dental implants with laser microtextured versus smooth/moderately rough collar

Disco
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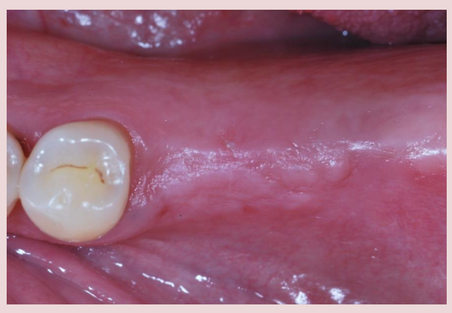
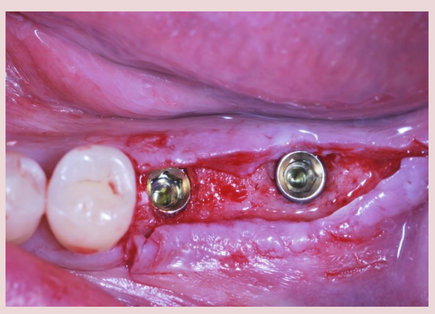
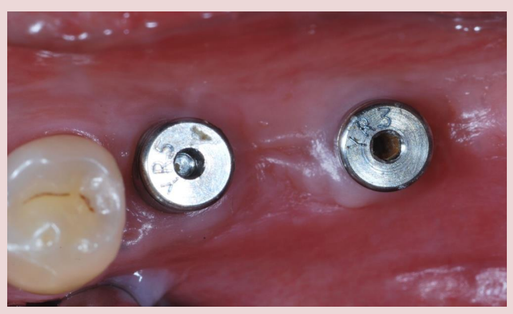
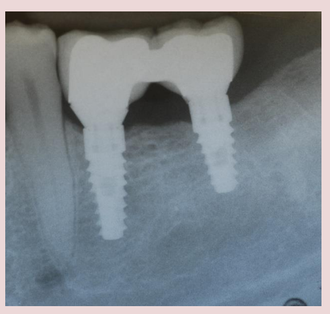
Aim: The aim of the present study was to compare the clinical, radiographic and microbiological parameters of Laserlok® (test) to RBT® (control) dental implants.

Material and Methods: 17 patients were enrolled and 34 implants inserted. According to randomization lists each patient received a test and control implant in two different sites. All the implants were placed with a non submerged, one stage surgical approach (figA-D). Three months after the implant placement, pick-up impressions were performed and the fixtures were restored with Laserlok® on test sites and fully machined abutments on control sites (Fig.E). The peri-implant status was assessed by PD, mPI and mGI. Standard periapical radiographs were taken at the implant surgery and after six months. Six months following surgery subgingival sampling with paper points for microbiological analysis (Real Time PCR) was also performed. Total counts of the following potential pathogenic bacteria were investigated: Aggregatibacter actinomycetmcomitans, Porphyromonas gingivalis, Prevotella intermedia, Treponema denticola. Statistical analysis was carried out by unpaired t-test ($p<0.05$).



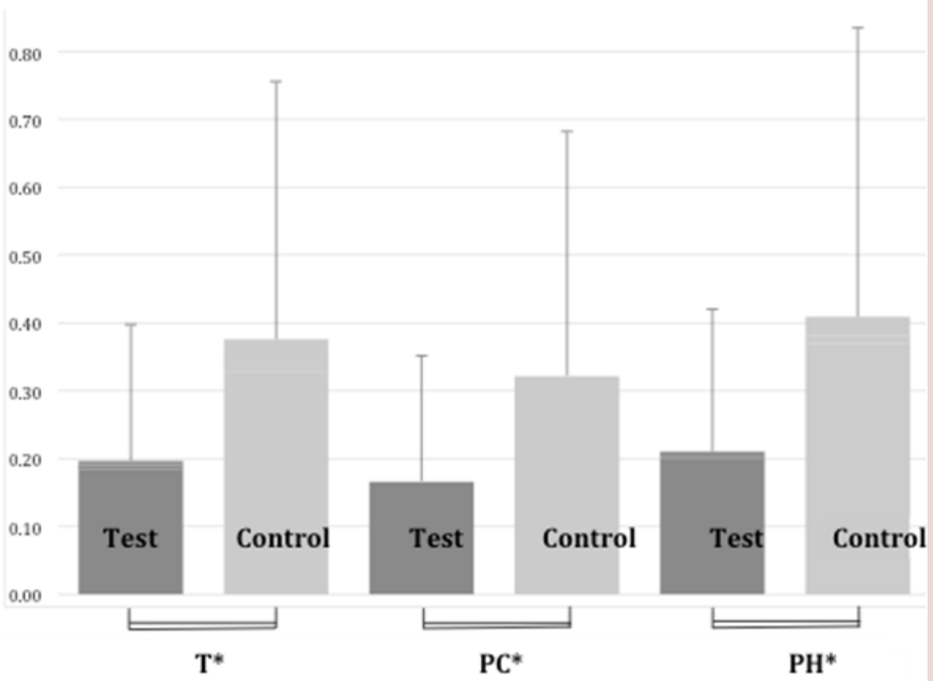
Results: After six months all the clinical peri-implant parameters were healthy (Tab. I). Bone remodeling was statistically lower on test versus control implants (p=0.001) (Tab. I). No significant differences were observed in the microbiological total and single bacterial species profile on test versus control peri-implant tissues (p=0.35) (Tab. II).

Tab: I Mean PPD (mm), mGI and mPI scores of test and control groups

	Clinincal measurements and Indices (mean ±SD)								
	PPD			mGI			mPI		
Study Groups	T	C	TT	T	C	TT	T	C	TT
Total (17)	1.31±0.51*	2.66±0.83	1.51±0.71	0.29±0.58	0.47±0.71	0.52±0.62	0.29±0.58	0.47±0.71	0.52±0.62
PC (6)	1.61±0.58**	2.84±1.0	2.25±0.6	0.0±0.0	0.5±0.54	0.33±0.51	0.0±0.0	0.16±0.40	0.66±1.03
PH (11)	1.72±0.4*	2.62±0.7	1.12±0.2	0.45±0.68	0.45±0.82	0.63±0.67	0.45±0.68	0.54±0.82	0.36±0.80

T = laser micro-textured implants, C = smooth/moderately rough implants, TT = adjacent tooth,
PC=-Periodontally compromised patients, PH= Periodontally healthy patients
*Significant (P<0.05)
** Highly significant (P<0.01)

Tab. II: Mean radiographic MBL (mm) scores of study groups



Test = laser micro-textured implants, Control = smooth/moderately rough implants, T= Total (17), P= Periodontally compromised patients (7), PH= Periodontally healthy patients (9).
*The differences between Test and Control groups were statistically significant (p<0.05)

Tab.III: Subgingival microbiota along T (laser micro-textured), C (smooth/moderately rough) implants, and TT (adjacent tooth) in all patients analyzed using RT-PCR

Total patients = 17			
TT	T	C	
Total Bacterial Load	0.9 x10³ (SD 1.8)	1.9 x10³ (SD 2.8)	2.1 x10³ (SD 2.9)
Aggregatibacter actinomycetemcomitans	<100 (SD 0)	<100 (SD 0)	<100 (SD 0)
Porphyromonas gingivalis	1.9x10³ (SD 2,5)	2.5 x10³ (SD 2.5)	3.7 x10³ (SD 3.9)
Prevotella Intermedia	0.5 x10³ (SD 1.59)	2.3 x10³ (SD 3.6)	1.5 x10³ (SD 2.3)
Treponema Denticola	0.8 x10³ (SD 1.7)	1.4 x10³ (SD 2.6)	1.7 x10³ (SD 2.5)
Tannerella Forsythensis	0.3 x10³ (SD 0.8)	1.4 x10³ (SD 2.4)	2.4 x10³ (SD 3.2)

Mean values expressed in Geq/ml
The differences between groups were not statistically significant.

Conclusions: Within the limits of this study the use of dental implants with laser microtextured collar configuration may help maintaining excellent conditions of peri-implant hard and soft tissues without a higher accumulation of potential pathogenic bacteria. A significant lower bone remodeling was observed in test versus control implants.

Di chi sara' il mondo di domani?
Di chi oggi canta in coro.

17 GIUGNO 2015
IL Di.S.C.O. SI RACCONTA