

# IMMEDIATE LOADING OF SOLITARY ASTRATECH OSSEOSPEED™ IMPLANTS IN HEALED RIDGES OF SMOKERS AND NON-SMOKERS.

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## BACKGROUND

Loading solitary implants immediately after implant placement in a healed ridge has shown promising results in non-smokers (Turkyilmaz et al 2007). Smoking, however, has a negative impact on implant survival with machined surfaces especially in the maxilla and periodontal healing is often impaired. A meta-analysis published by Hinode et al. (2006) revealed a significant relationship between smoking and the risk of osseointegrated implant failure, more particularly those implants located in the maxillary arch.

## AIM

To compare the clinical outcome of Osseospeed™ implants installed in healed ridges in smokers and non-smokers when loaded with a provisional single tooth in the aesthetic zone of the maxilla immediately after surgery.

## MATERIAL AND METHOD

Outcome of implant survival and bone loss was evaluated in 21 non-smokers (Caucasians, 12 males and 9 females, mean age 40 SD 18,1) and 10 smokers (> 10 cigarettes a day, Caucasians, 8 males and 2 females, mean age 36 SD 9,6). Osseospeed™ implants were installed in healed ridges with direct abutments and a temporary acrylic crowns were cemented out of direct occlusion (fig. 1-5). Bone levels were measured at implant placement, after 1 month, after 3 months (time of final restoration) and after 6 months.



Fig. 1. Resin-bonded bridges in a 25-year old patient with a poor oral hygiene



Fig. 2. Osseospeed™ implant and direct abutment for temporary crown



Fig. 3. Implants with full-ceramic restorations on lateral incisors



Fig. 4. Radiographs 1 month after implant placement with direct abutments and temporary crowns

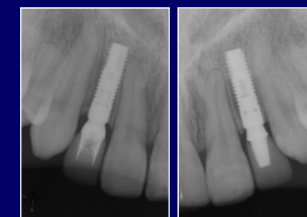


Fig. 5. Radiographs 6 months after implant placement and immediate loading (implant 12: change of direct abutment to TI-design abutment)

## RESULTS

All 31 implants were clinically stable and reported with healthy tissues after 6 months.

The mean marginal bone level at implant placement was higher for non-smokers (0,31mm SD 0,67) than for smokers (0,04mm SD 0,11) (table 1). A box plot for both groups is shown (fig. 6) with one outlier in the group of smokers. One of the reasons for excessive bone loss around that implant were cement remnants (fig.7) which were surgically removed after 3 months.

The mean change in marginal bone loss from baseline marginal bone level at implant surgery to 6 months was 0,68mm (SD 0,97) for non-smokers and 0,56mm (SD 0,88) (table 2) for smokers which was not statistically different (P=0,65) (Mann-Whitney U-test).

## CONCLUSION

These short term data indicates a 100% implant survival and minimal bone loss after 6 months of loading irrespective of smoking habits.

Data were compiled from a multicenter study initiated by Astra Tech and an investigator initiated study (Data from one centre only).

## References:

- Turkyilmaz I, Avci M, Kuran S, Ozbek EN. A 4-year prospective clinical and radiological study of maxillary dental implants supporting single-tooth crowns using early and delayed loading protocols. Clin Implant Dent Relat Res. 2007 Dec;9(4):222-7.  
 Hinode D, Tanabe S, Yokoyama M, Fujisawa K, Yamauchi E, Miyamoto Y. Influence of smoking on osseointegrated implant failure: a meta-analysis. Clin Oral Implants Res. 2006 Aug; 17(4):473-8. Review.

Group	Time	N	Mean	Std. Deviation
smoking	implant placement	10	0,04	0,11
	1 month after IP	10	0,34	0,58
	3 months after IP	6	0,64	1,15
	6 months after IP	10	0,60	0,88
non-smoking	implant placement	20	0,31	0,67
	1 month after IP	18	0,88	1,22
	3 months after IP	18	1,10	0,95
	6 months after IP	21	0,98	0,90

Table 1. Mean marginal bone level (mm) for smokers and non-smokers

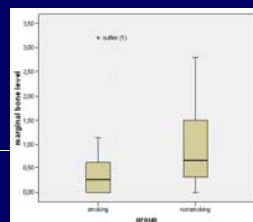


Fig. 6. Boxplot of marginal bone level (mm) 6 months after implant placement for smokers and non-smokers



Fig. 7. Excessive bone loss 3 months after implant placement due to cement remnants. Cement was surgically removed.

Group	Time	N	Mean	Std. Deviation
smoking	1 month	10	0,31	0,49
	3 months	6	0,58	1,01
	6 months	10	0,56	0,88
non-smoking	1 month	17	0,58	1,10
	3 months	17	0,93	0,96
	6 months	20	0,68	0,97

\*P=0,65, not significantly different (Mann-Whitney U-test)

Table 2. Mean bone loss (mm) 1 month, 3 months and 6 months from baseline marginal bone level at implant placement for smokers and non-smokers