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The Effect of Soft Tissue Augmentation on Clinical Outcomes in Implants Placed in Healed Mandibular Sites with Thin (<1.5 mm) Buccal Bone

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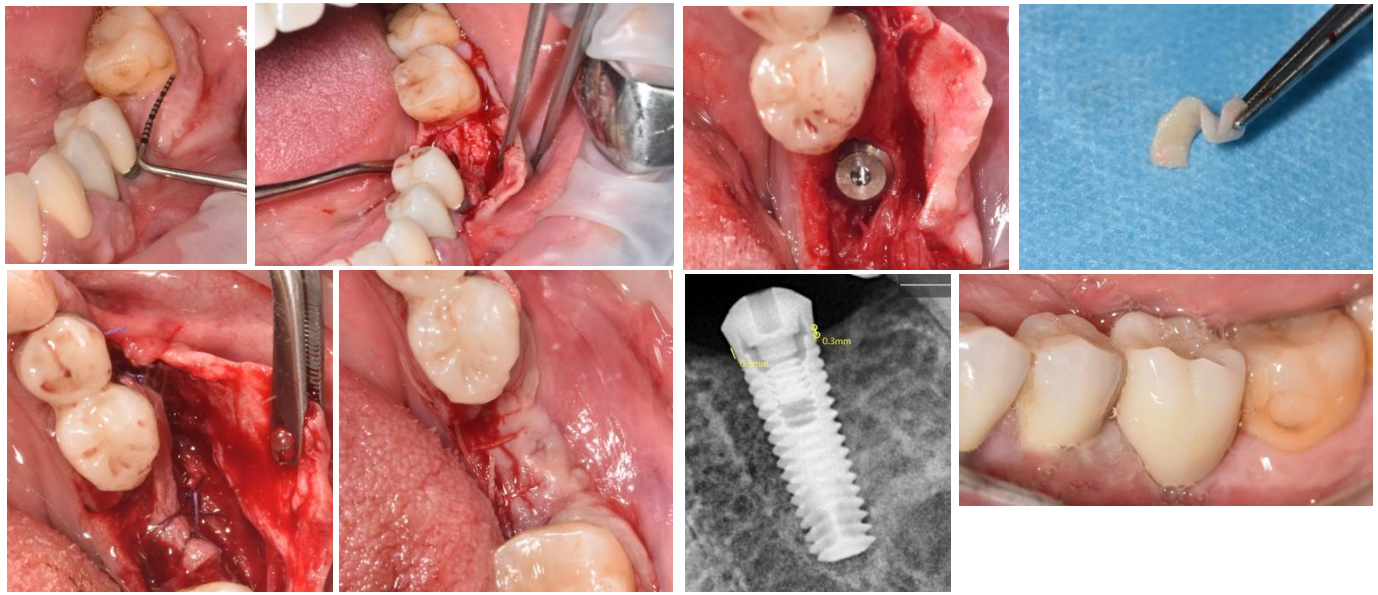
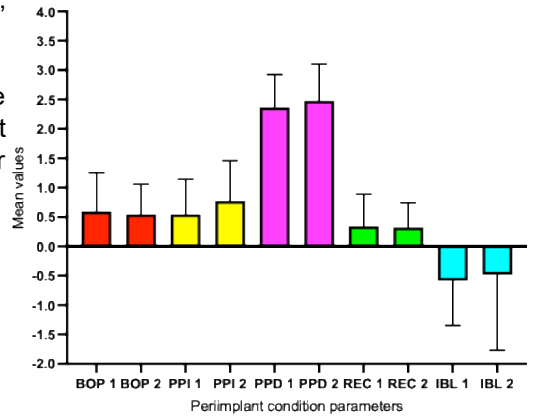
Background & Aim: The long-term stability of osseointegrated dental implants is highly dependent on the anatomical condition of the hard and soft tissue, especially on the buccal side. The literature has so far suggested minimal buccal bone thickness of 1.5-2 mm for long-term implant stability. The aim of this prospective study was to evaluate the clinical outcomes of implants placed in healed implant sites in the lower jaw with buccal bone thinner than 1.5 mm after implant placement and simultaneously augmented merely with soft tissue graft.

Methods: Twenty-three soft- tissue level implants (TRI Octa, Swiss) were placed in healed mandibular implant sites following the principles of the mucogingival approach. All implant sites presented buccal bone width <1.5 mm after implant placement. Hence the soft tissue at the buccal implant side was augmented with de-epithelized gingival graft from the palate in a bilaminar fashion, without any bone augmentation procedures. The evaluated clinical outcomes were bleeding and plaque scores, probing depth, marginal tissue recession and interproximal bone levels at one and two years post implant loading with screw-retained zirconia restorations.

Results: All implants were successfully osseointegrated. All implant sites presented low bleeding and plaque scores, physiological probing depths, minimal of inter-proximal bone loss and no marginal tissue recession at the two short-term timepoints. No statistically significant difference was found between the mean values of clinical parameters ($p<0.05$), except for the interproximal bone level values.

Conclusions: Implants may be clinically stable in an environment with buccal bone thinner than 1.5 mm provided that soft tissue is thick and healthy. The bilaminar soft tissue augmentation with mucogingival approach may a viable treatment option for providing implant stability in sites with thin buccal bone.





Parametric t-test comparisson between clinical outcomes

parameter	Mean value	Difference between means ± SEM	95% confidence interval	R squared (eta squared)	P- value P<0.05
BOP 1 BOP 2	0,5909 0,5455	-0.04545 ± 0.1788	-0.4071 to 0.3161	0,001641	0,2280
PPI 1 PPI 2	0,5455 0,7727	0.2273 ± 0.1936	-0.1635 to 0.6180	0,03177	0,5267
PPD 1 PPD 2	2,364 2,477	0.1136 ± 0.1792	-0.2479 to 0.4752	0,009488	0,6138
REC 1 REC 2	0,3409 0,3182	-0.02273 ± 0.1469	-0.3191 to 0.2737	0,0005698	0,2641
IBL 1 IBL 2	-0,5864 -0,4818	0.1045 ± 0.3189	-0.5390 to 0.7481	0,002553	**0,0206**

BOP- bleeding on probing, PPI- plaque index, PPD- pocket probing depth, REC – recession depth, IBL- interpoximal bone loss

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