

## 15944 POSTER WITH ORAL PRESENTATION CLINICAL RESEARCH - SURGERY

### Factors affecting implant failure and crestal bone loss. A study of 220 implants placed by students

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**Background:** Scientific literature demonstrated that implant therapy is highly reliable. Contributing factors to failures and marginal bone loss (MBL) have been documented. However, most of our knowledge stems from implants placed by experienced teams in university settings with strict selection criteria or in private offices. Studies on implants placed by inexperienced clinicians like students in non-selected patients are scarce; they should be more representative of the daily reality of implant therapy.

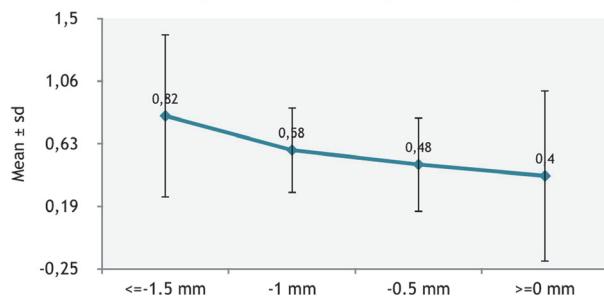
**Aim/Hypothesis:** Objective of this study was to identify contributing factors to implant failure and MBL of C1 and V3 implants (MIS) placed by inexperienced post-grad. students in the attending flow of patients. Contributing variables were related to the patient, the local site, surgical and prosthetic protocols.

**Material and Methods:** 130 C1 and 90 V3 implants Ø 3.3–5 × 8–16 mm long were placed in 99 patients. All surgeries were performed by inexperienced postgraduate students under supervisor attention. After 3 months of healing, the prosthetic steps were carried out. Failures and MBL were investigated at the 1 year recall after prosthesis delivery. Variables were divided into factors related to the patient (gender, age, smoking, periodontal disease, diabetes, oral hygiene), implant items (type, diameter, length, prosthetic abutment height and type), local site (jaw, site number, soft tissue thickness, biotype, amount of keratinized mucosa (KM), pocket depth (PD) at follow-up, surgical protocol (implant placement depth, bone sinus grafting, healing protocol, insertion torque), prosthetic variables (screw-retained, cemented, crown implant ratio). A generalized linear model and generalized estimating equations were used to identify contributing factors to implant failure and MBL.

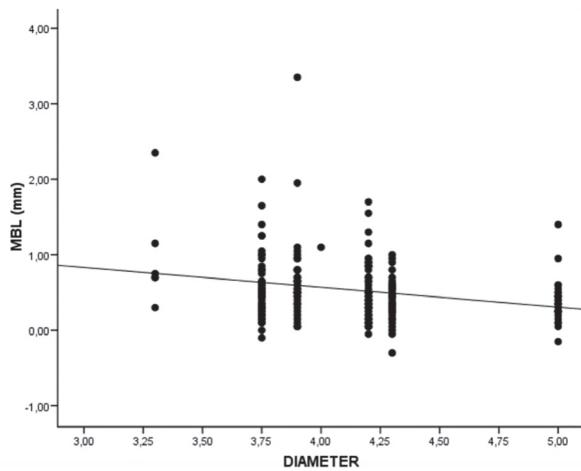
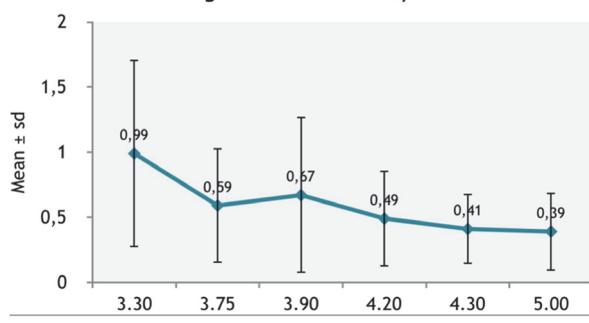
**Results:** 8 early failures were recorded, no implant failed after loading; survival rate was 96.4%. No variable significantly affected implant failure. Implants placed in perio. patients were at higher risk (OR = 5.6) but the difference was not statistically significant (NS, P = 0.11). Overall mean MBL was 0.53 mm, difference between C1 and V3 implants was NS (P = 0.11); difference between Mx (0.60 mm) and Md (0.46 mm) was NS (P = 0.05). Several variables affected MBL- gender (female 0.60 mm > male 0.44 mm, P = 0.02), implant diameter (MBL Ø3.3 = 0.99 mm, MBL Ø5 = 0.39 mm, P = 0.001), depth (d) of implant placement (for d = 1.5 and 2 mm, MBL = 0.82 mm; for d = 1 mm, MBL = 0.58 mm; for d = 0 mm, MBL = 0.40 mm, P = 0.003), KM height (when no KM MBL = 0.73 mm, any added mm of KM up to 4 mm decreased MBL by 0.06 mm, P = 0.037), PD at follow-up (MBL associated with deeper PD, 0.12 mm more MBL for every mm of PD > 3 mm, P = 0.034). In contrast, thickness of gingiva, biotype, prosthetic abutment height, abutment type MUA vs Ti-base did not affect the MBL.

**Conclusion and Clinical Implications:** The failure rate of C1 and V3 implants placed by inexperienced students was as low as 3.6%. A high survival rate of 96.4% was achieved, similar to published data from experienced practitioners. No contributing factor was identified for implant failure. Several factors have been shown to contribute to MBL; they were- gender (female), implant diameter, depth of implant placement, presence of KM, PD depth. In contrast, thickness of gingiva, prosthetic abutment height were not found to affect MBL.

## Marginal Bone Loss by Implant depth



## Marginal Bone Loss by Diameter



## Marginal Bone Loss by KM

