



# Vertical ridge augmentation (VRA) with Ti-reinforced d-PTFE membranes or Ti-meshes and collagen membranes: 3-year results of a randomized clinical trial Lucia Tedeschi<sup>1</sup>, Sofia Bettini<sup>2</sup>, Antonino Fiorino<sup>3</sup>, Alessandro Cucchi<sup>4</sup>

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## **BACKGROUND AND AIM**

The efficacy and the reliability of GBR have been demonstrated in many studies in 40 patients were randomly assigned for treatment using either Ti-reinforced d-PTFE the literature and it represents a predictable technique for vertical ridge membrane (group A) or titanium mesh covered by cross-linked collagen membrane augmentation. However, there are only a few randomized clinical trials in the literature reporting peri-implant bone levels and crestal bone loss after bone autogenous bone and bone allograft was used. The following peri-implant augmentation procedures. No studies are currently available evaluating the periimplant soft tissue parameters, after bone reconstruction procedures. The present RCT aimed to evaluated hard and soft tissue parameters around implants placed in

## **METHODS AND MATERIALS**

(group B) for vertical ridge augmentation. In both study groups a 50:50 mixture of parameters for bone and soft tissues, were evaluated: Probing Pocket Depth (PPD), Modified Plaque Index (mPI), Bleeding On Probing (BoP), Modified Gingival Index (mGI), Thickness of Keratinized Tissue (tKT), Width of Keratinized Tissue (wKT),

augmented posterior mandible, comparing Ti-reinforced d-PTFE membranes with Ti-Fornix depth (FD), Peri-implant Bone Level (PBL), Interproximal Bone Peaks (IBP), meshes covered with collagen membranes, after 3 years of follow-up. Marginal Bone Loss (MBL), Interproximal Bone Loss (IBL).



#### **RESULTS AND CONCLUSION**

In total 28 patients with 79 implants were evaluated after 3 years of follow up. Soft tissue augmentation was performed in 21 patients with 56 implants. The mean value of MBL was 0.70 mm (A = 0.73 mm; B = 0.71 mm), mean IBL was 0.54 mm (A = 0.64 mm; B = 0.40 mm), mean PBL was 0.82 mm (A = 0.72 mm, B = 0.92 mm), mean IBP was 0.64 mm (A = 0.61 mm B = 0.66 mm), mean tKT 4.51 mm (A = 4.31 mm; B = 4.73 mm), mean wKT 3.67 mm (A = 3.49 mm; B = 3.86 mm), mean FD was 7.44 mm (A = 7.26 mm; B = 7.64 mm), mean PPD was 2.02 mm (A = 1.94 mm; B = 2.11 mm), mean BoP was 18.16 % (A = 17.41%; B = 19.02%). The treatment with meshes resulted not inferior and clinically similar to PTFE. The medium-term results of this randomized non inferiority clinical trial showed that in the posterior mandible, VRA using both techniques provides stable peri-implant bone levels up to 3 years. The study confirmed the importance of a correct soft tissue management and a strict professional oral hygiene protocol to provide peri-implant health over time.

Titanium-meshes treatment better

PBL and IBP mean values: Overall measurements

Non-Inferiority Analysis (Base Line VS 3 Years Follow Up)

Titanium-meshes treatment worse

2.5



PBL mean values: Comparison between study groups



IBP mean values: Comparison between study groups







#### Radiographic evaluations (baseline, 1 year, 3 years)

