

Augmentation Using the Cortical Lamina Technique: A Clinical, Radiographic and Histological Prospective Study

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Introduction:

Bone discrepancies are met with different regeneration materials and techniques all aiming at restoring the required width or height for implant placement. A new cortical collagenated porcine membrane, the cortical lamina (Osteobiol Lamina, Tecnos, Giaveno, Italy), has provided promising results and appeared to fulfil the criteria for a successful horizontal and vertical bone regeneration. The aim of this study is to clinically, radiographically and histologically evaluate the lateral bone augmentation of the Cortical Lamina using equine-derived bone particles (Genos)

Materials and Methods:

Twelve healthy patients with partially or totally edentulous ridges (< 4mm of width) who presented for implant placement were included. The selected area was augmented using equine bone and the cortical lamina and immobilised using fixation screws (Pro-fix Precision Fixation System). Approximately six months later, at implant placement, a biopsy was taken and histological examination was made. CBCT scans were made before bone augmentation and implant placement, and measurements were made at the future implant sites. The number of implants placed as well as their diameters and torques were recorded.

Results:

Re-entry was done at 6 months, in all of the cases the cortical lamina was still present and removed with flap elevation. 27 implants were placed in 13 patients, ranging between 3.3 and 4.8mm. CBCT superimposition showed a mean augmentation in ridge width of 108% at the site of implant placement.

Conclusion and discussion:

The use of the cortical lamina in combination with equine-derived bone particles resulted in sufficient bone width evaluated clinically by adequate implant placement and radiographically by CBCT superimposition. Histological results showed vital bone formation revealed by the presence of microvessels and osteoclast activity. There seems to be promising results for this augmentation technique, however, randomized controlled clinical trials are needed to evaluate its superiority compared to other conventional regeneration techniques.