Ribose-Based Cross-linked Scaffold for Correction of Alveolar Ridge Defects

Bruna Tanello, D.D.S and Rodrigo Neiva, D.D.S, M.S.
University of Florida College of Dentistry - Department of Periodontology

Abstract

Alveolar ridge depressions often create and esthetic concern before and after implant placement, even when enough bone is present for adequate implant placement.¹ These defects may cause dissatisfaction with implant treatment, specially in patients with high smile line.² To overcome this clinical challenge, the use of bone grafts, soft tissue grafts, and even retention of residual roots have been suggested as methods to create more esthetic alveolar ridge contours. Ribose-based cross-linked collagen scaffolds have the capacity to not only correct these deficiencies, but to also stimulate additional bone formation and soft tissue thickening.

Background and Aim

The aim of this clinical observation was to evaluate the long-term stability of Ribose-based cross-linked collagen absorbable scaffolds for correction of buccal alveolar depressions in the esthetic zone, after dental implant placement.

Methods and Materials

Eighteen consecutive patients were treated for buccal ridge deficiencies with Ribose-based cross-linked collagen (Ossix Volumax, Datum Dental) scaffolds via full-thickness flap elevation and placement of the scaffold either as a bifold or a trifold. Flaps were secured with interrupted sutures. Patients were restored at 12 weeks and were followed for up to 18 months.³ CBCT imaging was obtained at 12 months to confirm the remodeling of the scaffold and to evaluate for bone fill over the previously existing defects. All patients were restored with custom titanium abutments (Atlantis, Dentsply Sirona). All patients were satisfied with the esthetic outcome and reported minimum to no discomfort after surgery.

Results

All implants experienced absence of symptoms post-treatment. Minimal to no discomfort was reported by all treated patients. Clinically, all implants appeared to be stable and continue to be in function. CBCT evaluation at 12 months confirmed these findings. Signs of bone fill and defect resolution were observed in 14 cases. Treated sites experienced a mean gain of buccal plate thickness of 2.68mm (Range: 1.4 mm – 3.8 mm) All patients were satisfied with treatment outcomes.

Conclusions

This clinical observation demonstrated that Ribose-based cross-linked collagen scaffolds are a viable option for treatment of alveolar bone depressions causing esthetic concern after implant placement. This procedure proved to be minimally traumatic and to provide stable long-term outcomes. Future studies should evaluate the long-term success of this treatment option.

References

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