

SCIENTIFIC PAPERS

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WITH A PREHYDRATED
CORTICOCANCELLOUS BONE GRAFT:
A CLINICAL, RADIOGRAPHICAL
AND HISTOLOGICAL CASE REPORT.

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ALVEOLAR RIDGE PRESERVATION WITH A PREHYDRATED CORTICOCANCELLOUS BONE GRAFT: A CLINICAL, RADIOGRAPHICAL AND HISTOLOGICAL CASE REPORT

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INTRODUCTION

With the variety of bone grafting materials available and their use around both natural teeth and dental implants, clinicians need to understand not only basic bone biology but also characteristics of different bone grafting materials to make a proper choice when selecting a material for alveolar bone augmentation and implant treatment. 1,2,3,4 The aim of this case report is to evaluate clinically, histologically and radiographically a socket preservation technique using a new commercially available porcine bone xenograft.

CASE PRESENTATION

A 46-year-old male patient with a non-contributory medical history, presented to our observation with the complaint of acute pain in the upper left side of the mouth. A comprehensive examination was done to determine periodontal status of adjacent teeth and overall oral health of the patient. Periapical radiograph revealed a deep radicular decay of #26 tooth. The tooth was deemed hopeless and referred for extraction with socket preservation for future implant placement. Under local anesthesia, tooth was sectioned and extracted without trauma, in order to preserve all 4 socket wall. A bone probing was performed to exclude fenestrations or dehiscences and to confirm the 4-wall kind of postextraction socket. The site was grafted with a prehydrated corticocancellous porcine bone graft (MP3, Osteobiol, TecnoSS Dental, Italy). Then, a resorbable collagen membrane (Evolution, Osteobiol, TecnoSS Dental, Italy) was used to cover the grafting material; it was placed on the buccal aspect of the extraction socket and sutured to the palatal flap to attempt a primary closure, with an exposed membrane left at the occlusal aspect of the extraction socket. After 6 months, implant surgery was accomplished to place a 5-mm wide and 11.5-mm long implant. Clinical measurements were taken with a periodontal probe and a reference guide for volume analysis. Also a bone tissue biopsy was taken with a trephine drill for histological analysis. 3 months elapsed to permit implant osseointegration and bone remodelling, afterwards the patient presented for re-opening surgery. After 15 days of soft tissues healing, a previously-established prosthetic protocol was followed to realize the definitive restoration with a metal-ceramic single crown. One year later, clinical examination showed soft tissues contours with no significant changes and radiographic examination revealed stable bone levels around implant. No signs of mucositis or periimplantitis were observed during follow-up.

RESULTS

Clinical and radiographical examination showed a complete bone tissue healing of extraction site 6 months after the procedure. At the time of implant surgery, histological analysis revealed the presence of trabecular bone, which was highly mineralized and well structured. Particles of the grafted material could be identified perfectly osseointegrated without fibrous tissue interposition. The healed bone was able to support the functional loading of implant and was perfectly stable after a 18-month follow-up.

DISCUSSION AND CONCLUSION

This case report showed good clinical results when using a porcine bone substitute and barrier membranes for socket preservation. Adding collagen gel to prehydrated and collagenated porcine bone particles to facilitate the clinical handling does not influence the bone tissue responses to the material, which exhibited osteoconductive properties.

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REFERENCES

1. Fickl S, Zuhr O, Wachtel H, Bolz W, Huerzeler MB. Hard tissue alterations after socket preservation: an experimental study in the beagle dog. *Clin. Oral Impl. Res.* 19, 2008; 1111–1118.
2. Festa VM, Addabbo F, Laino L, Femiano F, Rullo R. Porcine-Derived Xenograft Combined with a Soft Cortical Membrane versus Extraction Alone for Implant Site Development: A Clinical Study in Humans. *Clin Implant Dent Relat Res.* 2011 Nov 14.
3. Hämmerle CH, Araújo MG, Simion M. Evidence-based knowledge on the biology and treatment of extraction sockets. *Clin Oral Implants Res* 2012; 5: 80-2.
4. Barone A, Aldini NN, Fini M, Giardino R, Calvo Guirado JL, Coni U. Xenograft versus extraction alone for ridge preservation after tooth removal: a clinical and histomorphometric study. *J Periodontol* 2008; 79:1370–1377.
5. Vignoletti F, Matesanz P, Rodrigo D, Figuero E, Martin C, Sanz M. Surgical protocols for ridge preservation after tooth extraction. A systematic review. *Clin Oral Implants Res* 2012; 5: 22-38.
6. Vittorini Orgeas G, Clementini M, De Risi V, de Sanctis M. Surgical techniques for alveolar socket preservation: a systematic review. *Int J Oral Maxillofac Implants* 2013;28:1049-1061.