ENGLISH

16

RIDGE PRESERVATION FOLLOWING EXTRACTION

DR. YANIV MAYER

AlphaBio's GRAFT

Compliments Your Work

RIDGE PRESERVATION FOLLOWING EXTRACTION

AUTHOR:

DR. YANIV MAYER

D.M.D – SPECIALIST IN PERIODONTICS

Dr. Mayer acquired his education at the Hebrew University Hadassah School of Dental Medicine in Jerusalem, and specialized in periodontics at the Rambam School of Graduate Dentistry, at the Rambam Medical Center in Haifa.

Dr. Mayer is a Certified Specialist of the Israeli Ministry of Health, and of the European Federation of Periodontology, and he also has a diploma from the American National Board.

Dr. Mayer is involved in clinical research, and has received international recognition. He is a well-known speaker at global professional conferences, and, lectures in Israel and abroad. He is an official reviewer for several scientific journals in the fields of dental implants and Periodontology, and has had a number of articles published which received international awards.

Dr. Mayer works as a senior physician at the Rambam Health Care Center, Israel, and runs a private clinic specializing in Periodontology and Implantology.

Tooth extraction, for various reasons, is the beginning of a chain of events that occur in the alveolus and its surroundings, that eventually influence the topography of the edentulous ridge. This study will briefly describe the biological process that occurs as a result of the extraction.

At first, the extraction socket is filled with blood from the adjacent blood vessels. Within 24 hours, this becomes a stable blood clot, made of fibrin and platelet network. The clot attracts mesenchymal cells and various growth factors, in addition to inflammatory cell migration, for the purpose of dead cell and bacteria sterilization. The blood clot dissolves within a few days and is replaced by granulation tissue. A few weeks after this, a woven bone is formed, to be later replaced by a lamellar bone.

It is important to remember that the post extraction ridge dimensions will never revert to their original shape; the healing process combines the loss of both the vertical and the horizontal dimensions. Irinakis et al demonstrated that nearly 50% of the osseous material loss occurs during the first year, with a horizontal loss of 4-5 mm, and a vertical loss of up to 2 mm.

The loss of such a substantial mass of osseous material, combined with a topography change, constitutes a significant challenge in implantology procedures, especially when aesthetic considerations are paramount. Various techniques, combining different types of filling materials, have been developed over the years in an attempt to reduce the topographical changes as much as possible.

Hurzeler and Fickl demonstrated with an external scan, in a series of papers on dogs and humans, that using filling materials together with a soft tissue implant, successfully reduces the topographical change.[2,3]

A comprehensive scientific literature review was recently published in the Clinical Oral Implants Research Journal, on the effect of the various ridge preservation techniques (filling with various bone substitutes, implanting growth agents, using a membrane or a collagen sponge) on edentulous ridge contours, in the areas of non-denture teeth.[4]

The review stated that the range of horizontal contour loss was 2.6-4.6mm and that of vertical contour loss was 0.4-3.9mm. The use of the various bone substitutes demonstrated a reduction in ridge contour loss, but in no case were the contours preserved absolutely. It can be concluded from these data that ridge preservation is a necessary action both in esthetic sites and wherever implants are to be accommodated. However, it should be taken into account that additional augmentation may need to be performed during the implantation. Additionally, inserting an implant of smaller dimensions may be sufficient, since the amount of available bone will never be what it was prior to the extraction.

The following cases show that a ridge preservation performed on the day of extraction enables implants to be predictably inserted without the need for further surgical procedures.

[1] Irinakis T. Rationale for socket preservation after extraction of a single-rooted tooth when planning for future implant placement. J Can Dent Assoc. 2006 Dec;72(10):917-22.

[2] Fickl S, Schneider D, Zuhr O, Hinze M, Ender A, Jung RE, Hurzeler MB. Dimensional changes of the ridge contour after socket preservation and buccal overbuilding: an animal study. J Clin Periodontol. 2009 May;36(5):442-8.

[3] Fickl S, Zuhr O, Wachtel H, Stappert CF, Stein JM, Hurzeler MB. Dimensional changes of the alveolar ridge contour after different socket preservation techniques. J Clin Periodontol. 2008 Oct;35(10):906 13.

[4] Ten Heggeler JM., Slot DE, Van der weijden GA. Effect of socket preservation therapies following tooth extraction in non-molar regions in humans: a systematic review. Clin Oral Implants Res. 2011 Jul;22:779-788.

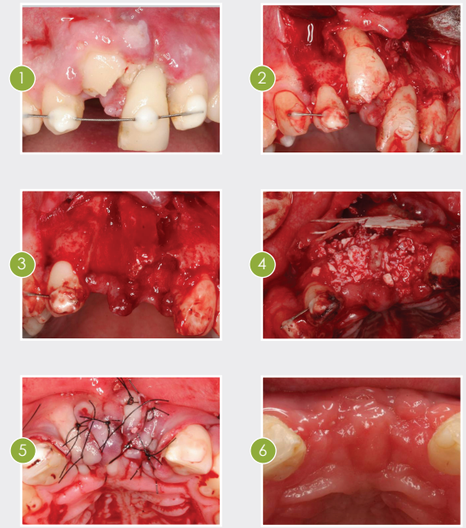
CASE 1

A 20-year-old man whose front teeth were damaged during a trip to South America, was forced to cut his trip short and seek urgent treatment. Tooth 11 underwent intrusion, damaging the buccal bone plate. Tooth 21 underwent luxation and damage to the osseous envelope.

After raising the buccal flap, the teeth were extracted, and the alveoli were filled with Alpha-Bio's GRAFT Natural Bovine Bone. In order to separate the soft tissue from the bone substitute, an absorbable Collagen Membrane was used. The buccal flap underwent considerable release, which was sufficient to ensure primary tension-free closure. The sutures were performed using a 5/0 nylon thread.

The postoperative prescription included the administration of antibiotics for a week, antiseptic mouthwash for two weeks and NSAIDs type analgesics. There were no complications during the healing period.

The postoperative picture was taken 3 months following the procedure. It shows ridge width preservation, meaning that the feasibility of inserting implants is assured.

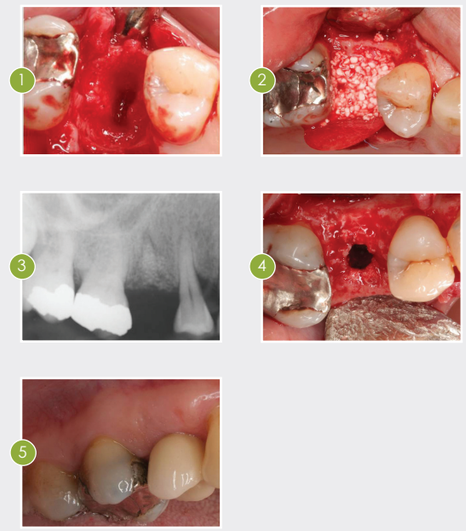


CASE 2

A 50-year-old woman suffering from extensive chronic periodontal disease. She underwent full preliminary preparation and periodontal surgery. Tooth 15 was extracted due to significant loss of support.

To avoid raising the sinus when inserting the implant, the ridge was preserved with Alpha-Bio's GRAFT Synthetic, Resorbable Bone composed of 60% hydroxyapatite (HA) and 40% beta-tricalcium-phosphate (β-TCP). This is a combination that on the one hand allows the alveolus volume to be preserved due to slow absorption of hydroxyapatite, and on the other hand allows rapid development of woven bone trabeculae due to relatively fast absorption of the beta-tricalcium-phosphate.

The bone substitute was covered with a Collagen Membrane. Three months later an implant was placed in the ridge. The postoperative picture after complete rehabilitation shows the preservation of the buccal plate contours relative to the adjacent teeth.



AlphaBio TEC
Simplantology

www.alpha-bio.net

Alpha-Bio Tec's products are cleared for marketing in the USA and are CE-marked in accordance with the Council Directive 93/42/EEC and Amendment 2007/47/EC.

Alpha-Bio Tec complies with ISO 13485:2003 and the Canadian Medical Devices Conformity Assessment System (CMDCAS).

Alpha-Bio Tec Ltd.

7 Hatnufa St. P.O.B. 3936, Kiryat Arye,
Petach Tikva 49510, Israel
T. +972.3.9291000 | F. +972.3.9235055
sales@alpha-bio.net

International

T. +972.3.9291055 | F. +972.3.9291010
export@alpha-bio.net

EC REP **MEDES LIMITED**

5 Beaumont Gate, Shenley Hill,
Radlett, Herts WD7 7AR. England
T/F. +44.192.3859810