ARTÍCULOS CIENTÍFICOS CLAVE

ENDORET®
ÍNDICE
Regeneración de tejidos en boca

CLÍNICOS - NIVEL I (RCTs)

Anitua et al 2014
Ensayo clínico, aleatorizado, controlado con tratamiento convencional, de eficacia y seguridad del Plasma Rico en Factores de Crecimiento (PRGF-Endoret) en la regeneración de alveolos post-extracción en exodoncias simples de molares en el maxilar inferior.

- INDICACIÓN: Regeneración de tejidos duros y blandos en Alveolos Post-extracción
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 60

Del Fabbro et al 2013
Plasma Rich in Growth Factors Improves Patients’ Postoperative Quality of life in Maxillary Sinus Floor Augmentation: Preliminary Results of a Randomized Clinical Study

- INDICACIÓN: Regeneración ósea y calidad de vida en Elevación de Seno maxilar
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 30

Mozzati et al 2013
Efficacy of Plasma-rich Growth factor in the Healing of Postextraction Sockets in Patients Affected by Insulin-Dependent Diabetes Mellitus

- INDICACIÓN: Regeneración de tejidos en Alveolos Post-extracción en pacientes con Diabetes M.
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 34

Mozzati et al 2013
Tooth extraction in patients on zoledronic acid therapy

- INDICACIÓN: Prevención BRONJ en pacientes en tratamiento con BPs
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 176

Del Fabbro et al 2012
Effect of platelet concentrate on quality of life after periradicular surgery: a randomized clinical study.

- INDICACIÓN: Reducción del dolor y calidad de vida post-operatoria
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 36

Torres et al 2010
Platelet-rich plasma may prevent titanium-mesh exposure in alveolar ridge augmentation with anorganic bovine bone.

- INDICACIÓN: Prevención de la exposición de la malla de titanio en la Regeneración de cresta ósea
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 30

Torres et al 2009
Effect of platelet-rich plasma on sinus lifting: a randomized-controlled clinical trial.

- INDICACIÓN: Regeneración ósea en Elevación de Seno maxilar
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 87

Anitua E 1999
Plasma rich in growth factors: preliminary results of use in the preparation of future sites for implants

- INDICACIÓN: Regeneración tejidos duros y blandos en Alveolos Post-extracción
- TIPO DE ESTUDIO: RTC
- Nº TOTAL DE PACIENTES: 20
Clinical, radiographical, and histological outcomes of plasma rich in growth factors in extraction socket: a randomized controlled clinical trial

Anitua E1, Murias-Freijó A, Alkhraisat MH, Orive G.

OBJECTIVES: Platelet-rich plasma has been used in the treatment of extraction socket; however, randomized controlled clinical trial is still lacking to evaluate its effect on extraction socket healing.

MATERIALS AND METHODS: Single center, assessor-blinded, parallel group, randomized controlled clinical trial was conducted. Sixty patients with indication of a simple one molar extraction in the mandible were randomized to receive plasma rich in growth factors (PRGF) or blood clot. A cross-stitch suture was placed in both groups. Clinical, radiographical, and histological assessments were performed during 10-12 weeks of follow-up.

RESULTS: Cone beam CT analysis has shown that the percentage of patients where the sockets are regenerated at ≥75% of the baseline volume was significantly higher in PRGF group (96.7%) than the control group (45.5%). Pain and inflammation (day 3 and day 7) have been significantly lower in PRGF group than the control group but not at day 15. Soft tissue healing scores have been significantly higher in the test group. No serious adverse events have been occurred in both groups. Histological analysis has indicated the presence of significantly thicker keratinized epithelium and significantly higher newly formed bone in the PRGF group.

CONCLUSIONS: PRGF was associated with enhanced healing of extraction socket of mandibular molars throughout the observation period.

CLINICAL RELEVANCE: Plasma rich in growth factors could be a useful tool to enhance the healing of extraction sockets by minimizing postoperative complications and stimulating the hard and soft tissues regeneration.

Efficacy of Plasma-Rich Growth Factor in the Healing of Postextraction Sockets in Patients Affected by Insulin-Dependent Diabetes Mellitus

Mozzati M, Gallesio G, di Romana S, Bergamasco L, Pol R. J

PURPOSE: To evaluate the efficacy of plasma-rich growth factor (PRGF) in improving socket healing after tooth extraction in diabetic patients.

MATERIALS AND METHODS: This was a split-mouth study in which each patient also served as the control: the study socket was treated with PRGF, whereas the control socket underwent natural healing. The outcome variables were the Healing Index, residual socket volume, visual analog scale score, postsurgical complications, and outcome of a patient questionnaire. The investigation considered the impact of hyperglycemia, glycated hemoglobin, End Organ Disease Score, and smoking habits. Follow-up included 4 postextraction checkups over a 21-day period. Pairs of correlated continuous variables were analyzed with the Wilcoxon test, independent continuous variables with the Mann-Whitney test, and categorical variables with the chi(2) test or Fisher test.
RESULTS: From January 2012 to December 2012, 34 patients affected by insulin-dependent diabetes mellitus underwent contemporary bilateral extractions of homologous teeth. The treatment-versus-control postoperative comparison showed that PRGF resulted in significantly smaller residual socket volumes and better Healing Indices from days 3 to 14. The patients’ questionnaire outcomes were unanimously in favor of PRGF treatment. The small sample of patients with glycemia values of at least 240 mg/dL showed worse Healing Index and minor socket decreases.

CONCLUSIONS: PRGF application after extraction improved the healing process in diabetic patients by accelerating socket closure (epithelialization) and tissue maturation, proving the association between PRGF use and improved wound healing in diabetic patients.

Tooth extraction in patients on zoledronic acid therapy

Oral Oncol. 2012 Sep;48(9):817-21
Mozzati M, Arata V, Gallesio G.

OBJECTIVES: Surgical management of patients following zoledronic acid therapy is particularly difficult, since the dental extraction is the main cause of BRONJ.

METHODS: A case-control study was conducted on 176 patients treated with intravenous (IV) bisphosphonates for oncologic pathologies who also underwent dental extractions. The study was divided randomly into two groups: 91 were treated with Plasma Rich in Growth Factor Plasma (PRGF) (study group) and the other 85 were not treated with the growth factor preparation (control group).

RESULTS: Panoramic X-ray and computed tomography were performed both before and 60 months after surgery. By clinical and radiological diagnosis, BRONJ was diagnosed in only 5 patients in the control group at an average of 91, 6 days after tooth extraction.

CONCLUSIONS: We hypothesize that Plasma Rich in Growth Factor (PRGF) is important for the successful treatment of patients on bisphosphonates to restore the osteoblast/osteoclast homeostatic cycles via autologous cytokines. Moreover, this protocol reduces the risk of BRONJ when it is necessary to perform dental extractions in patients undergoing IV bisphosphonate treatment.

Plasma Rich in Growth Factors Improves Patients’ Postoperative Quality of Life in Maxillary Sinus Floor Augmentation: Preliminary Results of a Randomized Clinical Study

Del Fabbro M1, Corbella S, Ceresoli V, Ceci C, Taschieri S.

PURPOSE: The control of postoperative discomfort may improve the patient’s quality of life as well as treatment acceptance. The aim of the present preliminary report was to assess if the use of autologous platelet concentrate during maxillary sinus augmentation may have a favorable impact on pain and other factors related to patient’s quality of life in the first week after surgery.
MATERIALS AND METHODS: This is an interim report of a randomized single-blind study. Fifteen patients with atrophic edentulous posterior maxilla underwent maxillary sinus augmentation using deproteinated bovine bone matrix (DBBM) as the grafting material (control group). In other 15 patients (test group), autologous plasma rich in growth factors (P-PRP) was added to DBBM, then a P-PRP clot was applied to covering the graft before suturing and finally P-PRP was placed over the suture in liquid form. During the first week postsurgery, all patients filled in a questionnaire for evaluation of main symptoms and daily activities. The outcomes of the questionnaires of the two groups were statistically compared.

RESULTS: In the first days postsurgery, the group using P-PRP reported significantly less pain, swelling, and hematoma, and improved functional activities with respect to the control group.

CONCLUSIONS: The adjunct of P-PRP to the maxillary sinus augmentation procedure produced a beneficial effect to patients’ quality of life in the early postsurgical phase.

Platelet-rich plasma may prevent titanium-mesh exposure in alveolar ridge augmentation with anorganic bovine bone


OBJECTIVE: Bone augmentation with the titanium-mesh (Ti-mesh) technique is susceptible to a large rate of complications such as morbidity of bone graft donor site, and mesh exposure to the oral cavity. The purpose of this study was to evaluate the effectiveness of anorganic bovine bone (ABB) in alveolar bone augmentation with the Ti-mesh technique. In addition, we investigated the effect of platelet-rich plasma (PRP) in preventing mesh exposure by using it to cover the Ti-mesh.

PATIENTS AND METHODS: Patients included in the clinical trial were randomly allocated by a blinded assistant into two groups. The 30 patients recruited for this study underwent 43 alveolar bone augmentation with the Ti-mesh technique using ABB as graft material in all of them. In 15 patients, the Ti-meshes were covered with PRP (PRP group) whereas in the other 15 the Ti-meshes were not (control group). After 6 months, patients were called for clinical, radiographic, and histological evaluation, and implant placement surgery. A total of 97 implants were placed in the augmented bone and their evolution was followed up for a period of 24 months.

RESULTS: Significant differences were found between the two study groups in terms of complications and bone formation. In the control group, 28.5% of the cases suffered from mesh exposure, while in the PRP group, no exposures were registered. Radiographic analysis revealed that bone augmentation was higher in the PRP group than in the control group. Overall, 97.3% of implants placed in the control group and 100% of those placed in the PRP group were successful during the monitoring period. We suggest that the positive effect of PRP on the Ti-mesh technique is due to its capacity to improve soft tissue healing, thereby protecting the mesh and graft material secured beneath the gingival tissues.

CONCLUSIONS: Alveolar bone augmentation using ABB alone in the Ti-mesh technique is sufficient for implant rehabilitation. Besides, covering the Ti-meshes with PRP was a determining factor in avoiding mesh exposure. Ti-mesh exposure provoked significant bone loss, but in most cases it did not affect the subsequent placement of implants.
**Effect of platelet-rich plasma on sinus lifting: a randomized-controlled clinical trial**


**OBJECTIVE:** The combination of anorganic bovine bone (ABB) with platelet-rich plasma (PRP) has been widely used in bone regeneration procedures although its benefits are still unclear. The purpose of this study was to evaluate whether or not PRP improves the efficacy of ABB in sinus floor augmentation. In addition, we have investigated the effect of residual bone height and tobacco on implant survival in sinus augmentation procedures.

**PATIENT AND METHODS:** Eighty-seven patients recruited for this study underwent 144 sinus floor augmentation procedures using ABB alone or ABB plus PRP (ABB+PRP) in a randomized clinical trial. A total of 286 implants were placed in the augmented bone, and their evolution was followed up for a period of 24 months. In order to investigate on a histological level and any adjunctive effects, we performed an ancillary study in five edentulous patients with a symmetrical severely resorbed maxilla. In these patients, a bilateral sinus augmentation was randomly performed using ABB or ABB+PRP in a split-mouth design, and after 6 months, bone biopsies were taken from the implant sites for histological and histomorphometrical analysis.

**RESULTS:** Overall, 96.2% of ABB and 98.6% of ABB+PRP implant success were obtained during the monitoring period and differences were not found between sites grafted with and without PRP in the 87 patients studied. Densitometry assessments and graft resorption were similar in both experimental groups. However, the histological and histomorphometrical analysis in the five edentulous patients revealed that bone augmentation was significantly higher in sites treated with ABB+PRP (p<0.05). Another outcome from our study is that the lack of initial bone support (p<0.05) and smoking (p=0.05) appeared to have a negative effect on the treatment success, which was accentuated when both circumstances coincided.

**CONCLUSIONS:** PRP is not a determining factor for implant survival in sinus lifting procedures. However, this study revealed that PRP can improve the osteoconductive properties of ABB by increasing the volume of new bone formed. Moreover, in sinus augmentation procedures the implant’s survival rate appears to be more influenced by the residual bone height or by tobacco than by the type of bone graft.

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**Effect of platelet concentrate on quality of life after periradicular surgery: a randomized clinical study**

Del Fabbro M1, Ceresoli V, Lolato A, Taschieri S.

**INTRODUCTION:** Control of postoperative discomfort might enhance the patient’s quality of life and treatment acceptance. The aim of the present randomized single-blind study was to evaluate whether the use of platelet concentrate during endodontic surgery might have a favorable impact on pain and other factors related to patient’s quality of life during the first week after surgery.

**METHODS:** Eighteen patients with periapical lesion were treated with modern endodontic surgical procedure (control group). In another 18 patients, in adjunct to surgical procedure, platelet concentrate was applied on the root end in liquid form, within the bone defect in clot form, and over the suture in liquid form (test group). All patients completed a questionnaire for evaluation of main symptoms and daily activities during the first week after surgery. The outcomes of the questionnaires of the 2 groups were statistically compared.
RESULTS: The test group showed significantly less pain and swelling, fewer analgesics taken, and improved functional activities as compared with the control group.

CONCLUSIONS: The adjunct of platelet concentrate to the endodontic surgical procedure produced significant beneficial effect to patients’ quality of life during the early postoperative stage.

Plasma rich in growth factors: preliminary results of use in the preparation of future sites for implants


Anitua E.

This article presents preliminary clinical evidence of the beneficial effect of the use of plasma rich in growth factors of autologous origin. The plasma is obtained from the individual patient by plasmapheresis. The macroscopic and microscopic results obtained with bone regeneration using this technique, which uses no membrane or barrier, can be observed. The incorporation of these concepts can introduce several advantages, including the enhancement and acceleration of bone regeneration and more rapid and predictable soft tissue healing.