

 W.B. SAUNDERS	Periodicals Home	Visit AAOMS	Search	User Pref	Help
JOMS Home	Table of Contents	All Issues	Order	About this Journal	<< Issue >> Issue



August 2003, Supplement 1 • Volume 61 • Number 8

*Abstract*

**Platelet-rich plasma: A preliminary report in routine impacted mandibular third molar surgery and the prevention of alveolar osteitis**

**Jerome D. Mancuso, DDS**

[[MEDLINE LOOKUP](#)]

**J.W. Bennion** [[MEDLINE LOOKUP](#)]

**M.J. Hull** [[MEDLINE LOOKUP](#)]

**B.W. Winterholler** [[MEDLINE LOOKUP](#)]

- [Previous article](#) in Issue
- View [print version](#) (PDF)
- [Drug links](#) from Mosby's DrugConsult
- [Genetic information](#) from OMIM

Abstract

TOP

**Purpose:** One hundred seventeen patients undergoing elective impacted mandibular third molar removal were enrolled in the study. Median age was 17.2 with a range from 14 to 22. There were 68 males and 49 females, and all females were questioned regarding use of oral contraceptives, the use of which precluded enrollment in the study. Also, the use of tobacco in any form resulted in removal from the study. Inclusive study dates were July 2002 to December 2002.

**Patients and Methods:** The 117 patients underwent elective removal of impacted mandibular third molars in the absence of any clinical pericoronitis, infection, or opposing traumatic occlusion. Platelet-rich plasma (PRP) was prepared as described by the manufacturer by collecting 20 cc of autogenous blood at the time of venipuncture, before intravenous fluids or sedative medications were administered. The specimen was centrifuged using the Harvest Technology Prep 2 centrifuge according to manufacturers' specifications. The platelet concentrate, containing an average of 338% platelets, was then reconstituted with blood plasma and combined with calcium chloride and topical thrombin to form the platelet gel. The PRP was then placed into either position 17 or 32 by the surgeons (J.D.M. and J.W.B.). The remaining platelet-poor plasma (PPP) was applied over the suture line on the same side to aid in hemostasis. Follow-up evaluation was performed immediately before discharge from the office, at seven days, fourteen days, and thirty days by two other surgeons (M.J.H. and B.W.W.), and compared to the contralateral side. The evaluating surgeons were unaware which side was treated with the PRP.

**Results:** The overall rate of alveolar osteitis in the PRP treated site was 3.4% (4 cases) versus the untreated site, which was 12.8% (15 cases), representing an almost four-fold increase. Alveolar osteitis (AO) was defined as loss of clot in the extraction site, severe pain refractory to narcotic intervention, and pain that radiated to the ear and preauricular area and was

accompanied by a foul taste and odor. Also, the PRP- and PPP-treated sides showed better hemostasis at time of discharge, objectively faster soft tissue flap healing, decreased swelling seven days postsurgically, and a subjectively lower level of pain on the Visual Analog Scale of 1 to 10 (VAS), with an average of 3 on the PRP side and 6 on the untreated side. Finally, one-month follow-up Panelpix radiographs demonstrated subjectively more dense bone fill and radiopacity in the extraction site of the PRP-treated side.

Conclusion: PRP is an inexpensive and widely available modality to minimize the occurrence of AO and enhance both hard and soft tissue healing potentials. The clinician's ability to utilize the known properties of transforming growth factor beta (TGF- $\beta$ ) and platelet derived growth factor (PDGF) contained in the PRP preparation has dramatically changed our understanding of bone healing and physiology as well as improved the expected outcomes in both minor and major oral and maxillofacial surgery.

## References

Marx RE, Carlson ER, Eichstaedt RM, et al: Platelet-rich plasma-growth factor enhancement for bone grafts. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 85:638, 1998

Tayapongsak P, O'Brien DA, Monteiro CB, et al: Autologous fibrin adhesive in mandibular reconstruction with particulate cancellous bone and marrow. *J Oral Maxillofac Surg* 52:161, 1994

Marx RE, Ehler WJ, Peleg M: Mandibular and facial reconstruction: Rehabilitation of the head and neck cancer patient. *Bone* 19:595, 1996 (suppl 1)

Marx RE: Clinical application of bone biology to mandibular and maxillary reconstruction. *Clin Plast Surg* 21:377, 1994

## Publishing and Reprint Information

TOP

- 2520 17th Street W., Suite 302, Billings, MT 59102, USA
- Copyright © 2003 by Elsevier Science (USA)
- doi:10.1016/S0278-2391(03)00532-9