

Influence of Platelet-rich Plasma on Osseous Healing of Dental Implants: A Histologic and Histomorphometric Study in Minipigs

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Purpose: In the present study the time course of local bone formation following the application of PRP during implant placement was evaluated histomorphometrically and histologically. **Materials and Methods:** The mandibular premolars of 12 adult minipigs were removed surgically and 72 sites were prepared for implant placement. Before the implants (MK III, Replace, and MK III TiUnite) were placed, autogenous PRP (8×10^5 to 10×10^5 platelets/ μ L) was instilled into the host sites on the left side. The animals were sacrificed at 3, 6, and 12 weeks, and undecalcified ground sections were prepared. **Results:** The histomorphometric evaluation showed significantly more bone-to-implant contact after topical PRP application in the early healing phase (6 weeks), which varied as a function of the distance from the implant surface (controls = 24.2% versus PRP = 44.21%; $P = .013$). At 12 weeks, the extent of osteoneogenesis was comparable in the 2 groups (controls = 51.3% versus PRP = 44.2%; $P = .251$). Statistical analysis revealed no significant interaction between implant surface type and PRP. **Discussion:** Topical PRP application significantly increased the activity of bone regeneration at implant host sites during early healing. **Conclusion:** In the present study PRP was found to have a time- and site-dependent effect on peri-implant bone healing. (INT J ORAL MAXILLOFAC IMPLANTS 2003;18:15–22)

Key words: animal study, dental implants, platelet-rich plasma