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### **Impact of h-PPP on Bone Formation in Rat Calvaria Defects**

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**Objectives** This study aimed to investigate the effect of heating platelet-poor plasma (PPP) on bone formation in rat calvaria defects and to compare its efficacy with unheated PPP when used with collagen membranes for bone regeneration.

**Methods** Ten adult male Sprague-Dawley rats underwent bilateral calvaria defect surgeries. Collagen membranes soaked with PPP were either kept at room temperature or heated to 75°C for 10 minutes before placement over the osteotomy defects. Histology and micro-computed tomography (Micro-CT) were performed three weeks post-operation.

**Results** Micro-CT analysis revealed significantly greater bone volume (BV) in defects treated with room temperature PPP-soaked membranes (median 1.71 mm<sup>3</sup>, range 0.5-6.4 mm<sup>3</sup>) compared to those treated with heated PPP-soaked membranes (0.4 mm<sup>3</sup>, range 0.00-3.7 mm<sup>3</sup>) (P=0.015). Similarly, defect coverage was significantly higher in room temperature PPP-soaked membranes (median 36.6%, range 14.1-86.6%) compared to heated PPP-soaked membranes (14%, range 0.0-62.8%) (P=0.009).

**Conclusions** Our findings suggest that heat-denatured plasma impedes bone regeneration in rat calvaria defects, while native coagulated plasma promotes the migration of new bone into collagen membranes. These results imply that heated PPP could serve as a potentially effective occlusive barrier in combination with collagen membranes for bone regeneration.