Human histologic evaluation of bioactive ceramic in the treatment of periodontal osseous defects.

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This study examined the healing of intrabony defects around 5 teeth treated with bioactive glass ceramic (PerioGlas). Healing was evaluated by clinical measurements, radiographic observation, and histologic analysis. The protocol included a presurgical phase of scaling and root planing therapy, with measurements obtained immediately prior to the surgical procedures and after 6 months of healing. Following therapy there was a mean of 2.7 mm of probing depth reduction, 2.2 mm of clinical attachment gain, and 0.5 mm of recession. The histologic analysis revealed healing by a long junctional epithelium with minimal new connective tissue attachment to the teeth, except in one case where the intrabony region demonstrated new cementum formation and new connective tissue attachment. Graft particles were found to be biocompatible, as evidenced by being embedded in a stroma of dense connective tissue with minimal inflammatory infiltrate. There was minimal new bone formation limited to the most apical borders of the defects. No signs of periodontal regeneration as defined by new cementum, periodontal ligament, and bone formation on a previously diseased root surface were observed. Although the clinical results are encouraging and radiographs evidenced radiopacities within the defects, histologic analysis revealed that as a periodontal grafting material, bioactive glass ceramic has only limited regenerative properties.