ABSTRACT

This study, in non-human primates (*Papio ursinus*), evaluated the healing potential of recombinant human transforming growth factor-β3 (rhTGF-β3) when implanted in exposed periodontal furcation defects either by direct application to the defect or by transplantation of rhTGF-β3-instigated heterotopic bone as source of autogenous bone. Class II furcation defects were surgically created bilaterally in the first and second molars of both the mandible and the maxilla of four clinically healthy adult baboons. Simultaneously, autogenous bone was induced bilaterally within the *rectus abdominis* muscle of the baboons using rhTGF-β3. Forty days later, the periodontal defects were implanted with rhTGF-β3 in Matrigel® as delivery system, or rhTGF-β3 plus muscle tissue in Matrigel®, or with the harvested rhTGF-β3-induced autogenous bone. Sixty days after periodontal implantation, the animals were euthanased and the molars harvested together with the surrounding tissue. Histological analysis was performed by light microscopy and digital imaging computer software. The extent of regeneration was assessed by measuring area and volume of new alveolar bone, height of new alveolar bone and height of new cementum. The results, compared to controls, showed pronounced periodontal tissue regeneration in experimental defects. The most noteworthy healing was observed in defects implanted with heterotopically induced autogenous bone as well as those implanted with rhTGF-β3 plus muscle tissue. The findings of this study suggest that rhTGF-β3 applied directly to a defect, or rhTGF-β3-induced autogenous bone, transplanted to a defect, have significant regenerative capabilities in periodontal tissue regeneration of non-human primates *Papio ursinus.*