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Biodegradable implants for orthodontic anchorage. A preliminary biomechanical study

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ABSTRACT

The use of endosseous implants as temporary orthodontic anchoring elements has good results in many clinical applications. The development of a new orthodontic implant anchorage system comprising an implant produced of biodegradable polylactide with a metal superstructure is described. The presented bioresorbable implant anchor for orthodontics system (BIOS) implant is designed to provide orthodontic anchoring functions in adolescents and adult patients, and to then be resorbed without a foreign body reaction or signs of clinical inflammation. Shear strength and maximum vertical strength have been measured in biomechanical in vitro tests. BIOS fixtures can be loaded with horizontal shearing forces of 50 N with a mean deflection of 0.26±0.13 mm and mean vertical removal forces of 155±80 N. Clinical studies are currently being undertaken to evaluate clinical practicability and biocompatibility of the BIOS implants.

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