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Hydroxyapatite and beta-TCP are widely used in orthopaedics and dentistry. However, there are few applications for the treatment of soft tissue such as tendon and ligament healing. Popular treatments for anterior cruciate ligament injuries have been replacement with biological tissues. In using the hamstring tendon as the graft, problems have occurred at the graft-bone interface. For secure fixation of the graft within the bone tunnel, we applied calcium phosphate to the grafted tendon utilizing an alternate soaking process (1). The long digital extensor (EDL) tendons of four beagles were transplanted, through a bone tunnel, into the proximal tibial metaphysis as previously described by Rodeo et al. (2). The tendon of the right EDL was alternately soaked in the CaCl_2 and Na_2HPO_4 solutions each for three minutes five times, and the tendon of the left side was pulled out through the bone tunnel without soaking process. All animals were sacrificed after four weeks of operation, and the histological characteristics of the tendon-bone interface were evaluated. The apatite-coated tendon was shown direct contact to the bone tunnel without intervention of fibrous tissues. Although the bonding strength of inorganic/organic complex needs to be determined, our method might be one of the options to accelerate tendon healing in bone.

REFERENCE

[1] T. Taguchi, M. et al., J. Biomater. Sci. Polymer Edn. 10, 331-339. (1999).

[2] S. A. Rodeo et al., JBJS. 75-A, 1795-1803 (1993)