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Comparative study of nanostructured effect of alumina-graphite with Autogenous rib cartilage in the repair of bone defects in dogs

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Abstract

Bone tissue has attractive structural features, especially due to its hybrid bone structure, which is a combination of hydroxyapatite, collagen, and small amounts of proteoglycans, non-collagenous proteins and water. The chemical structure of the material used is a mixture of alumina powder and graphite. Alumina is a non-acidic and non-base mineral structure that is classified in terms of porosity as a Nano-porous material. In some of its structures, half the volume belongs to the porous spaces. 15 dogs were randomly divided into three groups of control, autogenous cartilage recipient and alumina graft recipient group. By removing the skin, connective tissue, and muscles, the humerus was exposed and a 2 cm long and 1 cm wide incision was made in the humerus body and the alumina-graffiti was placed in the defect, the other group autogenous cartilage resected from rib arch was inserted in the created defect. In control group did not place any material in the created defect. There was a significant difference between control groups, autogenous cartilage group and alumina grafit in bone repair criteria. Using alumina graphite can cause bone healing faster than autogenous rib cartilage.

Key words: Alumina-graphite nanostructure, Autogenic cartilage, Dog, Bone healing

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