

MORPHOHISTOLOGIC STUDIES ON ENTIRE SEGMENT CORTICAL BONE ALLOGRAFTS IN EXPERIMENTAL DOGS

By

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SUMMARY

Twenty nine adult apparently healthy mongrel dogs of both sexes and weighing 15 to 25 kg were used as a recipient for cortical segmental bone grafts. The used types of bone grafts were fresh cortical autograft (FCA) as a control group (5 dogs), ethylene oxide sterilized cortical allografts (EOCA 12 dogs) and deep-freezing cortical allografts (DFCA 12 dogs). The stages of graft incorporation in the host bone have been described on morphohistological basis by euthanasia at time intervals 1, 3, 6, 12 and 18 months. The assessment of graft regeneration during the follow up period of 18 months confirmed acceptance and incorporation of EOCA in a similar manner to DFCA and FCA.

INTRODUCTION

Cortical bone grafts are used clinically in the repair of severely comminuted diaphyseal fractures when the mechanical support of cortical bone is necessary for rigid stabilization of the fracture (Sinibaldi, 1989; Johnson et al., 1992). Three basic mechanisms share in bone regeneration, these are osteogenesis, osteoinduction, and osteoconduction (Lane and Sandhu, 1987).

The morphologic changes of cortical allografts in dogs are a periosteal reaction over the grafted segment ranging from minimal to a periosteal sleeve and of several millimeters thick. The cortex of the graft appeared whiter in colour than the host cortex. The graft-host junction showed bone healing ranging from early callus formation to solid bone union with either red cancellous marrow or fatty gelatinous tissue in the medullary canal (Dell et al., 1985). The first stage of graft incorporation in the host bone was found to be a bridging callus of relative new bone. In the second stage, there was vascular