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"Repair of cranial bone defects using endochondral bone matrix gelatin in rat "

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Abstract:

Bone matrix gelatin (BMG) has been used for bone induction intramuscularly and subcutaneously by many investigators since 1965. More recently, some of the researchers have used BMG particles for bone repair and reported various results. In present study for evaluation of bone induction and new bone formation in parital defects, BMG particles were used in five groups of rats. The BMG was prepared as previously described using urist method. The defects wee produced with 5 –mm diameter in pariteal bones and filled by BMG particles. No BMG was used in control group.For evaluation of new bone formation and repair, the specimens were harvested on days 7 , 14 , 21 and 28 after operation. The samples were processed histologically, stained by H& E, alizarin red S staining, and Alcian blue, and studied by a light microscope.The results are as follows:In control group: Twenty-eight days after operation a narrow rim of new bone was detectable attached to the edge of defect.In BMG groups: At day 7 after operation young chondroblast cells appeared in whole area of defect. At 14th day after operation hypertrophic chondrocytes showed by Alcian blue staining and calcified cartilage were detectable by Alizarin red S staining. The numerous trabeculae spicules, early adult osteocytes and highly proliferated red bone marrow well developed on dayd 21 . finally typic bone trabeculae with regulated osteoblast cells and some osteoclast cells were detectable at day 28 after operation. In conclusion,BMG could stimulate bone induction and new bone formation in bony defects. So, it seems that BMG could be a godd biomaterial substance for new bone inducation in bone defects

Keywords:

Endochondral bone matrix gelatin (Ec BMG) ، Bone induction ، New bone formation ، Parietal

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