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Sternal cartilage autograft for repair of full-thickness articular cartilage defect: An experimental study on equine model

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The objective of the study is to test the hypothesis that sternal cartilage autograft will result in clinical and radiographic improvement of an induced articular cartilage defect. Twelve skeletally mature animals (12 donkeys and 8 horses) were used in the study. A fresh osteochondral autograft was harvested from the sternum and press-fitted in an induced full-thickness articular cartilage defect (6 mm diameter) at the radial facet of the third carpal bone in one limb. In the other limb, a full thickness articular cartilage defect was induced and left without implantation. Animals were grouped and evaluated at 1, 2, 3 and 6 months with clinical, radiographic evaluation as well as synovial fluid analysis. Clinically the grafted limbs showed low grades of lameness compared with control ones. Radiographically, there was no evidence of any osseous reaction or radiographic changes in the subchondral bone of the grafted third carpal bone as well as the opposite radial carpal bone in any of the grafted joints till 6 months after grafting, while the non-grafted joints showed marginal subchondral luency in the distal radial carpal bone detected at 2 months and marginal osteophytes in the proximal third carpal bone and distal radial carpal bone starting from the 1st till the 6th month. Synovial fluid analysis and increased enzymatic activity reflected the ongoing changes in the articular cartilage of the non-grafted joints resulted in improved clinical and radiographic picture of the grafted joints compared with the non grafted ones so the hypothesis was accepted.

Biography

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