

## Cartilage regeneration by implantation of canine allogenic umbilical cord blood derived mesenchymal stem cell

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The objective of this study is to evaluate reparative tissues formed in adult canine chondral defects model implanted with umbilical cord blood derived mesenchymal stem cells(UCB-MSCs)mixed with commercial matrigel(3D culture matrix mebiol gel).

Four defects were produced in the femoral condyle of each dog. Each defect was implanted with UCB-MSCs ( $1 \times 10^6$ ), bone marrow derived mesenchymal stem cell (BM-MSCs,  $1 \times 10^6$ ) and cell lysate that were mixed with matrigel and one group was implanted only matrigel. The tissue response was evaluated 1, 2 and 4 weeks after implantation by general histology with hematoxylin and eosin stain, alcian blue stain and safranin O stain.

A week after implantation, there were no significant differences among group. But after 2 weeks, fibrous and cartilage-like tissue populate the defect site. At week 2 and especially week 4, the UCB-MSCs implantation group showed better chondrocyte-like morphology, smooth surface, continuous subchondral bone and thicker newly formed cartilage-like tissue as compared with that of BM-MSCs, cell lysate and matrigel repair group. There was a little safranin O and alcian blue staining of the reparative tissue.

Future studies will be need to investigate other matrix characteristics and the effects of cell density.

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