

The use of stem cells in the wrist arthrodesis. Experimental study

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Introduction. Wrist arthrodesis is a procedure performed in advanced arthritis with painful movement in wrist joint. In the result of the wrist arthrodesis appear intercarpal ankylosis. This surgery is a rescue one, and is made in order to remove the pain syndrome and increase the strength of the hand. Unfortunately, wrist arthrodesis is performed with the cost of losing of range of movement. Aim of study was evaluation of stem cells using in wrist arthrodesis.

Material and Method. Our study was based on experimental research on New Zealand rabbits. As methods of implementation of the study included: preparation of allogeneic demineralized bone grafts, bone marrow sampling and isolation of autologous stem cells. In the first study group, on 7 laboratory animals was performed arthrodesis of wrist joint with allograft. In the second study group, on other 7 laboratory animals, was performed arthrodesis using the allograft with stem cells.

Results. For the initial stage, it was prepared 28 demineralized allografts, then by tissue engineering was obtained 14 osteo-cellular grafts. In all 14 cases, an immediate postoperative radiograph was performed. The clinical and radiological evaluation, performed at 4, 8 and 12 weeks after the surgery. Computer tomography was done 12 weeks postoperatively. Imagistic results showed us, that the group were performed arthrodesis using combined graft with stem cells, the ankylosis were achieved faster. Histological examinations indicate more active involvement in the process of osteogenesis in the use of combined stem cell transplantation.

Conclusion. Our study showed that the arthrodesis of the wrist using the allograft with stem cells have a positive impact in the process of osteogenesis.

Keywords. Demineralized allograft, stem cells, experimental study, wrist arthrodesis.

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