

## NEOCHONDROGENESIS AND ROLE OF STEM CELLS: AN EXPERIMENTAL STUDY IN GOAT MODEL

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### Objectives

A pilot study to assess whether intra-articular injections of autologous bone marrow mononucleated cells (BMMNCs) and hyaluronic acid (HA) will result in a better quality of cartilage regeneration after subchondral drillings into surgically created full-thickness chondral defects.

### Materials and Methods

15 male goats were subjected to full-thickness chondral defects followed by subchondral drillings. The goats were divided into three groups: Group A, no injection (control group); Group B, a weekly intra-articular injection of HA for three consecutive weeks; Group C, a weekly intra-articular injection of autologous BMMNCs in combination with HA for up to three consecutive weeks. The repaired chondral defects were visually inspected and histologically examined at week 24.

### Results

Full-thickness chondral defects in Group C goats showed better repair of tissues with hyaline cartilage as compared to the other groups.

### Conclusion

Intra-articular injections of autologous BMMNCs in combination with HA following subchondral drillings into chondral defects result in better quality of neochondrogenesis.

Preliminary results from on-going human clinical trials provide evidence that regeneration of articular cartilage is possible following subchondral drillings into multiple chondral defects followed by post-operative intra-articular injections of autologous peripheral blood stem cells (PBSCs) combined with hyaluronic acid (HA).

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