

Arthroscopic Subchondral Drilling Followed by Injection of Peripheral Blood Stem Cells and Hyaluronic Acid into Knee Chondral Defects: Mid to long-term (5 to 10 years) Follow-up

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INTRODUCTION:

Arthroscopic subchondral drilling into knee chondral defects followed by intra-articular injections of peripheral blood stem cells (PBSC) and hyaluronic acid (HA) has shown the ability to repair and regenerate articular cartilage approaching 95% of normal articular cartilage histologically. This provides better resilience and hence endurance of the regenerated cartilage. The same technology has also successfully treated massive knee chondral defects including bone on bone lesions in a US-FDA Phase2b study, which results have been published. We report satisfactory mid to long-term (5 to 10 years) results in this study.

METHODS:

264 patients underwent this treatment from year 2007 to 2014. These patients were contacted for this mid to long-term study. Available patients were evaluated clinically and had MRI scans of their operated knees performed. Subjective International Knee Documentation Committee (IKDC) were collected and statistical analysis was assessed pre-operatively, at 5 and 10 years after surgery. Clinical significance outcome was also analysed using minimal clinically important differences (MCID) on distribution-based method.

RESULTS:

38% of patients were available for follow-up at 5 years and 62% at 10 years. The average age of patients at the time of surgery was 42 years (range 16 to 61) with average follow-up time of 10 years (range 5 to 15). Single to multiple knee chondral defects were treated. MRI scans revealed minimal deterioration of the regenerated cartilage and no evidence of long term adverse synovial or osseous changes of the operated knee joint. The mean IKDC scores at baseline was 51.3. At 5 and 10 years, the mean IKDC scores were 72.0 ($p < 0.005$) and 76.6 respectively ($p < 0.005$). Clinical significance was mostly achieved.

DISCUSSION AND CONCLUSION:

Arthroscopic subchondral drilling into knee chondral defects followed by intra-articular injections of peripheral blood stem cells and hyaluronic acid has shown mid to long-term safety and efficacy due to the resilience of the regenerated articular cartilage.

