Minced Cartilage Repair at the Glenohumeral Joint: A Case Casuistry

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Purpose: Chondral defects of the shoulder are common but still represent a therapeutic challenge. Joint preservation should be pursued, especially in young patients. The current gold standard for large defects is autologous chondrocyte implantation (ACI). However, this results in high costs, limited availability of specialized laboratories, and a 2-stage surgical design. Showing initial good clinical results for the knee joint, minced cartilage repair is a cost-effective procedure in which autologous cartilage chips are harvested from the defect walls and delivered to the defect area in a single-stage open or arthroscopic approach. A 50-year-old male patient presented with a grade IV cartilaginous shearing injury after trauma. After extended radiological diagnosis, the indication for a cartilage replacement procedure was given.

Methods: The procedure was performed in beach chair position using a dry arthroscopic approach. After ablation of the destroyed cartilage, healthy tissue was collected from the chondral walls of the defect margin using a special shaver device with a connected colleting chamber until a vertical margin was formed. To fix the collected fragments, autologous conditioned plasma (ACP) was extracted from the patient's blood, from which thrombin was prepared. After mixing the cartilage chips with pure ACP, the mass could be applied onto the dry defect. This was covered with thrombin solution, allowing the fibrinogen in the mass and the thrombin to form a stable clot of fibrin. Finally, it was sealed with on-table prepared fibrin.

Results: At 6 months postoperatively, MRI showed no evidence of chondral damage. With terminal frozen shoulder preserved, we performed re-arthroscopy for arthrolysis and defect assessment. This showed complete defect coverage at the level of the surrounding cartilage, which led us to exclusively perform arthrolysis to improve the range of motion.

Conclusion: At the 6-month follow-up of the first patient treated by minced cartilage repair at the glenohumeral joint, an excellent clinical result can be seen. Thus, this procedure is a very promising alternative to the more costly and time-consuming gold standard ACI.