Fresh Osteochondral Allograft Transplantation of the Capitellum for the Treatment of Osteochondritis Dissecans

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INTRODUCTION: Osteochondritis Dissecans (OCD) of the humeral capitellum is a rare yet challenging Condition. Several surgical options exit for unstable lesions. In the last few years, the pendulum has swung from debridement and microfracture to restoration of the articular surface. Osteochondral autograft from rib and knee have been described but have donor site morbidity. The senior author chose to use fresh osteochondral allograft transplantation (FOCAT) to avoid donor site morbidity. We report the mid-term results of FOCAT of the capitellum.

METHODS: After IRB approval, patients who underwent FOCAT for OCD of the capitellum between 2006 and 2022 by a single surgeon were reviewed. The majority of cases (94%) had unstable lesions (Minami 2,3). All had failed a trial of non-operative treatment. All patients underwent a diagnostic arthroscopy, followed by a mini-open, ligament-sparing approach with grafting using commercially available guides and instruments.

RESULTS: 35 patients were identified. The mean age was 16$\pm$3.9 years (Range:11-32 years). There were 25 males. There were 24 baseball players (19 pitchers and 5 position players), 5 gymnasts, 3 cheer/tumbling, 1 tennis player, 1 student, and 1 patient with avascular necrosis (AVN) from chemotherapy. Eighteen had a mean contracture of $14.1^0 \pm 11.9^0$. A single osteochondral allograft (OCA) plug was used in 23 patients (mean diameter of 11.3$\pm$2.8 mm) and 12 patients required 2 plugs ("Mastercard"). The mean follow up was 92.6+54.5 months (range 24-204 months). There was significant improvement in Oxford (25.5$\pm$4.9 to 46.7$\pm$3.5, P<0.00001) and Visual Analogue Scale (VAS) for pain (7.5+2 to 0.3+1.0, P<0.0001). The mean Single Assessment Numeric Evaluation (SANE) at time of follow-up was 90.6+10.8 (Range 60-100). In overhead athletes, there was significant improvement in KJOC score (40.8+11.8 to 90.6+10.8, P<0.00001). A routine post-operative MRI was obtained in 16 (46%) patients at a mean of 32.6 months. In all cases, the graft was incorporated. All overhead athletes were able to return to their sport and perform at same level or higher for over 2 years. Two elbows required a subsequent arthroscopy for loose body removal, otherwise, there were no other complications.

CONCLUSION: FOCAT is a viable option for resurfacing OCD lesions of the humeral capitellum. Excellent outcomes, and high return to sport rates are reported with mid-term follow up showing no graft failures. FOCAT is a viable option to autologous graft in order to eliminate donor site morbidity.

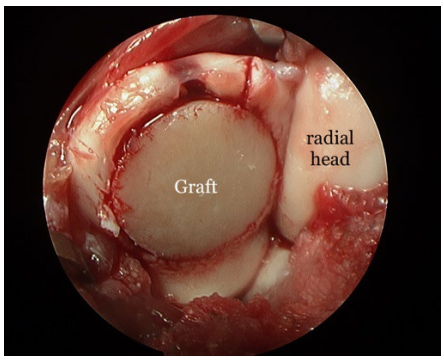

Figure 1. Single OCAT plug

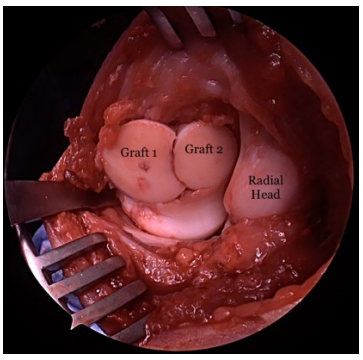

Figure 2. Two OCAT plugs