

Osteochondral Allograft Transplantation for Capitellar Osteochondritis Dissecans: Excellent Patient Reported Outcome Scores and High Return to Sports

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Background

- Debridement and marrow stimulation historically the treatment for capitellar OCD
 - Good overall results
 - Suboptimal return to sport in 25% and pain in high-demand upper extremity athletes



- Indications for osteochondral transplantation
 - Large, unstable OCDs
 - Extension to lateral border of the capitellum
- Fresh osteochondral allograft transplantation (OAlloT) restores subchondral bone and cartilage and avoids donor site morbidity of autograft harvests
- Purpose = To evaluate the outcomes of OAlloT in pediatric patients with unstable OCD of the capitellum $\geq 10\text{mm}$ in size

Methods

- Prospective cohort
- Age < 19 years
- Unstable capitellar OCD $\geq 10\text{mm}$ treated with primary fresh osteochondral allograft transplantation
- Minimum 2 year outcomes
- Pre- and post-op PROs (Oxford Elbow, QuickDASH, QuickDASH sport)
- Pre- and post-op imaging characteristics (x-ray and MRI)
- Surgical details

Pre-Op Characteristics

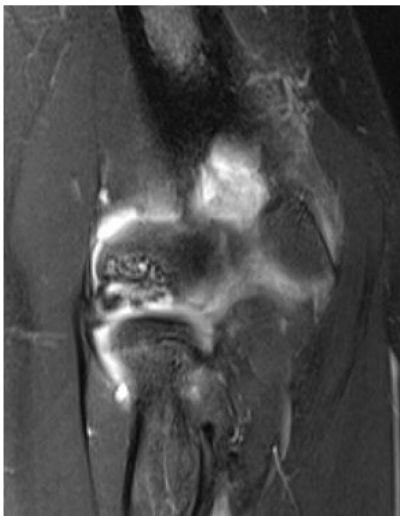
Sports	# (%)
Gymnastics	11 (42)
Baseball/Softball	7 (27)
Cheer	3 (12)
Football	2 (8)
Wrestling	2 (8)
Swim	1 (3)

- 26 elbows, 24 patients
 - Mean age 13.4 years (11.3 – 17.1)
 - 62% female
 - 50% played primary sport >9 months in past year
 - 88% participate at competitive/travel level
- Median symptom duration = 3 months
 - Pain (85%), mechanical symptoms (81%)
 - $\geq 5^\circ$ extension loss (62%)
 - $\geq 10^\circ$ flexion loss (46%)

Oxford Elbow	QuickDASH	QuickDASH Sport
32.5 (14 – 40)	18.2 (0 – 61)	62.5 (0 – 100)

Pre-Op Imaging

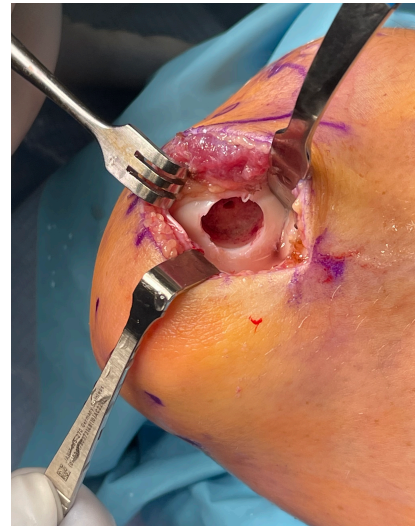
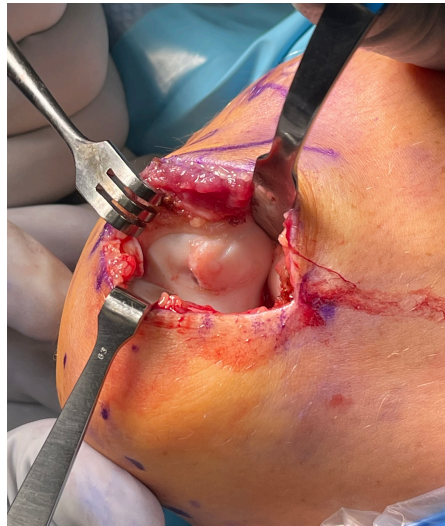
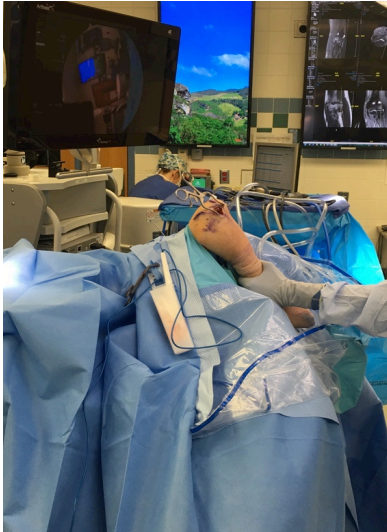
MRI Size (mm)	
Coronal width	11.2 (7 – 17)
Coronal depth	7.5 (2 – 14)
Sagittal width	12.3 (8 – 17)
Sagittal depth	6.4 (2 – 11)



	N (%)
Capitellar Physis	
Open	3 (12%)
Closed	23 (88%)
Location in Capitellum	
Central	17 (65%)
Lateral	9 (35%)
X-ray Classification	
I (flattening, radiolucency)	14 (54%)
II (nondisplaced fragment)	6 (23%)
III (displaced fragment)	6 (23%)
MRI Classification	
I (thickening of cartilage)	2 (8%)
II (breach, low signal)	5 (20%)
III (breach, high signal/fluid)	6 (24%)
IV (loose body)	12 (48%)

Surgery

- Arthroscopic loose body removal
- Anconeus reflecting approach
- Pre-cut OCA cores
 - 85% single graft, 15% 2 grafts
 - Median plug size = 12mm (10 – 16)














Outcomes

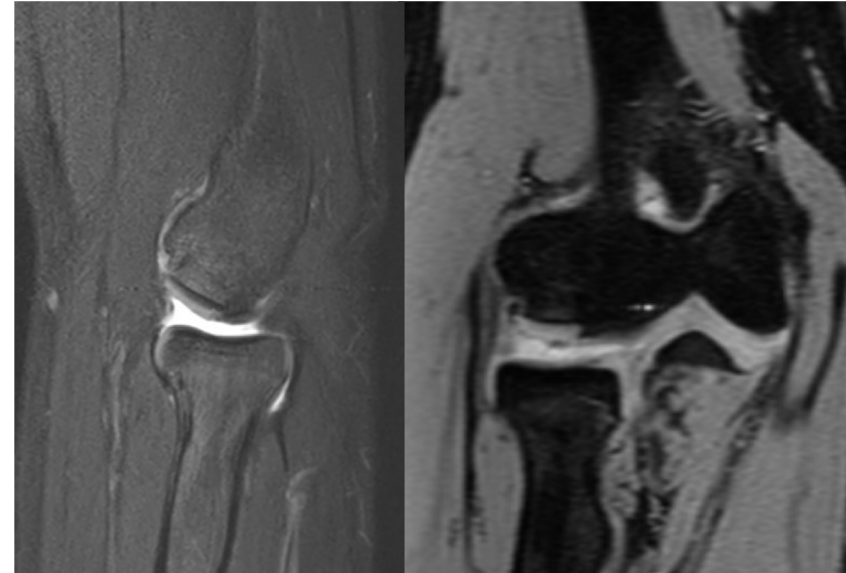
- Mean follow-up = 40 months (25 – 60)
- All cleared for return to primary sport at 6-12 months
- Return to Sport
 - 1-Year = 21 elbows (81%)
 - 2-Years = 25 elbows (96%)
 - 11 gymnasts: 4 returned (45%), 6 chose different sport, 1 no sports
 - 6 baseball: 5 returned (83%), 1 chose different sport

	Pre-Op	6 Months	1 Year	2 Years
Oxford Elbow	32.5	43.7	44.3	46.8
QuickDASH	18.2	5.2	4.2	1.2
QuickDASH Sport	62.5	24.2	10.5	1.3

Outcomes

- MRI at 5-8 months post-op in 15 patients (58%)
- Mean BOGIE Score = 11 (9 – 12)

	3	2	1	
Graft Bone	 Normal	 Any edema  Any cyst <2mm	 Cyst or cavitation >2mm	T2 (edema) DESS (cyst)
Parent Bone	 Normal	 Any edema  Any cyst <2mm	 Cyst or cavitation >2mm	T2 (edema) DESS (cyst)
Cartilage contour	 Flush or countersunk cartilage height	 cartilage height prominence by >2mm	 Very thinned or absent cartilage	DESS
Joint Health	No effusion No loose body No other OCDs	Effusion (anterior AND posterior) OR Other OCDs (eg radial head) No loose bodies	Loose body (with or without effusion or other OCDs)	T2 (effusion) measured on hourglass sagittal slice DESS/T1 (LB)



- Complications
 - No infections
 - 2 Reoperations (8%): arthrofibrosis (1) and posterolateral synovial impingement (1) both after full return to sport

Conclusions

- OCAloT of the capitellum for large unstable OCDs is associated with:
 - Low rates of complications
 - Excellent graft incorporation
 - High elbow function and patient satisfaction
 - High rates of return to sports at 2-years

- Long-term follow-up outcomes ongoing



Thank You

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