

Osteochondral Allograft Reconstruction for Reverse Hill-Sachs Lesion



Physical Therapy Protocol · Posterior Stability Precautions

A reverse Hill-Sachs lesion is an anteromedial humeral head impaction defect created by posterior glenohumeral dislocation; allograft reconstruction restores the articular arc but the shoulder remains at risk for recurrent posterior instability during graft incorporation. Published rehabilitation protocols specific to this procedure are scarce, so this guideline deliberately blends posterior instability rehabilitation principles (University of Washington posterior stabilization protocol; international Delphi consensus on posterior shoulder instability) with the reported case-series protocol for fresh-frozen humeral head allograft reconstruction. Confirm all limits and progression with the surgeon.

AT A GLANCE

TIMELINE	16-24 weeks; progression gated by graft incorporation and posterior stability
IMMOBILIZATION	Brace/sling in neutral rotation with slight (~15°) abduction for 4-6 weeks, including sleep
KEY MILESTONES	Protected PROM weeks 0-6 with IR restricted · graded IR restoration after week 6 · full AROM by weeks 9-12 · strengthening weeks 6-16
RETURN TO ACTIVITY	Noncontact sport ~4 months per case-series data; contact/collision sport not before 6 months

KEY PRECAUTIONS

- Protect posterior stability: avoid combined flexion, horizontal adduction, and internal rotation (posterior loading/apprehension position) for the first 6 weeks.
- No posteriorly directed loads through the flexed arm - no pushing, push-ups, or weight bearing through the hand during the protection phase.
- Maintain neutral rotation in the brace; no IR ROM or IR loading beyond surgeon-prescribed limits until ~week 6, then progress IR and horizontal adduction gradually and pain-free through week 12.
- Confirm graft incorporation with the surgeon (clinical/imaging follow-up) before progressing to impact, heavy pressing, or contact activity.

PHASED REHABILITATION

PHASE 1 — PROTECTION		Weeks 0–6
GOALS	• Protect the allograft and posterior capsulolabral structures • Pain and edema control • Maintain distal function and scapular activation	
INTERVENTIONS	• Brace/sling in neutral rotation, ~15° abduction, worn including sleep per surgeon (typically 4-6 weeks) • Active elbow, wrist, and hand ROM; grip work from day 1 • Scapular retraction and sternal-lift postural drills in the brace • Supported pendulums when permitted by surgeon • Protected PROM per surgeon: abduction/scaption toward 60°-90°, ER as tolerated at the side; flexion limited to ~90°; IR restricted (no IR past neutral early; partial IR range only if surgeon allows late in phase) • Cryotherapy for pain and edema • Aerobic maintenance: stationary bike or walking with brace on	
CRITERIA TO ADVANCE	• Pain controlled with protected PROM program • No episodes of instability or posterior apprehension • Full distal (elbow/wrist/hand) AROM • Surgeon clearance at ~6 weeks to discontinue brace and begin IR progression	

PHASE 2 — MOTION RESTORATION		Weeks 6–10
GOALS	• Restore AROM in all planes with gradual, pain-free IR recovery • Initiate submaximal strengthening without posterior capsule loading	
INTERVENTIONS	• Discontinue brace at surgeon clearance (~week 6) • AAROM progressing to AROM: flexion, scaption, abduction, ER; wand and pulley work • Graded IR ROM progression (behind-back and cross-body motion introduced last, kept pain-free) • Submaximal multi-angle isometrics: ER, abduction, flexion first; IR isometrics last and pain-free • Periscapular strengthening: rows, prone scapular retraction, serratus activation below 90° • Treadmill walking/elliptical; avoid push-up-type loading	
CRITERIA TO ADVANCE	• AROM flexion ~140° and abduction ~120° with sound mechanics • IR progressing without posterior apprehension or pain • No instability symptoms with ADLs	

PHASE 3 — PROGRESSIVE STRENGTHENING		Weeks 10–16
GOALS	- Restore rotator cuff and periscapular strength and dynamic posterior stability - Prepare for impact and sport-specific loading	
INTERVENTIONS	- Progressive isotonic rotator cuff program (ER/IR with bands, side-lying ER, scaption raises) - Periscapular progressive resistance: seated rows, prone Y/T/W, standing rows - Rhythmic stabilization and perturbation drills in mid-range, progressing toward functional positions - Late-phase closed-chain progression (wall push-up to incline push-up), avoiding end-range flexion + IR positions - Running progression; lower-body and trunk conditioning	
CRITERIA TO ADVANCE	- Full, pain-free AROM including IR - Strength approaching symmetry without posterior apprehension - Tolerates closed-chain loading without pain at the reconstruction site	

PHASE 4 — RETURN TO ACTIVITY		Months 4–6
GOALS	- Return to work, recreation, and sport with a stable, strong shoulder - Independent maintenance program with durable posterior stability	
INTERVENTIONS	- Sport- or work-specific movement progression, including controlled pressing and overhead patterns - Plyometric and ball-toss drills progressing from below shoulder to overhead - Progressive push-up and pressing loads once cleared - Transition to independent maintenance strengthening program	
CRITERIA TO ADVANCE	- Strength $\geq 90\%$ of the contralateral side on testing - Pain-free sport-specific movements without apprehension - Surgeon confirmation of graft healing before contact/collision sport (not before 6 months)	

GUIDING PRINCIPLES

This protocol follows criterion-based progression over rigid time-based advancement; phased rehabilitation balancing tissue healing with controlled stress application; objective milestones (ROM, strength LSI, functional testing) to guide phase transitions; individualization based on surgical findings, tissue quality, and patient factors; and ongoing surgeon–therapist communication throughout recovery.

REFERENCES

1. Marcheggiani Muccioli GM, Rinaldi VG, Lullini G, et al. Mid-Term Outcomes Following Fresh-Frozen Humeral Head Osteochondral Allograft Reconstruction for Reverse Hill-Sachs Lesion: A Case Series. *BMC Musculoskelet Disord.* 2021;22:768.
2. Hurley ET, Aman ZS, Doyle TR, et al. Posterior Shoulder Instability, Part II — Glenoid Bone Grafting, Glenoid Osteotomy, and Rehabilitation/Return to Play: An International Expert Delphi Consensus Statement. *Arthroscopy.* 2024. doi:10.1016/j.arthro.2024.04.034.
3. University of Washington Medical Center Shoulder and Elbow Team. Posterior Bankart Repair Post-Operative Physical Therapy Protocol. <https://faculty.washington.edu/alexbert/Shoulder/Handouts/WarmePT/WarmePosteriorBankartProtocol.pdf>

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