



Therapy Talk: Management of the Post-Operative Shoulder

Christopher Fondren, PT, MPT, SCS, CSCS

Physical Therapist

ProMedica Total Rehab Sports Medicine

Toledo, OH

5 Most Common Shoulder Surgeries

1. *RTC Repair
2. Impingement Syndrome
3. Labrum Repair: SLAP, *Bankart
4. Adhesive Capsulitis
5. TSA/ *Reverse TSA

Navigating – Where to Start?

Key Considerations:

1. **WHAT** surgery was it?
2. What **TISSUES** were involved?
3. Tissue **QUALITY**.
4. What was the **SIZE and TYPE** of repair?
5. **PMHx** complicating factors
6. **SURGEON** Preferences and Protocols



Navigating – Where to Start?

Key Considerations (continued):

1. Building pt **TRUST**: Therapeutic Alliance
 1. Manual therapy: guarding pt
2. **DATE** of surgery and **TIME** postoperatively
3. Long term goals: **HOBBIES**, Occupation
4. Pt **EDUCATION** & **COMPLIANCE**



Navigating – Where to Start?

Therapeutic Alliance (TA):

Client to Therapist Relationship:

Positive Effects:

1. Trust
2. Individualized Treatment Plan:
 1. Identify patient *barriers* and *motivators*
(Harmon et al, 2014)
3. Empathy
4. Open Communication



Navigating – Where to Start?

Therapeutic Alliance (TA):

Client to Therapist Relationship:

Positive Effects (Continued):

1. Establish the need for active participation
2. Therapist working with the whole person
3. Therapist are seen as more than just a professional
4. Ability to work through challenges in the patient-clinician Relationship



Navigating – Where to Start?

Therapeutic Alliance (TA):

Client to Therapist Relationship:

Negative Effects:

1. Patient-Reported: Hostility and Anger Expression
2. Clinician-Reported: Combination of high anger and high depression scores (Burns et al 1999)



Navigating – Where to Start?

Therapeutic Alliance (Systematic Review):

Fuentes et al. 2014 found a **77.4%** reduction in (chronic) pain when combining physical therapy interventions and enhanced TA.



ASSET: American Society of Shoulder and Elbow Therapist: Consensus Statement

- Variability in research related to RTR protocols
- Need for a clinical decision-making model
- Goal: “The framework for rehabilitation for RTR is centered on the gradual application of controlled stresses over time.”

ASSET: American Society of Shoulder and Elbow Therapist: Consensus Statement

- “In General, a period of immobilization with graded rehab shows improved rates of anatomic healing without associated stiffness when compared with an approach of early, unprotected ROM.”
- “In addition, any stiffness that arises from protected ROM and immobilization tends to moderate by 1 year after an arthroscopic RCR.”

RTC Repair-Risk Screen

Delays/ Risk of Failure (16-94%, 1 st 6 mos)	Delays/ Risk of Failure (16-94%, 1 st 6 mos)
Age (RTC Tears; 30% > 60 yo, 60% > 80 yo)	Higher BMI
Repairs with Greater tension	Diabetes, smoking, higher comorbidities
Quality and size of tear > 5 cm	Worker's Comp and Comorbidities : ↓ outcomes
More than 2 Tendons	Higher Pre-Op Optimism: ↑ Outcomes
Poor Tissue Quality	Pt education and compliance

Meijden et al, IJSPT 2012, ASSET: Expert Opinion, Level 5, C.A. Thigpen, et al. 2016. Weber et al, JAAOS 2020.

RTC Repair Framework

Healing Stage	Treatment Focus	Time
Inflammatory / Proliferative	Immobilization	POW 0-2
Proliferative/ Remodeling Phase	PT – Protected PROM Phase:	POW 2-6
Remodeling Phase	AAROM/AROM	POW 6-8
Remodeling Phase	Initial RTC Strength	POW 8-12
Remodeling – max tensile strength	Advancing Strength	POW 12-16

Meijden et al, IJSPT 2012, ASSET: Expert Opinion, Level 5, C.A. Thigpen, et al. 2016.

ASSEST: Level V , Expert Opinion J Shoulder Elbow Surg (2016)

Stage	EMG Level	Weeks Post Op	Exercise Examples:
Phase 1: PROM	≤15%	1-6	Pendulums, Forward Bow, Gr 1-2 Mobs, PT PROM
Phase 2: AAROM, or AROM	≤15%	6-12	Towel Slide, AROM Supine Press Up,
Phase 2-3: AROM or Resisted	16-29%	8-16	Pulley FE, Ball roll on wall, FE Upright T bar, FE 1lb , Side lying DB ER at 0 ABD
Phase 3-4: Endurance	30-49%	12-20	High, Mid, and Low scapular rows. Stand ER @ 0 ABD, Elastic throwing acceleration, Elastic IR @ 90
Phase 4: Strengthening	≥ 50%	20+	ER at 45 → 90 ABD, Upright FE 3-4 lbs, Military press, Elastic throwing resistance decelerate

IJSPT 2016: RTR Current Concepts

Stage	Phase	Weeks Post Op	Exercise Examples:
Immobilization:	0	0-2	Sling
PT – Protected PROM Phase	1	2-6	Pendulums, Gr 1-2 Mobs, Limited PROM
AAROM/AROM	2	4-8	Wand bench, supine flexion, prone scap retraction, Seated “Salute”, Reverse Codman’s
Initial RTC Strength	3	8-12	Dynamic hug, Rows, Bicep/ Tricep, Isometrics
Advancing Strength	4	12-16	ER at 45 -> 90 ABD, Statue of Liberty, Push-Up Plus

*** Progressing Pattern?: A 2-week Rule.**

EMG Studies – Supraspinatus Pooled Means

ROM Stage	Exercise	% MVIC
Early PROM	Supine Press Up	4
	Forward Bow	5
	Supine Self –assisted Elevation	11 (1-17)
AAROM	Ball Roll	16
	Wall Slide	22
AROM	Stand ER with towel	41
	Dynamic Hug	62
	Push-Up Plus	99

EMG Studies – Infraspinatus Pooled Means

ROM Stage	Exercise	% MVIC
Early PROM	Forward Bow	2
	Supine press-up	9
	Supported Wall Slide	9
AAROM/ AROM	Ball Roll	18
	Flexion	26 (21-29)
AROM/ Strength	Side lying ER with towel	42
	Standing ER 90 ABD	50
	Push-Up Plus	104

EMG Studies – Teres Minor Pooled Means

ROM Stage	Exercise	% MVIC
AROM/ Strength	ER at 0 ABD WITH towel (goal: pure ER, comfort)	29 (17-46)
	ER at 0 ABD WITHOUT towel	46 (17-84)
	Forward Punches	69
	High Row	109

EMG Studies – Subscapularis Pooled Means

ROM Stage	Exercise	% MVIC
Low/ AAROM	Pulley-assisted elevation	8
	Table Slide	10
	Prone Shoulder Flexion	12
AAROM	Upright Bar-assisted elevation	24
	Forward Punch	35
AROM/ Strength	IR at 0 ABD	40
	Dynamic Hug	58
	Resisted Flexion	99

The Salute Exercise : 5% MVIC (Supra)



Open Chain Proprioception: 9-11% MVIC (Supra)



Dynamic Hug: 62% MVIC (Supra)

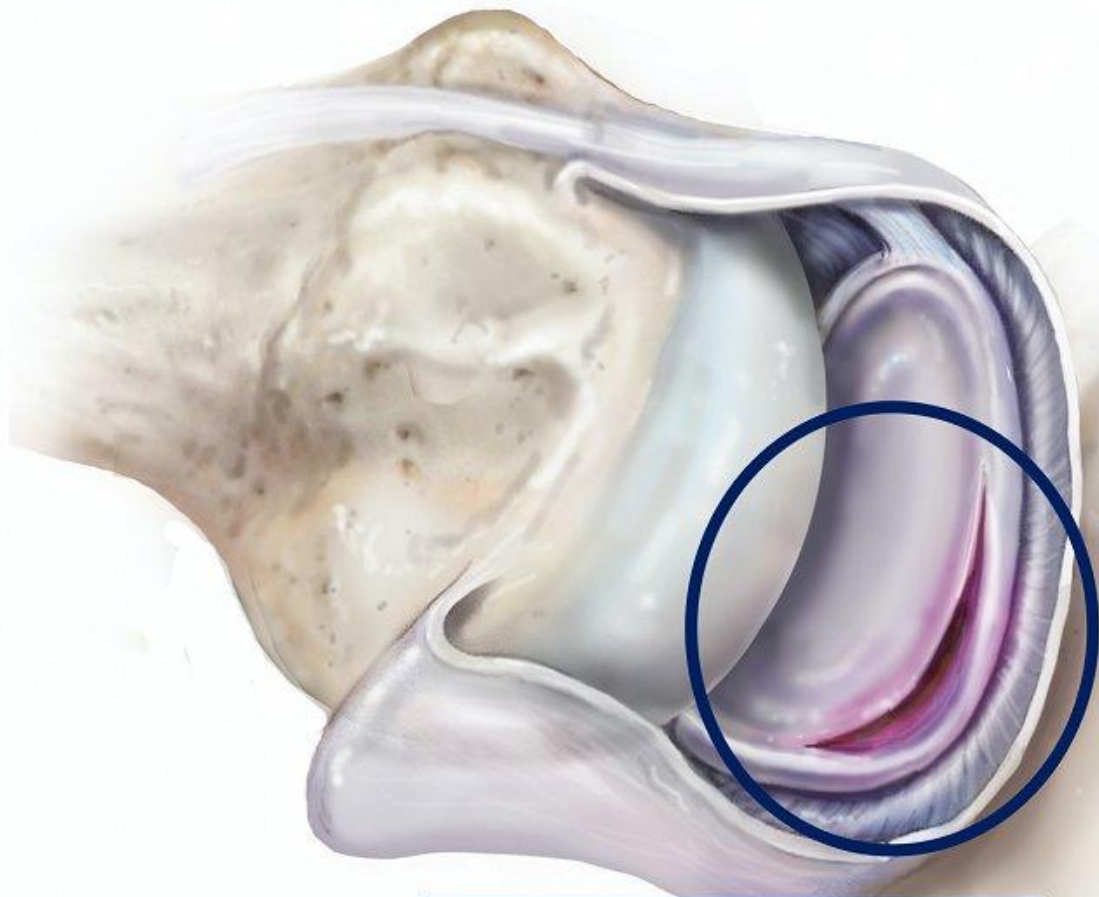


ER @ 45 ABD: 41% MVIC (Supra)



ASSET Consensus on Capsulolabral Repair

Principles	
1	Understand the surgical procedure
2	Understand the anatomic structures to be protected, how they are stressed, and the rate at which they heal.
3	Select and apply skilled techniques to impart stress to healing tissues.
4	Appropriate management of the initial immobilization period and the rate of ROM progression.



Bankart lesion



Bankart repair

ASSET Consensus on Capsulolabral Repair

Phase	Treatment Focus	Time
Phase 1	Immobilization	POW 0-4
Phase 2	Staged ROM	POW 6-12 wks
Phase 3	Initial Strengthening	POW 6
Phase 4	Advanced Strength	POW 9-12
Phase 5	Functional Progression	POW 16-20

Gaunt B.W. et al, JOSPT 2010.

ASSET Consensus on Capsulolabral Repair

Post Op Week	Staged ROM			
	PFE	PER at 20 ABD	PER at 90 ABD	AFE
POW 3	90	10-30	Contraindicated	NA
POW 6	135	35-50	45	115
POW 9	155	50-65	75	145
POW 12	WNL	WNL	WNL	WNL

REGUIDE: Managing Apprehension in Arthroscopic Bankart Repair

- (Therapeutic Alliance)
- Cognitive Behavioral Therapy
- Pt Education impact of psychosocial behaviors
- Graded exposure
- Training in anterior stability-provoking positions

REGUIDE: Managing Apprehension in Arthroscopic Bankart Repair

- Neurocognitive reactive multitasking:
 - Example: Blaze pods color tap uninjured hand with IR/ER at 90 abduction and add perturbation on the involved side.
 - The Vector ball reaction drills vs wall and throw-catch, throw-react.



Variability in Protocols s/p Bankart Repair and Remplissage (ABR)

- Level 3 Evidence
- Variability in protocols following ABR
- Hill-Sachs Defect present in 65-70% of first-time, and up to 100% in recurrent shoulder dislocators.
- Bankart plus remplissage (ABR): a popular choice for reducing recurrence rates by performing infraspinatus tenodesis and posterior capsulodesis.

Variability in Protocols s/p Bankart Repair and Remplissage (ABR)

- Immobilization (3-6 wks):
 - 83% Sling, 17% neutral rotation brace, Pouch
 - *ASSET: neutral rotation
- Early Motion exercises:
 - Disparity. Pendulums common. Isometrics (Avoid ER*).
- Movement Restrictions:
 - Limited ER for 4-8 wks, No ABDER, No FF >90 (The Tortoise Wins!)



Variability in Protocols s/p Bankart Repair and Remplissage (ABR)

- Initiation of formal PT:
 - Ranged 2-12 wks post-op
- Strength Training:
 - Absence of detailed information
- Return to Sport:
 - Mean return 5.2-6.4 mos
 - SIRSI (Shoulder Instability Return to Sport after Injury – Outcome Tool)



Reverse TSA (RTSA)

Time	Treatment Focus
POW 0-6	Sling 0-4 wks
	Pendulums, “Upper Cuts”, “Hitchhikers”, “Wall walks”, Elbow and Wrist AROM, Grip Strength, Cryotherapy
POW 6-12	PROM, AAROM, AROM progression. No resisted IR and reaching extension for 6 wks postop
	PROM and progress as tolerated: FF 90, ER 20 Light PREs ER, FF, abduction isometrics and bands, Concentric motions only
Month 3-12	Increase ROM to full PROM Progress resistance RTC, Deltoid, scapular stabilizers.

rTSA

- Lack of high-quality research
- Immobilization: sling 4-6 wks
- Start PT ROM: Wk 6
- Limited ROM: End of 12-16 wks
 - Flexion *110-150
 - ER *30-60
- RTS: 60-86% returned.
 - Swimming > Fitness > golf > tennis



Changes in AROM pre and post rTSA

Table 1. Preoperative and Postoperative Clinical Outcomes

Variable	Preoperative	2-Year follow-up	<i>p</i> -value
VAS	5.2 ± 2.2	1.8 ± 1.5	< 0.001*
Constant score	35.4 ± 8.1	57.8 ± 8.8	< 0.001*
UCLA score	13.4 ± 3.9	28.8 ± 3.8	< 0.001*
ROM (°)			
Active FF	51.5 ± 23.4	121.8 ± 27.8	< 0.001*
ER at the side	37.9 ± 10.5	35.5 ± 10.5	0.116
IRp	12.8 ± 2.9	13.4 ± 1.8	0.062
Abduction	96.9 ± 18.1	108.6 ± 16.6	< 0.001*
Muscle strength (lb)			
Active FF	2.1 ± 1.2	5.5 ± 2.8	< 0.001*
ER at the side	3.1 ± 1.6	5.7 ± 2.7	< 0.001*
IR	4.0 ± 2.0	6.1 ± 2.7	< 0.001*
Abduction	2.2 ± 1.4	5.0 ± 3.1	< 0.001*

Values are presented as mean ± standard deviation.

VAS: visual analog scale, UCLA: University of California at Los Angeles, ROM: range of motion, FF: forward flexion, ER: external rotation, IRp: internal rotation to the back, IR: internal rotation.

*Statistically significant

Rehabilitation Protocol for Reverse Shoulder Arthroplasty –Massachusetts General Hospital

Phase	Treatment Focus	Time
1	Immediate Post-Op: PROM, AROM of elbow and hand	POW 2-3
2	Intermediate Post-Op 1: PROM, AAROM low reps, no pain	POW 4-6
3	Intermediate Post-Op 2: AAROM, AROM higher reps	POW 7-8
4	Transitional Post-Op: AROM, Light isotonics	POW 9-11
5	Advanced Strength: Lifetime overhead no more than 10 lbs	POW 12-16

<https://www.massgeneral.org/assets/mgh/pdf/orthopaedics/sports-medicine/physical-therapy/rehabilitation-protocol-for-reverse-shoulder-arthroplasty.pdf> Dec2018.

References

1. American Academy of Orthopaedic Surgeons. *Management of Rotator Cuff Injuries. Clinical Practice Guideline.* <https://www.aaos.org/globalassets/quality-and-practice-resources/rotator-cuff/rotator-cuff-cpg-final-9-16-19.pdf>. Published March 11, 2019
2. Edwards, P.K., et al (July 2017). *A Systematic Review of EMG Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair.* JOSPT, 1-42.
3. Guant, B.W., et al. The American Society of Shoulder and Elbow Therapists' Consensus Rehabilitation Guideline for Arthroscopic Anterior Capsulolabral Repair of the Shoulder. JOSPT March 2010, 40 (3) 155-168.
4. Howard, M.C., Trasolini, N.A., Waterman, B.R. (2023). *Optimizing Outcomes After Reverse Total Shoulder Arthroplasty: Rehabilitation, Expected Outcomes, and Maximizing Return to Activities.* Current Reviews In Musculoskeletal Medicine 16, 145-153.
5. Kim et al. *Reverse Total Shoulder Arthroplasty According to Primary Diagnosis.* Clinics in Orthopedic Surgery • Vol. 12, No. 4, 2020 • www.ecios.org

References

6. Kinney, M., Et al (2020). *The impact of therapeutic alliance in physical therapy for chronic musculoskeletal pain: A systematic review of the literature*. *Physiotherapy Theory and Practice*, 36 (8), 886-899.
7. Meijden, O.A., et al (April 2012). *Rehabilitation After Arthroscopic Rotator Cuff Repair: Current Concepts Review and Evidence-Based Guidelines*. *International Journal of Sports Physical Therapy*, 7(2), 197-210.
8. Thigpen, C.A., et al (2016). *The American Society of Shoulder and Elbow Therapists' consensus statement on rehabilitation following arthroscopic rotator cuff repair*. *The Journal of Elbow and Joint Surgery*, 25, 521-535.
9. Van Gastel V.M., et al (May 2024). *Developing a Rehabilitation Guideline (REGUIDE) for Patients Undergoing an Arthroscopic Bankart Repair After Traumatic Anterior Shoulder Dislocation, Focusing on Managing Apprehension: An International Delphi-Based Consensus Study*. *JOSPT*, 54(5), 289-301.
10. Villarreal-Espinosa, J.B. et al (2024). *Rehabilitation Protocol Variability Following Arthroscopic Bankart Repair and Remplissage for Management of Anterior Shoulder Instability: A Systematic Review*. *International Journal of Sports Physical Therapy*, 19(10).
11. Weber, S., Chahal, J. *Management of Rotator Cuff Injuries*. *AAOS Clinical Practice Guideline Summary*. *J Am Acad Orthop Surg*; March 2020. 28: e192-e201.



Thank you

Christopher Fondren, PT, MPT, SCS, CSCS *Physical Therapist ProMedica Physicians
Orthopaedics, Toledo, OH*