Partial Cuff Tears: How to Approach

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Partial Rotator Cuff Tears

Approach to the Partial Cuff tear

NO REPAIR
1. No Surgery
2. Surgical Decompress/Debride

REPAIR
1. Complete the Tear and then fix
2. PASTA repair
Partial Thickness Cuff Tear

- Poorly Studied
- Majority of research based on impingement & FT RCT
Partial Cuff Tear - Incidence

• True incidence of partial cuff tear remains unknown
• Vast majority occur in supraspinatus
• Cadaveric studies:
  – 13-32% incidence of PT RCT, 7-19% FT RCT
  – Intratendinous > art sided > bursal sided
• Clinically:
  – Articular sided tear 2-3x more than bursal sided
  – Young athletes: 91% art sided (Payne et al AJSM 1997)
Partial Cuff Tear - Causes

Multifactorial

• Intrinsic causes:
  – Age related
  – Shear stress

• Extrinsic causes
  – Subacromial impingement
  – Internal Impingement
  – Shoulder instability
  – Trauma
  – Repetitive microtrauma

• Often more than one is responsible for development of partial thickness cuff tear
Partial Cuff Tear - Treatment

Many Variables to Consider in treatment

- Traumatic vs non-traumatic
- Tear size / depth
- Magnitude, duration, and impact of pain
- Other issues causing pain
- Degree of functional deficit
- Expected shoulder demands
Partial Cuff Tear - Treatment

• Repair or Don’t Repair

• If Don’t repair, then Options?
  – No Surgery
    • PT, Injections
  – Surgery
    • Decompression
    • Debridement
Partial Cuff Tear – No Surgery

WHAT ARE RAMIFICATIONS OF NO SURGERY?

- pain may persist / increase
- Function might deteriorate
- tear may become full-thickness
- low probability of loss of repairability without recurrence of symptoms
Partial Cuff Tear – No Surgery

PATIENTS DO GET BETTER WITH PT
Partial Cuff Tear – No Surgery

PATIENTS DO GET BETTER WITH PT

Long-term follow-up of cases of rotator cuff tear treated conservatively

Hiroaki Kijima, MDa,*, Hiroshi Minagawa, MDb, Tomio Nishi, MDa, Kazuma Kikuchi, MDb, Yoichi Shimada, MDC

- 65 shoulders with rotator cuff tears treated non-op
- 13 year follow-up
- 90% of patients had no or only slight pain and about 70% had no disturbance in activities of daily life.
Partial Cuff Tear – No Surgery

PROGRESSION OF PARTIAL TEAR?

• ~ 40% PTRCT will progress to FTRCT within 2 years
• pain development is associated with tear progression
• function tends to deteriorate with inc. in tear size
• even with increase in tear size, no fatty atrophy / loss of ER strength

• Mall JBJS 2010
Ultimately:

- 70 – 80% satisfied short / intermed. Without surgery
- persistent, disabling pain unresponsive to conservative Rx is primary reason to consider surgery,
  - not concern for potential deteriorating pathology
• Trying Physical Therapy first is a good and viable option
Partial Cuff Tear – Surgery?

• Does it have to be repaired?
• What about surgery without repair?
  Decompression
  And/or
  Debridement
Partial Cuff Tear – Decompression

Bursitis may be the key element of pain

- Greater number of nerve endings in the bursa than surrounding tissue

  Soifer et. al. Arthroscopy 1996

- High levels of substance P in bursa


- Conclusion: treating Bursa PAIN is key to bursitis and impingement
Partial Cuff Tear – Decompression

Clinical and structural results of partial supraspinatus tears treated by subacromial decompression without repair

Dennis Liem · Semra Alci · Nicolas Nedy · Jörn Steinbeck · Björn Marquardt · Gunnar Mölloenhoff


• Retrospective review on articular sided tears 50 month f/u
• 46 patients mean age 59.2 yrs old
  • Grade 1 tears (Ellman): 26 patients: No debridement
  • Grade 2 tears: 20 patients: Debride.
• Ultrasound: 3% progressed to full tear:
• 87% Good/Excellent Outcome

Conclusion: Partial cuff tears that are 50% in size or smaller do well without repair
Partial Cuff Tear – Decompression

Decompression Alone: PROs & CONs

**PROS**
- Eliminate extrinsic pain generators:
  - Bursa
  - Labral?/Biceps?
- Technically fast/easy/cheap
- Bleeding: biologic positive?
- Quick rehabilitation
- Protect cuff long term
Partial Cuff Tear – Decompression

Decompression Alone: PROs & CONs

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**CONS**
- Violation of soft-tissue envelope
- Adhesions between bone and underlying tendon
- Cuff may still progress
Partial Cuff Tear – Debridement

Arthroscopic Rotator Cuff Debridement Without Decompression for the Treatment of Tendinosis

- 60 patients
- Debridement only for partial thickness tear
- 9.5 yr f/u
- 79% good/excellent results

Budoff et al, Arthroscopy 2005
Partial Cuff Tear – SAD/Debride

The Arthroscopic Management of Partial-Thickness Rotator Cuff Tears: A Systematic Review of the Literature

• 16 articles
• 7 articles: debridement/SAD
• 9 articles: Repair

Concluded:
• <50% partial cuff tears treated with debridement +/- SAD
• >50% partial cuff tears: cuff repair
Conclusions for the “no repair”

- Partial tear of cuff – try Physical Therapy 1st
- Literature supports debridment +/- SAD for partial cuff tears < 50%
- Intrinsic and extrinsic factors must be considered
- Common sense should prevail
If Repair of Partial Cuff Tear
What to do?

Complete the tear by taking it down and then repair

Or

Keep remaining tissue intact and do a PASTA repair
Partial Tear: Complete it!  
Making the Decision

- Have suspicion from MRI
  - Does the tendon have a degenerative signal?
  - How much tendon is involved?
Partial Tear: Complete it! Making the Decision

- Debride the articular side
- Measure exposed footprint
  - Can use shaver diameter
- Mark with suture
- Subacromial bursectomy
- Evaluate/debride bursal tendon
- Use blunt probe on the tissue

• MAKE A DECISION!
Partial Tear: Complete it!
Making the Decision

• Takedown
  • Old, degenerative tear > 50% of total articular side footprint exposed
  • Bright signal evident on MRI indicating degenerative tissue and often intratendinious tearing
    • Possibility that this tissue is part of the pain generator and needs to be removed, much like grayish tissue in debridment of lateral epicondylitis
Partial Tear: Complete it!

Why 50%?

- Stress in residual tendon increases in a non-linear fashion in tears > 50%

  *Yang et al, JSES 2009*
Partial Tear: Complete it!

Outcomes

- Shin et al, *Arthroscopy* 2012
  - N= 48, Prospective, randomized
  - More stiffness in trans-tendon repair
  - 2 failure of takedown by MRI

- Bollier, et al *Iowa Orthop J* 2012
  - Systematic review
  - 14 studies
  - Improved outcomes and dec. morbidity with a takedown
Treatment - Surgical

- Bursal-sided defect
  - With Articular defect –
    Take down and Repair
    - The tissue in between is no good

- “High Grade” Articular sided
  - Take Down & Repair if 50 – 60%
  - Take down if 30 - 60% and degenerative tissue
It Is Not Just Me Saying It

Look At What The Studies Show!
Arthroscopic repair of partial-thickness tears of the rotator cuff

- 41 patients treated with arthroscopic completion and repair of partial cuff tear
- ASES improvement from 42 to 93 points
- 98% patient satisfaction
41 partial cuff tears converted to full thickness tears and repaired arthroscopically.

11 month f/u

88% were intact by ultrasound, and 5 demonstrated tear

ASES score improved from 46-82

Patient satisfaction was 93%.

Patient age was a significant predictor of tendon healing.
Deep partial rotator cuff tear: transtendon repair or tear completion and repair? A randomized clinical trial

Castagna et al. KSSTA, 2015

- 74 pts. with large articular partial cuff tears - randomized to completion and repair or transtendon repair
- Sig. improvement in Constant score and VAS with no statistically significant differences between the two groups
- Subgroup analysis, patients who underwent conversion repair had significantly increased postoperative strength scores as compared to patients following transtendon repair.
Conclusion

Take down and complete if:

• Bursal-sided defect
  – With Articular defect – Take down and Repair

• “High Grade” Articular sided
  – Take Down & Repair if 60%
  – Take down if 30 - 60% and degenerative tissue
PASTA REPAIR

- Consider this transtendon repair with good tissue and partial tear of 30-60%
Putting it all together

• Trying Physical Therapy first is a reasonable approach
• Partial tears < 30% debride/decompression
• Partial tears 30% - 60% consider Pasta depending on the quality of the tissue
• Partial tears > 60%, likely take down
• Bursal-sided defect
  – With Articular defect – Take down and Repair
• “High Grade” Articular sided
  – Take Down & Repair if 60% or more
  – Take down if 30 - 60% and degenerative tissue
Thank You