

Subscapularis Peel/Tenotomy vs Lesser Tuberosity Osteotomy The Case for LTO for anatomic TSA

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Conflicts of Interest

- Viscus: Royalty
- DJO- Royalty and Consulting
- DePuy- Synthes: Royalty
- Arthrex: Royalty
- Tornier- Wright: Royalty
- Lippincott W&W: Royalty
- Custom Orthopaedic Solutions: Equity and Consulting

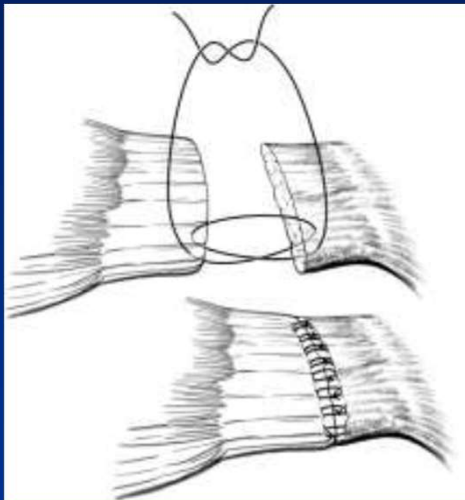
Subscapularis

- Largest and most powerful rotator cuff muscle
- Upper 60% tendon insertion
- Lower 40% muscular insertion
- Important for function and stability after anatomic TSA

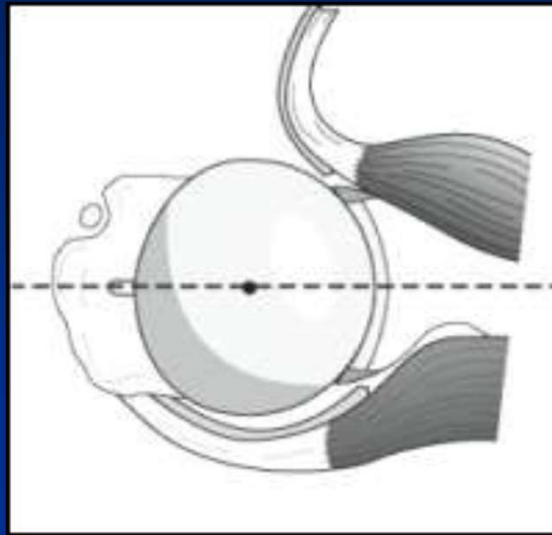


Subscapularis Management

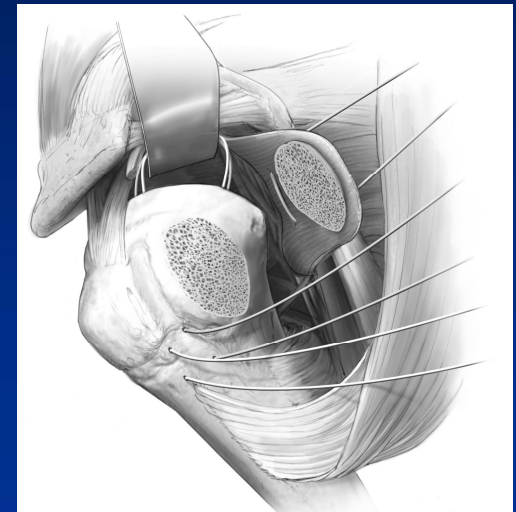
- Tenotomy



Peel



LT Osteotomy



Subscapularis Failure After TSA With tenotomy and Peal

- Moeckel, et al- JBJS-A 1993
 - 7/236 anterior instability
 - 3 failed primary repair- revised with
 - achilles tendon allograft
- Miller, et al- JSES 2005
 - 7 cases reoperation (6% incidence)
 - 3 anterior instability
 - Internal rotation weakness, increased passive external rotation
- Acute repair good
- Late repair or reconstruction poor



Consequences of Subscapularis Failure

- Scheibel and Habermeyer- JSES 2008
 - undetected failed repair follows natural history of a
 - traumatic SSC tendon rupture
 - scarring
 - progressive atrophy and fatty infiltration
 - irreparable

Subscapularis Weakness Tenotomy and Peel

- Miller, et al- JSES 2003
- 41 TSR- tenotomy
- Abnormal lift-off 25 of 37
- 66% abnormal belly-press and lift-off
- 92% with abnormal lift-off reduced subscapularis function



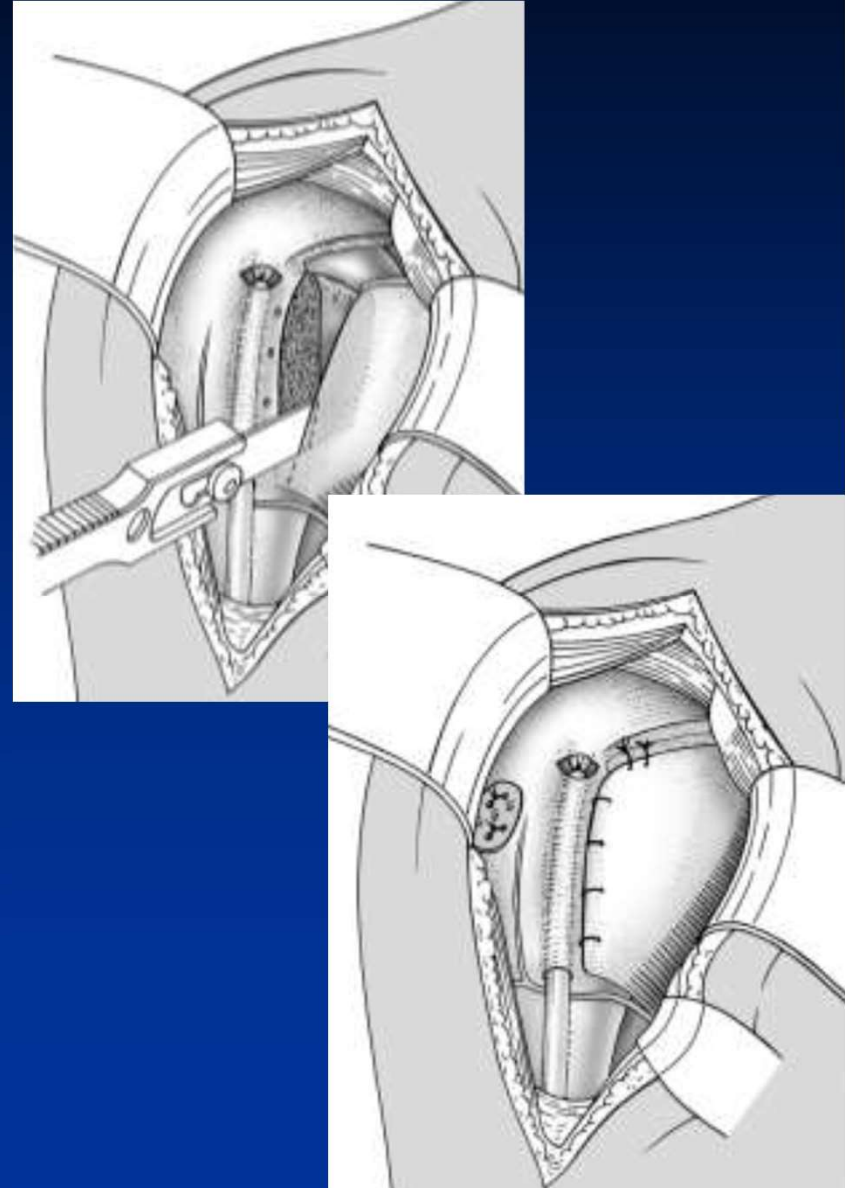
Mechanical Testing

- Multiple studies with variable findings
 - LTO never worse
 - Actual construct determines strength of the initial fixation
 - Mechanical testing does not reflect the result of healing
- Van den Berghe-JSES 2008
- Krishnan,et al JSES 2009
- Thiel, et al JSES 2010
- Giuseffi et al JSES 2012
- Fishman et al JSES 2014

LTO

LTO better than historical results

- Qureshi, et al-JSES 2008-
Level IV case series
 - 30 cases LTO
 - 60% normal belly press
 - Improvement over
historical results
(tenotomy repair 33%
normal belly press)



LTO vs. Tenotomy

LTO better

- Buckley, et al JSES 2014- Level III cohort
 - Tenotomy (32) vs LTO (28) patients
 - Belly press and bear hug not significantly different
 - WOOS, DASH, and Constant Scores not significantly different
- Evaluation
 - Tenotomy 4 subscapularis tendons abnormal
 - Abnormal ultrasound worse WOOS and DASH
 - LTO all normal

LTO vs Peel

No Difference

- Lapner et al JSES 2013(Level II RCT); JBJS-A 2012 (Level I RCT)
 - 87 patients- LTO (43) vs peel (44) - 24 mth followup
 - Healing rates and fatty infiltration no significant differences
 - Subscapularis muscle strength no significant difference
 - Patient reported outcomes (WOOS and ASES) no significant differences

LTO vs Peel (2007)

LTO Better

- Scalise, et al JBJS-A 2010- Level III therapeutic (Cleveland Clinic Experience)
 - Tenotomy (15) vs LTO (20)
 - LTO higher outcome scores, lower rate of subscapularis tears, and universal healing of osteotomy

Why I use a LTO for anatomic TSA

- Last 13 years of experience with LTO
- 20 years prior experience with tendon to bone repair after TSA with 30% + belly press
- Our case controlled clinical study
- Better fixation our clinical impression and literature
- Better healing bone to bone
- Better clinical results
 - IR function (Belly press test)

Thank You



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Every life deserves world class care.