Biceps Tenodesis: Sub-Pec is the only way!

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The Problem is Pain

“Pain Generator”

- Painful biceps tear
- Painful Biceps Tenosynovitis

Speaker Disclosure

Disclosure Information
The following relationships exist:

Stryker, Smith Nephew - Institutional Support
Biomet Sports Medicine - Consultant, Royalties
Elsevier - Book Royalties
DJO - Royalties for Sling
Biceps Tenodesis vs Tenotomy

Biceps Treatment

- Tenotomy
- Proximal Tenodesis
- Subpectoral Tenodesis

Tenodesis

Assume Tenodesis is the Answer!
- Relieve anterior shoulder pain
- Maintain tendon-length relationship
- Avoid Cosmetic deformity
- Avoid subjective or objective weakness
  - supination
  - flexion
- Avoid fatigue/cramping

Tenodesis Above the Groove?
Why do Biceps Tenodesis more distal?

- Decreased incidence of postoperative groove pain with distal tenodesis location
  Lutton et al, CORR, 2011

Why do Biceps Tenodesis in Sub-Pectoralis area?

- Completely removes the tendon from the sheath and synovium (which may contribute to persistent pain)
- Poor tendon quality proximally may make tenodesis challenging
- Anatomy is easily defined and identified
- Efficient technique with “short” learning curve
- Small cosmetic incision

Fixation for the Tenodesis: Does it matter?

- Interference Screw fixation demonstrated higher load to failure and stiffness compared to suture anchors
  Golish and Sekiya, Arthroscopy 2008
- Clinically No Difference in outcomes between suture anchors and interference screw
  Millett and Warner BMC Musculoskeletal Dis, 2008
At Risk Structures:

Musculocutaneous nerve
10.1 mm medial to the tenodesis
2.9 mm medial to the medially placed retractor in neutral arm
8.1 mm from the tenodesis at 45° IR
19.4 mm from tenodesis at 45° ER

Dickens et al AJSM, 2012

Complications

Nho SJ, Beiff SN, Verma NN, Slabaugh MA, Mazzocca AD, RomeoAA. Complications Associated with Subpectoral Biceps Tenodesis. Low Rates of incidence following Surgery JSES, 2010

- Over 3 yrs, 7 of 353 Biceps Tenodesis had complications with incidence of 2.0%
- 2 pts (0.57%) with persistent bicipital pain
- 2 pts (0.57%) with failure of fixation with Popeye deformity
- 1 pt (0.28%) with deep wound infection
- 1 pt (0.28%) with temporary musculocutaneous neuropathy
- 1 pt (0.28%) with RSD

Technique
Arm placed in holder in slightly abducted and external rotated position

Identify inferior border of pectoralis major, and the underlying short head of the biceps muscle belly
Make incision in axillary fold close to humerus. Incision can be 2-3 cm in length with most on the inferior aspect of pectoralis.

Dissection under pectoralis

Palpate under pec
Army/Navy under pec and blunt Hohmann retractor placed superior lateral over the humeral shaft laterally and above the pec insertion.

Identify biceps, Blunt Hohmann or is placed medially. Care taken to avoid stretch on musculocutaneous nerve

Small self retaining retractor can be placed eliminating need for 2nd hand on the medial hohman
Place Cannula for the drill

Drill for Anchor
Sutures passed in and through the biceps tendon in situ -
This eliminates any guesswork from proper length tension relationship of biceps
Tenodesis complete

Tendon is tagged with a hemostat above tenodesis site and the tendon is cut just above the tenodesis.
Remember

- Pre-op ultra-sound guided injection in bicipital groove (with positive response) will help confirm biceps sheath pain and indication for biceps tenodesis
**Pearls & Pitfalls**

- Arm should be slightly abducted and externally rotated for best visualization
- Easier to perform tenodesis early in the arthroscopic procedure before the tissues get swollen from fluids

**Pearls & Pitfalls**

- Make incision in axillary fold close to humerus for cosmetic incision
- Place the Hohmann retractor lateral to biceps and just at superior border of pec for optimizing visualization

**Pearls & Pitfalls**

- Go gentle with medial retractor (avoid injury to musculoskeletal nerve), use small hohmann to retract conjoined tendon away from long head just enough to visualize tendon
Pearls & Pitfalls

• Can use medial retractor to retract biceps medial when curetting the bone and drilling for anchor or for placement of interference screw

• Keeping biceps intact in the joint and fixing the biceps to bone with suture anchor allows for optimal length tension without guessing

Pearls & Pitfalls

• Place a hemostat on the tendon above tenodesis site and then cut the tendon just below this. The hemostat will allow easy retrieval of tendon once it is cut within the joint

• Use dermabond on skin after the skin closure to assist in sealing the skin in axilla region and help prevent infection

Remember Postoperative Rehabilitation

Goals
• Protect Biceps Tenodesis site
• Full Shoulder motion

Early
• Concentrate on healing

Late
• Strengthening beginning with light 2 ½ lb weight at 6 weeks

Return to sports
• Normally 4 months minimum
Thank You

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