When Is a Hill-Sachs Lesion Too Large for Remplissage?:
The Relationship between Humeral Head Size and Infraspinatus Tendon Length

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Disclosure

My co-authors and I have no financial conflicts to disclose.
Purpose

• Hill-Sachs lesions (HSLs) are common after anterior shoulder dislocation

• Humeral head (HH) bone loss is a risk factor for failure after arthroscopic treatment of shoulder instability\(^1,2\)

• Remplissage is a well known treatment approach for HSLs
  • Remplissage = infraspinatus (IS) tenodesis into a HSL to create an extra-articular boney defect\(^3\)
Purpose

• Others recognize remplissage is often capsulomymodesis rather than tenodesis
  • If IS tendon medial-lateral (M-L) length is less than M-L length HSL, this results in capsulomyodesis
  • HSLs are commonly located at superior HH, thus superior portion IS tendon particularly important
• Relationship b/w HH anatomy & available IS tendon length has yet to be described in the literature
• Aim of this study is to compare the relationship between HH anatomy and the amount of available IS tendon
Methods

- 15 fresh frozen cadaveric shoulders w/ intact rotator cuff tendons
- Interval b/w teres minor (TM) & IS was identified and divided
- IS tendon measured along superior-inferior (S-I) width & M-L length
- Given variability in IS tendon morphology the superior & inferior M-L lengths measured independently
Methods

• Each HH measured in three planes:
  - Anterior to posterior (A-P)
  - Mid-coronal humeral neck from superior to inferior (HN)
  - M-L: lateral proximal humerus to most medial portion of articular surface
• Pearson correlation coefficients (r) of tendon measurements relative to HH measurements were calculated
Results

Mean HH measurements were:

• A-P = 44.3mm ± 3.3mm
• HN = 49.3mm ± 3.4mm
• M-L = 52.2mm ± 3.4mm (M-L)
Results

Mean IS tendon measurements were:
- Superior M-L length = 42.4mm ± 5.5mm
- Inferior M-L length = 31.0mm ± 4.7mm
- Superior-inferior width IS tendon = 19.4mm ± 3.0mm
Results

Statistically significant correlations (p<0.05)

- M-L length of superior IS tendon relative to A-P HH diameter
- M-L length of superior IS tendon relative to M-L HH length
Results

Two methods to estimate M-L length of IS tendon:

1) Superior IS length = 0.969 X (A-P HH measurement) – 0.503

2) Superior IS length = 0.922 X (M-L HH measurement) – 5.762
Conclusion

- First study to define the relationship b/w HH size and available IS tendon length
- Direct correlation b/w both A-P HH diameter and M-L HH length and the length of superior IS tendon
- May help guide the future management of HSLs in the setting of subcritical glenoid bone loss
- Pre-operative HH measurements on advanced imaging may help define “critical” amount of HH bone loss where M-L length of the HSL > M-L length of available IS tendon