Case study #2 Shoulder

Patient is an 45 year old female that presents with severe right shoulder pain after tripping on a phone cord and landing directly on her right shoulder. Shoulder lacks any real mobility and attempts to reposition are very painful.

Patient came to Neo Matrix for an initial ultrasound exam to evaluate soft tissues of the shoulder. The exam was somewhat limited due to the limited range of motion available.

**Sonographic Findings**

DOB: 09/1970 DOE: 3/21/16 Right Shoulder

**Long Head of the Biceps SAX**
In SAX the Biceps Tendon is not positioned deep in the Bicipital Groove. There is not excess fluid noted in within the tendon sheath. No “halo sign” as seen with tenosynovitis.

Bony irregularity/spur formation of the Greater and/or Lesser Tuberosity margins is not demonstrated.

**Long Head of the Biceps LAX**
In LAX the Biceps Tendon has normal hyperechoic, fibrous echotexture. No sonographic evidence of tendinosis.

**Subscapularis Tendon SAX**
The SAX Subscapularis tendon ,with the patient arm in external rotation, does not show hyperechoic, fibrous echotexture. Intra-tendinous tears cannot be ruled out. Due to medial “perching” of the Biceps on the lesser tuberosity, Subscap pathology is likely. This allows medial translation of the Biceps. The tendon attachment on the Lesser Tuberosity lacks the normal tapering conformity, and well defined tendon footprint associated with a stable tendon enthesis.

**Subscapularis Tendon LAX**
In LAX, the Subscapularis does not demonstrate the normal tendon slips interdigitating with hypoechoic muscle.

**AcromioClavicular Joint**
The cortical margins of the Acromion and Clavicle are not irregular with bone proliferation/spurs. The Clavicle is not elevated above the
Acromion suggestive of shoulder separation. The AC ligament is distended from intra-articular effusion. “Geyser Sign” is present. Internal and external rotation dynamic maneuvers are not presented for AC impingement (internal) and AC separation (external).

**Supraspinatus Tendon SAX**
The Humeral cortex is continuous/smooth/intact. The hyaline cartilage interface is a well-defined anechoic interface following the bony margin. There is not a “double contour sign” suggestive of abnormal fluid present deep to the SSP, and associated with tendon tears. The tendon does not show hyperechoic, fibrous echotexture. There is poor or nonvisualization of tendon intrasubstance region of the SSP as with partial thickness tears. There is not effusion of the SubDeltoid bursa.

**Supraspinatus Tendon LAX**
The tendon attachment on the Greater Tuberosity has the normal tapering conformity, and well defined tendon footprint associated with a stable tendon enthesis.

**Infraspinatus Tendon SAX**
The patient arm was in internal rotation and tight adduction to be imaged. The tendon demonstrates hyperechoic, fibrous echotexture. A well-defined tendon footprint is demonstrated.

**GlenoHumeral Joint**
The Humeral Head demonstrates continuous/smooth/intact cortical margin. The visible/apical portion of the Glenoid Labrum is not suggestive of labral defect/tear. The joint space is well maintained. The Teres Minor muscle/tendon is unremarkable. There is not sonographic evidence of a dorsal ganglion in the Suprascapular Notch.

**Anterior Impingement**
Dynamic imaging with patient arm flexion/abduction reveals the Supraspinatus gliding incompletely under the Acromion.

**Rotator Cuff Interval**
The RC interval image demonstrates increased SSP and SubScp margins due to GH joint fluid exiting the capsule at this anterior site. The combined interface of the CoracoHumeral ligament and GH capsule is thickened as with capsulitis.
**Findings:**

- Subscapularis tendinosis with enthesopathy
- Biceps subluxation (mild/moderate)
- AC joint separation w/ effusion
- Supraspinatus tendinosis w/ intrasubstance fiber failure (Best on LAX)
- Anterior Impingement. Humeral proximal migration due to cuff instability. GH joint capsulitis

**Suggested treatment sites:**
- RC Interval: Fenestrate CH ligament/Capsule interface
- Intraarticular GH joint
- SSP intrasubstance tear/LAX AC joint
- Subscapularis enthesis
- *Anterior GH Ligament*

Interpretation findings suggested potential benefit with stem cell therapy. It was determined that two vials of PX50 was the most suitable product for this treatment protocol.

All recommended treatment sites were identified via ultrasound guidance with precise product placement in all sites. Patient tolerated procedure well.

**Post procedure evaluation**

At time of follow-up patient reported pain alleviation but no change in range of motion. Patient followed up with an X-Ray that revealed a broken clavicle that was not previously identified through prior MRI diagnostics.

Follow-up ultrasound was performed to objectively evaluate shoulder treatment sites 93 days S/P treatment. The following is follow up exam interpretation.

**Sonographic Findings**
Sonographic images of the right shoulder are presented as follow-up to a previous study performed on 3/21/16. The biceps tendon is medially displaced in the groove. Perched on the lesser tuberosity side of the bicipital groove. The biceps tendon is otherwise normal in echotexture. No evidence of tendinosis or fiber failure.

Images of the tendon attachments of subscapularis and supraspinatus reveal demonstrable increased echogenicity and echotexture. Best demonstrated on images #4 and #5 and #6 respectively.

Rotator cuff interval images demonstrate absent sonographic evidence of capsular fluid exiting the gleno-humeral joint via the interval. This is most evident on image #10.

Acromial-clavicular joint and images demonstrate increased intra-articular debris as seen with post-inflammatory activity. Simple fluid as in active inflammation is not demonstrated.

**Findings:**
Sonographic evidence compatible with increased echodensity at the tendon attachments of subscapularis and supraspinatus. Rotator cuff interval images do not demonstrate excess fluid as in capsulitis. Findings compatible with post-inflammatory AC joint inflammation.
Above image demonstrates demonstrable increased echogenicity and echotexture of the Supraspinatus as well as increased echodensity at the tendon attachment. Pre image is on the left and the follow up is on the right.

Above image demonstrates demonstrable increased echogenicity and echotexture of the Subscapularis as well as increased echodensity at the tendon attachment. Pre image is on the left and the follow up is on the right.