AN UNUSUAL CAUSE OF
SHOULDER PAIN IN A DIVISION I
VOLLEYBALL PLAYER

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Introduction

• Shoulder pain is a common complaint especially in overhead athletes due to the repetitive motions such as those experienced in volleyball hitters.1 Paley KJ, Jobe FW, Pink MM, Kvitne RS, ElAttrache NS. Arthroscopic findings in the overhand throwing athlete: evidence for posterior internal impingement of the rotator cuff. Arthroscopy. 2000;16(1):35-40.

• Proper diagnosis is of paramount importance in directing management and treatment.

• A variety of physical examination maneuvers as well as imaging techniques can be employed to produce a differential diagnosis.
History of Present Illness

21 year old right-hand-dominant female NCAA Division I volleyball outside hitter who presented with right shoulder pain.

• New onset of pain.
• Remote history of previous pain in high school, but no complaints in college until fall 2011 in her sophomore year.
• She was evaluated by her athletic trainer at that time and treated for impingement syndrome with rehab and OTC medications.
• She required ibuprofen prior to matches and completed the season without any missed practices or games.

• She improved with time off, but had a significant exacerbation of pain in February 2012 while at the U.S national team trials.
• She was evaluated by a team physician at that time.
• Denied any specific injury or trauma, neck, wrist, hand, or radicular symptoms.
• Denied history of dislocations.
• She did occasionally have some elbow discomfort.
• Her pain was mainly in the right lateral deltoid tuberosity region.
Past Medical History

• PMHX: Seasonal Allergies, Psoriasis, Iron Deficiency Anemia
• PSHx: Adenoidectomy, Ureter surgery
• FHX: MGF cardiac amyloidosis, MGM thyroid dz, arrhythmia
• ROS: Neg outside of HPI

Physical Exam

• Normal ROM.
• Positive Empty Can’s
• Positive Hawkin’s and Neer’s.
• Normal strength except with Empty Can.
• Normal sensation.
• Positive symmetric bilateral laxities in her shoulders, anterior capsule.
• Negative Biceps Loading Test.

Differential Diagnosis

• Shoulder Impingement Syndrome
• Rotator Cuff Tendonitis
• Labral Tear
• Deltoid Strain
• Partial Tear of the Rotator Cuff
• Cervical Radiculopathy
• Thoracic Outlet Syndrome
• Somatic Dysfunction
Test & Results

• Imaging:
  – An x-ray was completed and demonstrated an abnormal radiolucent defect along the glenoid.

This was followed by an MR arthrogram, which showed.....
MRI T1 Sagittal with contrast

MRI T2 axial demonstrating cystic changes measuring approximately 21 mm AP x 21 mm craniocaudal.

MRI sagittal T1 without contrast demonstrating cystic changes.
The athlete was referred to the orthopedic surgeon. Management options were discussed at that time including surgery. The athlete elected conservative measures. Pain management was achieved with:

- oral anti-inflammatories
- rehab 5x/week
Outcome

- She did well until September 2013 in her senior year when she began to complain of sudden onset of pain after a weekend tournament.
- At that time, she was reevaluated by an orthopedic surgeon.
- She denied any acute injury or trauma.
- She complained of 3 to 4/10 pain at rest with some intermittent sharp, stabbing pain and achy pain at night when she slept, which would awaken her from sleep if she slept on her right side.
- She also complained of pain with reaching overhead.
- Mostly, activities below her shoulder did not cause much pain.

Outcome

- Physical Exam at reevaluation
  - Full/symmetric ROM bil shoulders.
  - Full Strength.
  - Negative rotator cuff weakness.
  - Hypermobility with Beighton score 7/9 (no knee hyperextension).
  - Negative O’Brien’s.
  - Symmetric laxity: 1+ sulcus.
  - 1½ to 2+ posterior load and shift and 1+ anterior load and shift bilaterally.
  - Apprehension was negative for abduction external rotation, but mildly positive for adduction, internal rotation with an axial load.

Outcome
Outcome

- A decision was made to manage her symptomatically with a series of injections to delay surgery.
- She received a series of 3 injections over thirteen weeks
  - The first two injections were combination of Kenalog (triamcinolone) 40mg and 3cc Eufflexa© (1% sodium hyaluronate) into the glenohumeral joint separated by 7 weeks.
  - This was followed by a third injection of 3cc Eufflexa© (sodium hyaluronate) glenohumeral injection 6 weeks later.

Return To Play

- Following viscosupplementation injections, she was off for 3 days and then limited to 50% (10-20) swings in practice
- She progressed to full activity 3 days after the first 2 injections.
- Her need for oral medication decreased during her season and she completed the season with decreased pain
- After the last injection, she played volleyball overseas.
- Upon her return, she followed up with orthopedics and elected to have surgery.

Discussion

- There are many potential etiologies for shoulder pain.
- In this particular case, an osteochondral defect (OCD) of the shoulder was the cause.
- Overhead athletes suffer recurrent microtrauma to the shoulder and may have rates of chondral injury as high as 17%1. 
Discussion

• The physical exam pointed to impingement as the diagnosis initially, but after physical rehabilitation failed, an x-ray was ordered.
• The findings on x-ray led to the MR arthrogram and the final diagnosis; demonstrating the usefulness of x-ray in refractory shoulder pain cases.

Discussion

• An osteochondral defect (OCD) of the shoulder is a rare and often asymptomatic finding.

Discussion

• A literature review did not provide any cases of an OCD in the glenoid diagnosed prior to shoulder arthroscopy, further demonstrating the importance of presenting such a case and providing a discussion for diagnosis and management.
Discussion

• In most shoulder conditions in an overhead athlete, conservative management should always be considered.
• With scarce literature on this rare diagnosis, no set management guidelines are available.
• Anecdotal strategies used for conservative management could include:
  – avoidance of activities that would exacerbate the symptoms
  – use of NSAID’s and/or analgesics
  – shoulder rehabilitation
  – Corticosteroid and/or viscosupplementation injections.

Discussion

• With this athlete, rehabilitation was initially attempted along with NSAID’s and analgesics.
• She did well for two years and then symptoms worsened.
• Treatment options were discussed and due to the cystic changes and damage to the articular surface of the glenoid, essentially demonstrating glenoid arthrosis, a decision was made to trial viscosupplementation injections before performing surgery.5,10


Discussion

• The athlete improved and subsequent injections were provided as described.
• She was able to complete her senior season without missing any games.
Discussion

• She would like to continue her career at the professional level, therefore, underwent arthroscopic surgery.

• A lack of literature is available to direct the different surgical approaches and repair.
Follow up

- Post op she was placed in a sling.
- She will be NWB for 8 weeks.
- Rehab with ROM was started immediately.
- She is currently pain free!
QUESTIONS?

References