April 2011 Case of the Month

Left Elbow Pain

By Matt Grady MD

CC: left elbow pain

HPI: A 13 year old male baseball player presents to the sports medicine clinic with left elbow pain. Symptoms began about 2 months ago as deep elbow pain with full extension when swinging a baseball bat. He has been learning a new baseball swing which emphases bat speed. This technique, popularized by Albert Pujols, achieves increased bat speed by a short swing and early full elbow extension. He has been training a few times of week over the winter. He is not currently playing games.

He is a right handed batter and throws right handed. There was no history of acute injury. He has no pain at rest or with elbow flexion. He has pain with full elbow extension. There is no limitation to his elbow ROM.

Symptoms made worse by: full elbow extension

Symptoms improved by: rest

Past Medical History: normal developmental history, no chronic illness

Past Surgical History: none

Social History: lives with parents, 8th grade, plays on school baseball team in the spring and travel team in the spring and summer. He denies supplement use.

Meds: None

NKDA

Physical Exam:

Temperature 98.4 °F (36.9 °C), height 1.658 m (5' 5.28"), weight 67.4 kg (148 lb 9.4 oz).

Constitutional: Well developed, well nourished and No acute distress

HEENT: normocephalic/atraumatic, anicteric

Respiratory: Normal effort, no respiratory distress, no cyanosis

Neurologic: alert, oriented x 3, normal coordination

Psychologic: normal affect, mood and age-appropriate judgment

Skin: Skin over all extremities clean, dry, intact

Full forward flexion and abduction of the shoulder

Shoulder ROM in supine position:

Right IR 45/ ER 100

Left IR 60/ ER 100

Left Elbow:

Inspection: Effusion Absent
Ecchymosis: Absent
Alignment: Normal
Palpation: Tenderness None
Crepitus: Absent
Masses: Absent
ROM: Full ROM of the elbow
Pain was elicited with ROM- only with full extension
He has pain with push up and dips.
Strength: full strength about elbow including flexion, extension, pronation and supination
Elbow Special Tests:
Stable: yes
Varus Stress: Negative
Valgus Stress Negative
Tinel: Negative
Upper Arm:
Inspection:
Swelling: Absent
Ecchymosis: Absent
Muscle Wasting: Absent
Palpation: Tenderness: No
Masses: Absent
Forearm:
Inspection: Ecchymosis Absent
Muscle Wasting Absent
Palpation Tenderness: No
Masses: Absent
His shoulder, wrist, and hand are all within normal limits.
Neurovascular:
Radial, Ulnar, Medial, Anterior Interosseous are all intact.
Brisk capillary refill distal to injury with strong radial pulse.
RADIOGRAPHS:
Views: bilateral elbow AP, Oblique, Lateral, )
My interpretation: no obvious acute osseous abnormality, ? lucency of trochlea of distal humerus on the left on AP view.
Radiologist's report: normal elbow
Figure 1 A: left (symptomatic) side B: right comparison side

DDX:
Osteochondritis Dissecans of the trochlea or capitellum
Olecranon apophysitis
Olecranon stress fracture
Triceps tendonitis
Mechanical pinch from cyst (ganglion, joint capsule, etc)
Loose body

Work up:
Since OCD of the trochlea was suspected, an MRI was done (pictures below A: t1 tirm coronal, B: PD FS sagittal, C T1 sagittal D: T2 cartilage sequence)
Final diagnosis:
Osteochondritis Dissecans of the trochlea

Discussion:
Osteochondritis Dissecans of the capitellum has been a well described injury pattern in youth pitchers and gymnasts. However, injuries to the trochlea have not been commonly reported in the sports literature. This athlete experienced elbow pain after adopting a new batting technique that emphasized quick elbow extension. This case highlights an unusual case of elbow extension pain in a baseball batter.

Avascular necrosis of the Trochlea has been reported in the pediatric orthopedic surgical literature as a complication of an elbow fracture (1). After an injury, the lateral aspect of the trochlea does not continue to grow or develop. This has been reported as either a focal avascular necrosis in the lateral trochlea or premature closure of the lateral aspect of trochlear physis. This results in a widened trochlear groove between the medial and lateral condyles later in childhood/early adulthood. The classic radiographic finding is called the “fishtail deformity”.

This deformity occurs as a result of the interruption of the blood flow to the lateral trochlea. During childhood, the trochlea of the humerus receives its blood supply from two separate arterial sources. The lateral trochlea receives its blood flow from the posterior vascular arcade. These vessels penetrate the humerus from the posterior metaphyseal area, cross the physis and supply the lateral trochlea and a large area of the trochlear apex. The medial trochlea receives its blood flow from some medial end-arterioles. There is not collateral circulation and there is not overlap in the watershed area (2, 3).

In this case, the trochlear groove was not widened, but there was lucency in the trochlea. This lucency corresponds to the watershed area of the blood flow. This type of injury has recently been documented in the radiology literature (4). They hypothesized that repetitive traumatic injury to this watershed could produce this injury of focal AVM. This could occur from repeated forced elbow extension/hyperextension directly impinging the blood flow or repetitive terminal extension abutment with resultant chondral/subchondral edema that leads to increased intraosseous pressure and decreased local perfusion.

Case follow-up:
He rested one month and became asymptomatic. He wanted to return to baseball, so he was fitted with a hinged elbow brace, locked at 10 degrees to prevent full elbow extension of his left elbow. He currently is pain free. A three month follow up is planned.
Figure 3 Normal T1 elbow (age matched control), abnormal T1 elbow this patient.


