

Biceps Tendon Injury

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Rad 4001

Reviewed By: Dr. Pritish Bawa



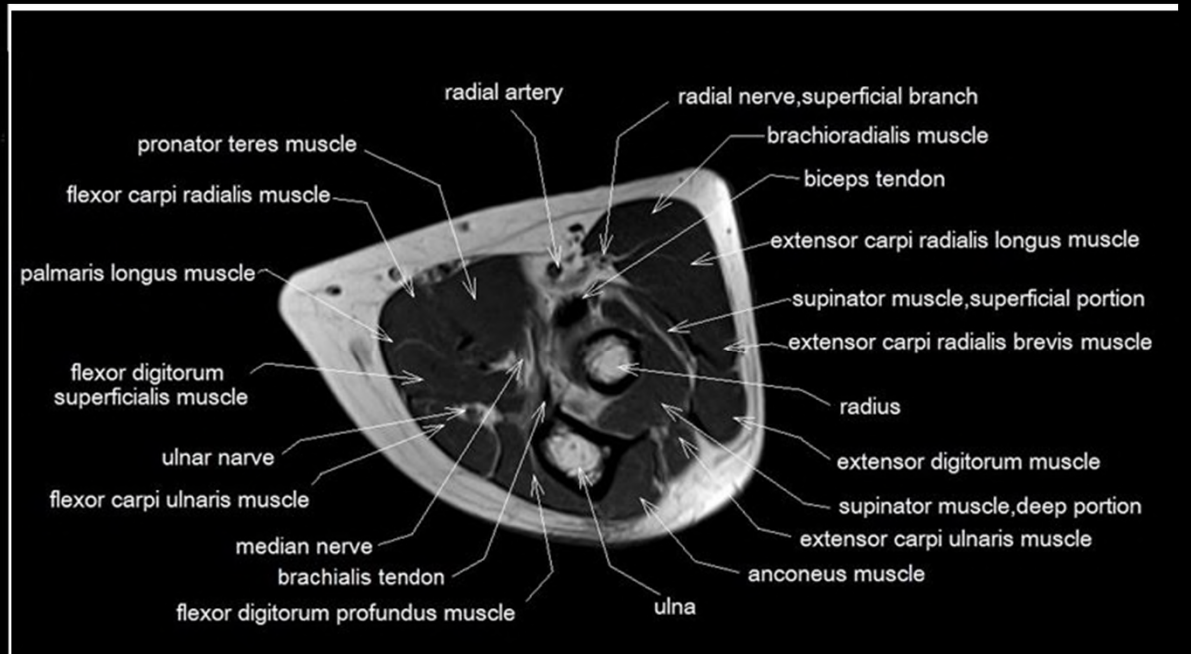
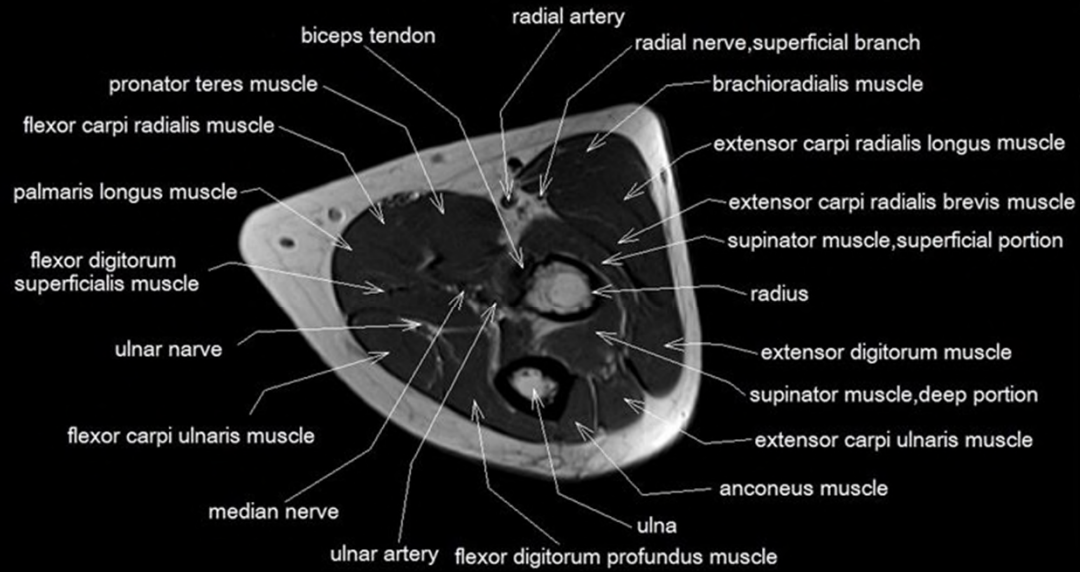
Clinical History

- Patient is a 40yo male with a noncontributory medical history, presenting with CC of pain and difficult flexion of the right upper extremity.
 - Patient stated that he was at work lifting a pallet of marine batteries when he felt a pop.
 - Patient began to experience severe pain and swelling. At which time he sought medical care.
 - Initial exam was significant for edema and mild bulging of the anterior portion of the upper arm.
 - Initially x-ray was performed at an outside facility as was found to be inconclusive. An MRI of the right elbow was performed for greater specificity.

Differential Diagnosis

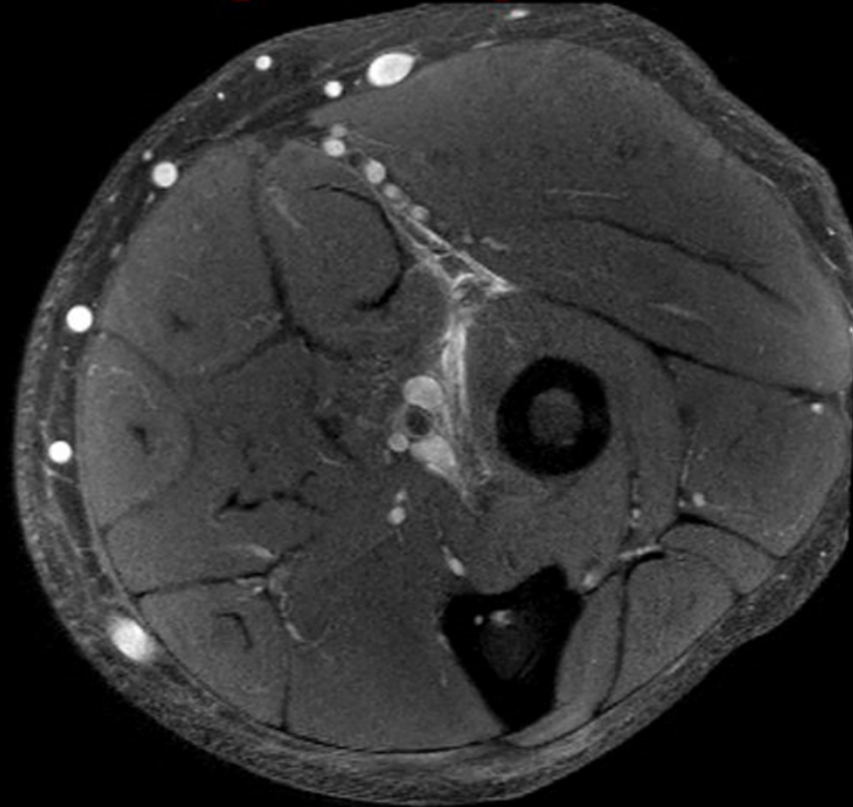
- Partial/Complete Biceps tendon injury
- Impingement syndrome
- Distal humeral/Radial head fracture
- Rotator cuff injury

Normal Imaging Axial

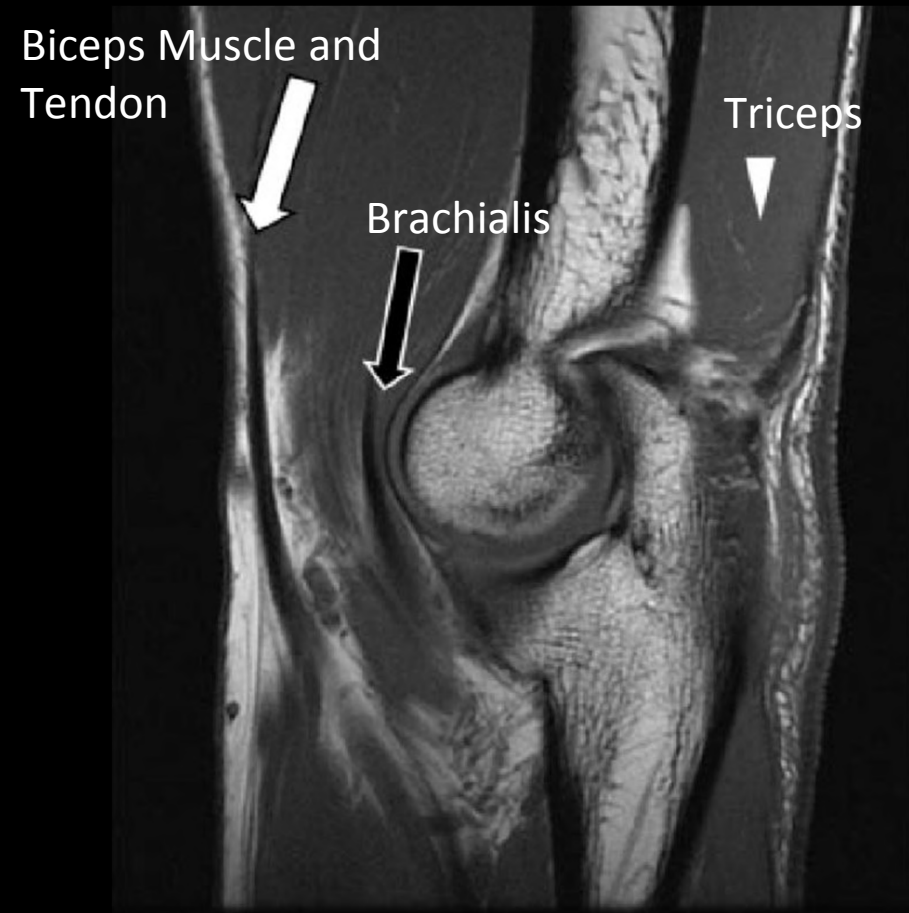


MRI Axial

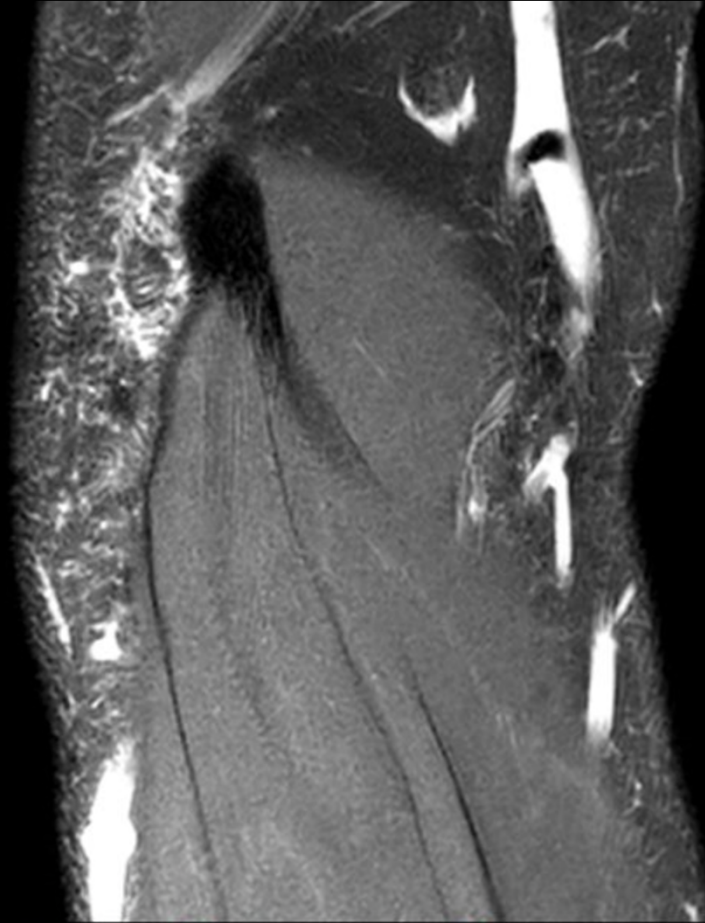
Warning: Not for diagnostic use



Normal Imaging Sagittal



MRI Sagittal



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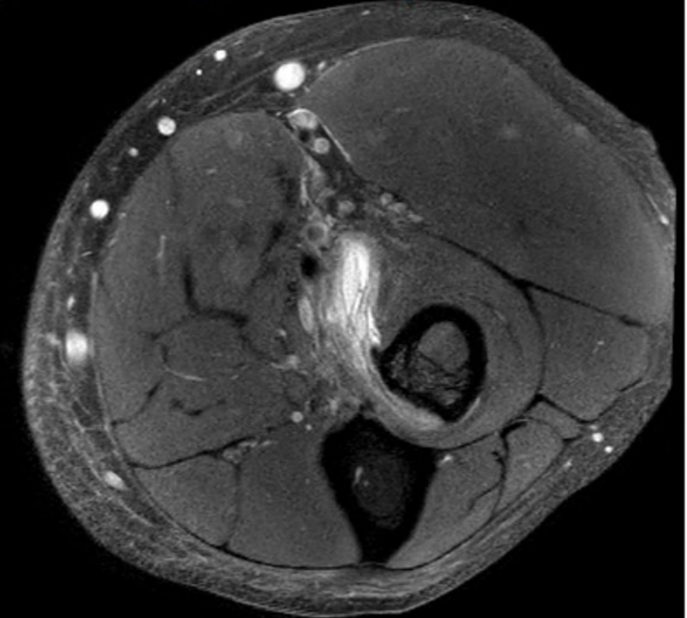
Key imaging findings and diagnosis

- Complete rupture of the distal right biceps tendon from its insertion at the radial tuberosity. Mild proximal retraction.

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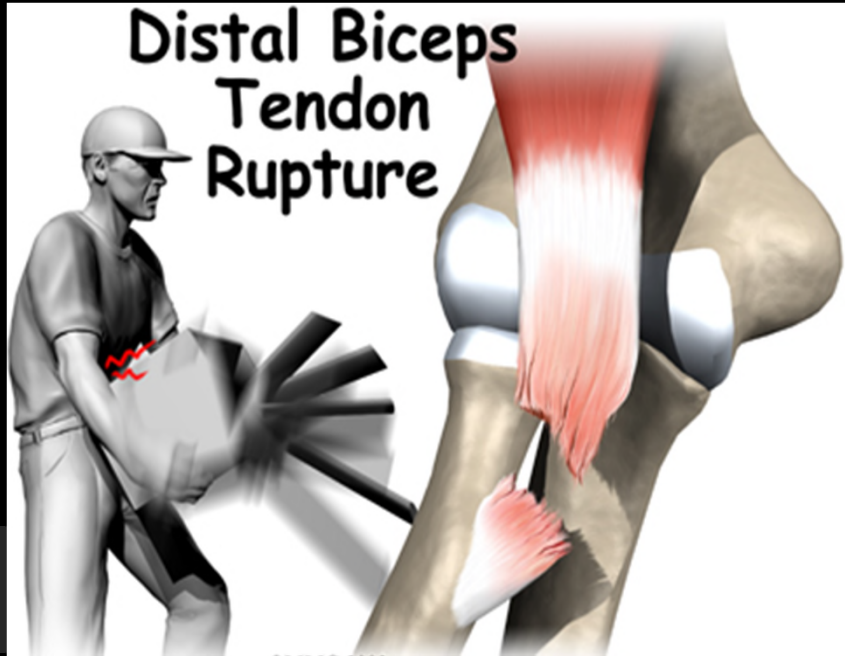
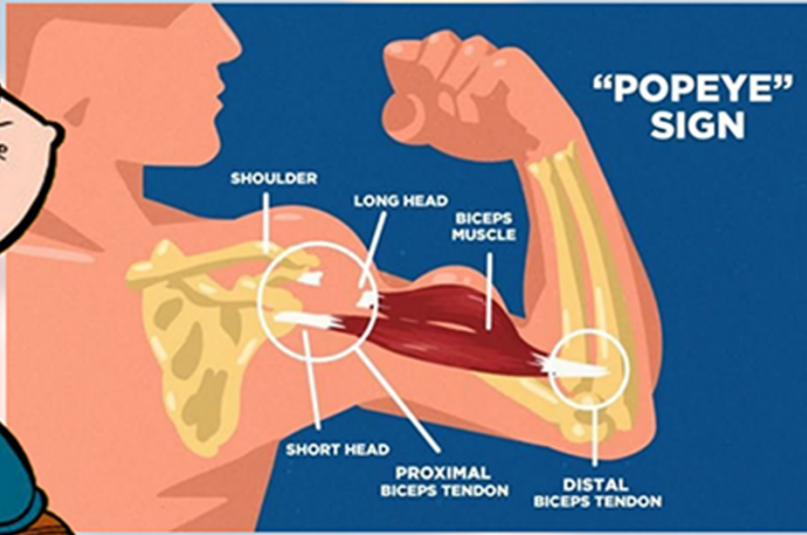


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Discussion

- Age, overuse, smoking and corticosteroid use contribute to tendon degeneration and tendinopathy. Sudden excessive load may break tendon structures, primarily at the bony attachment. This is thought to be due to a watershed zone of vascular supply at this area. Proximal injuries are more common in older patients while distal injuries are seen more frequently in younger patients.
- Tendinous rupture is most often diagnosed clinically on physical exam by the observation of muscle retraction (Popeye sign). In addition to this the examiner can attempt to hook their finger under the tendon while the arm is in 90 degrees of flexion. If the examiner is unable to do so this is further confirmation of a tear.
- Partial ruptures may present with similar, but subtle, symptoms and physical presentation is usually less a significant weakness or no palpable defect, sometimes leading to delayed diagnosis.
- Further work up can include: ultrasound, radiographs and much more commonly MRI for showing the degree of tear.



Continued discussion

- Rupture of the biceps tendon affects the strength of flexion and supination at the elbow. Despite this there is no absolute indication for surgery.
- Surgical intervention is most commonly performed in younger patients that require strenuous use of the upper extremity such as athletes.
- Prognosis is dependent on prompt evaluation, diagnosis, rehabilitation and successful operation in severe cases.
- Chronic biceps tendon rupture is defined as tendon tear for more than 4 weeks. Chronic rupture may be due to missed diagnosis or failure of conservative treatment. Partial tear or other coexisting pathology may complicate the diagnosis.

Final Diagnosis

- Complete rupture of the right biceps tendon at the distal insertion.

Treatment and Outcome

- Repair of the tendon was repaired roughly one month post injury, with removal of the protective cast four weeks later. The patient then underwent a total of 4 weeks of physical therapy, which was successful in reconditioning the extremity for normal daily activities. Precautions were given for heavy lifting and strenuous use in the short term.
- Patients with complete rupture often return to near full function of the extremity post repair as long as there is no underlying nerve damage. This can be seen in the relatively quick improvement in our patient post-op.
- No post-op imaging was available.

ACR appropriateness Criteria

Variant 8:

Suspect biceps tendon tear; radiographs nondiagnostic.

Radiologic Procedure	Rating	Comments	RRL*
MRI elbow without IV contrast	9	This is an alternative procedure.	O
US elbow	8	This is an alternative procedure.	O
MRI elbow without and with IV contrast	1		O
MR arthrography elbow	1		O
CT elbow without IV contrast	1		☒☒
CT elbow with IV contrast	1		☒☒
CT elbow without and with IV contrast	1		☒☒
CT arthrography elbow	1		☒☒
Tc-99m MDP 3-phase bone scan elbow	1		☒☒☒
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Take Home Points

- Biceps tendon tears can be striking on initial physical exam.
- Despite this imaging is sometimes required, as some cases have only mild retraction despite complete rupture.
- MRI is the image of choice when grading soft tissue/tendinous injuries such as this.
- The key to prevention of this injury is to educate the patient on modifying the risk factors. After the injury is diagnosed, work specific or sports specific training is often recommended before returning to the original activity. For most patients full recovery is possible within 8-12 weeks.

References

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Questions?