

Evidence Discussion (Elbow MS-20)

A diagnosis for the vast majority of elbow conditions can be made based on a detailed history, physical examination and plain x-rays. [1-4, 11] Advanced imaging is typically not necessary for the initial evaluation. Multiple articles have shown advanced imaging can often demonstrate elbow abnormalities in asymptomatic patients [4-8] and that the prevalence of asymptomatic abnormalities increases with age. [8] Advanced imaging incidental findings can possibly lead to overtreatment with referral to specialists and possibly unnecessary surgery. [4]

Plain x-rays are valuable as initial imaging as they can determine the necessity of advanced imaging, what specific advanced imaging study is warranted and if contrast is needed. As x-rays often have a larger field of view than MRI or CT, they have the potential to identify more proximal or distal pathology in an extremity. Initial plain x-rays for the evaluation of elbow conditions are supported in the literature [2, 3, 9] It is also noteworthy that when MRI is necessary, radiographs are considered an essential, initial complementary study for the reading of musculoskeletal MRIs. [10]

Treatment for many elbow conditions does not rely on advanced imaging results and most patients will improve within a few weeks or months with conservative care. [3, 4] Lateral epicondylitis may take 6 months or longer to improve, however, advanced imaging rarely is needed to make the diagnosis or play a role in treatment decision making. [11] However, for some elbow conditions (e.g. loose bodies, suspected tendon or ligament tears, issues after elbow replacement surgery), conservative care would not be necessary prior to advanced imaging.

In addition to overtreatment and possibly unnecessary surgery due to incidental findings, risks of advanced imaging include but are not limited to radiation exposure, implanted device complications, metallic foreign body complications and contrast complications. [12]

References:

1. Javed M, Mustafa S, Boyle S, Scott F. Elbow pain: a guide to assessment and management in primary care. *Br J Gen Pract*. 2015 Nov;65(640):610-2.
2. Stanborough, Rupert O. MD; Wessell, Daniel E. MD, PhD; Elhassan, Bassem T. MD; Schoch, Bradley S. MD. MRI of the Elbow: Interpretation of Common Orthopaedic Injuries. *Journal of the American Academy of Orthopaedic Surgeons* 30(6):p e573-e583, March 15, 2022.
3. Kane SF, Lynch JH, Taylor JC. Evaluation of elbow pain in adults. *Am Fam Physician*. 2014 Apr 15;89(8):649-57.
4. Pompan DC. Appropriate use of MRI for evaluating common musculoskeletal conditions. *Am Fam Physician*. 2011 Apr 15;83(8):883-4.
5. Bastian SA, Rahmi H, Crues J, Bhanu S, Blout C, Rangarajan R, Lee B, Itamura J. Variations of magnetic resonance imaging findings in asymptomatic elbows. *J Shoulder Elbow Surg*. 2019 Jun;28(6S):S154-S160.
6. Garcia GH, Gowd AK, Cabarcas BC, Liu JN, Meyer JR, White GM, Romeo AA, Verma NN. Magnetic Resonance Imaging Findings of the Asymptomatic Elbow Predict Injuries and Surgery in Major League Baseball Pitchers. *Orthop J Sports Med*. 2019 Jan 29;7(1)
7. Ligaments and Plicae of the Elbow: Normal MR Imaging Variability in 60 Asymptomatic Subjects Daniela B. Husarik, Nadja Saupe, Christian W. A. Pfirrmann, Bernhard Jost, Juerg Hodler, and Marco Zanetti *Radiology* 2010 257:1, 185-194
8. Paluch AJ, Burden EG, Batten TJ, Knight B, Anaspure R, Aboelmagd S, Evans JP, Smith CD. Defining tennis elbow characteristics - The assessment of magnetic resonance imaging defined tendon pathology in an asymptomatic population. *Shoulder Elbow*. 2024 Apr;16(2):206-213.
9. Thomas JM, Chang EY, Ha As, et. al. Expert Panel on Musculoskeletal Imaging. ACR Appropriateness Criteria® Chronic Elbow Pain. *Am Coll Radiol (ACR)*; Date of Origin: Revised 2022.
10. Taljanovic MS, Hunter TB, Fitzpatrick KA, Krupinski EA, Pope TL. Musculoskeletal magnetic resonance imaging: importance of radiography. *Skeletal Radiol*. 2003 Jul;32(7):403-11.
11. Johnson GW, Cadwallader K, Scheffel SB, Epperly TD. Treatment of lateral epicondylitis. *Am Fam Physician*. 2007 Sep 15;76(6):843-8.
12. Watson RE, Yu L. Safety Considerations in MRI and CT. *Continuum (Minneap Minn)*. 2023 Feb 1; 29(1):27-53.