Improving Elbow MRI Quality

Descriptor:
Improving the technical adequacy of Elbow MRI

Background:
Elbow MRI is infrequently ordered and technically challenging. Poor quality studies can result in misdiagnosis and sub-optimal assessment of pathology such as distal biceps tendon tears. Appropriate imaging planes should be followed, with anatomic coverage including all relevant structures.

Standard:
Inclusion of relevant structures and appropriate imaging planes on both routine and FABS (flexed elbow, abducted shoulder) elbow MRI protocols.

Target:
Inclusion of radial tuberosity on all axial series – 100%
Sagittal and coronal orientation vs axial – within 10 degrees of 90

Methods:
Using a PACS database, routine elbow MRI studies should be assessed for 1) total coverage relative to radio-humeral joint line in three planes; 2) angular orientation of coronal and sagittal images relative to axial plane; and 3) inclusion or exclusion of the radial tuberosity on axial series. FABS images should assess for coverage of the radial tuberosity. Suggested number of cases = 50.

Intervention/Action Plan:
Audit results to be presented/discussed with MRI technologists. If target is not met, discuss possible reasons for failure. Design an in-house online educational survey to address these issues and refresh key anatomy and recommended scanning technique. Consider implementing standardized changes to elbow MRI scanning protocol.

Resources Required:
Access to PACS database, online survey software. Medical student/resident for data collection and analysis.

Time Required to Perform the Audit:
Data collection: 3-4 days, design/administration of educational survey: 2-3 hours.

References:
1. Chew ML, Giuffre BM. (2005). Disorders of the Distal Biceps Brachii Tendon. Radiographics 25:1227-1237.
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3. Sampath SC, Bredella MA. (2013). Magnetic Resonance Imaging of the Elbow: A Structured Approach. Sports Health 51(1):34-49.
4. Giuffre BM, Moss MJ. (2004). Optimal Positioning for MRI of the Distal Biceps Brachii Tendon: Flexed Abducted Supinated View. American Journal of Radiology - 182:944-946.
5. Kijowski R, Tuite M, Sanford M. (2004). Magnetic resonance imaging of the elbow. Part I: Normal anatomy, imaging technique, and osseous abnormalities. Skeletal radiology 33(12):685-697.