

Case Report: Complex Tear of the Anterosuperior Labrum

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Patient history

The patient is a 29-year-old medical student who has a history of bilateral hip pain which is significantly affecting her activity level. She underwent MR

arthrography of the left hip on a 1.5 T scanner. There were findings suggestive of labral tear (Figs. 1 and 2) but the pathology was not optimally visualized. In addition it was difficult to be certain

of the integrity of the articular cartilage. Therefore a repeat examination was performed on the 3T MAGNETOM Verio (software version syngo MR B17) using the 4-channel small flex coil. The patient

was injected with intravenous gadolinium and dGEMRIC images were acquired to improve further assessment of the articular cartilage. Sequences included axial fat suppressed proton density,

coronal proton density, coronal fat suppressed proton density, sagittal fat suppressed proton density, radial proton density, and VIBE for T1 mapping. A detailed description of the imaging

protocol we use at our department in such a clinical setting is provided in table 1.

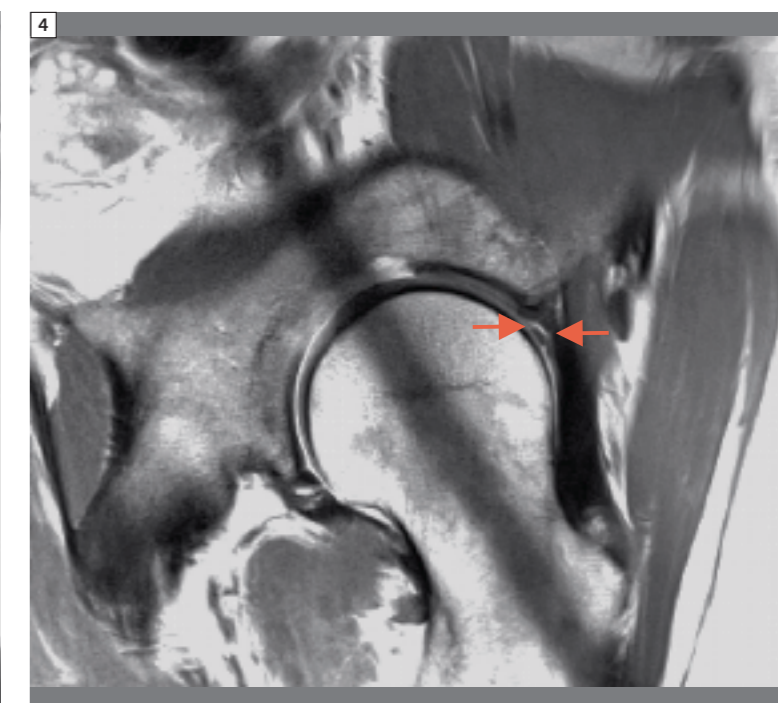


1 Sagittal T1-weighted image post intraarticular gadolinium injection on a 1.5T non Tim MAGNETOM Symphony. There is signal abnormality in the anterosuperior labrum suggestive of a labral tear. No gross defects are visualized in the adjacent articular cartilage but there is suboptimal delineation of the articular cartilage on the image.

2 Corresponding sagittal Proton density MRI demonstrating abnormal signal in the labrum extending to the surface of the labrum consistent with a labral tear.



3 Radial Proton Density MRI at 3T demonstrating a complex labral tear with both a radial and longitudinal component. The adjacent articular cartilage appears normal.



4 The longitudinal component of the tear is well visualized on this radial image (3T MR scan).

Table 1: Sequence details of the used imaging protocol at 3T with the 4-channel small flex coil.

Sequence:	cor T1 loc	ax T1 loc	cor pd fs	sag pd fs	ax t1	pd radial	cor T1	sag T1
Type:	tse	tse	tse	tse	gre	tse	vibe	vibe
Scantime [mm:ss]:	1,35	0,49	6,07	4,32	2,56	4,32	3,38	3,40
Res [mm ³]:	1.0 x 0.6 x 3.0	1.0 x 0.6 x 3.0	0.5 x 0.5 x 3.0	0.5 x 0.5 x 3.0	0.5 x 0.5 x 2.0	0.4 x 0.4 x 3.5	0.6 x 0.6 x 4.0	0.6 x 0.6 x 4.0
TR [ms]:	300	300	2750	2080	170	3110	20	20
TE [ms]:	10	10	26	23	6.15	25	3.54	3.54
FOV[mm]:	160	160	150	150	120	160	160	160
Slices	5	5	24	24	11	8	32	32
Gap	25%	25%	10%	10%	10%	25%	20%	20%
Average	2	2	1	1	2	1	1	1
Concatenations	2	2	1	1	1	1	1	1
Flip Angle	150	150	131	131	90	150	first angle 5 second angle 30	first angle 5 second angle 30
Slice Thickness	3	3	3	3	2	3.5	4	4
Bandwidth	250	250	180	180	240	211	130	130
Turbo Factor	4	4	4	4	n/a	10	n/a	n/a
Echo Train	77	39	132	128	n/a	86	n/a	n/a

Imaging findings

There is a complex tear of the anterosuperior labrum best visualized on the radial images. There are both radial and longitudinal components of the tear. The additional dGEMRIC images (not shown) confirmed that the articular cartilage is within normal limits in this case.

Discussion

Although the labral pathology was identified on the original MR arthrography on the 1.5T system, it was much more conspicuous on the optimized 3T exam using a multichannel coil. This optimized MR scan including dGEMRIC images allowed for a confident diagnosis of normal adjacent articular cartilage, a key factor in determining the patient's operative treatment.

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