



History: 58 year old man with THA done 2.5 years now with audible squeaking with walking





Coronal PD MAVRIC



Coronal IR MAVRIC

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Axial PD



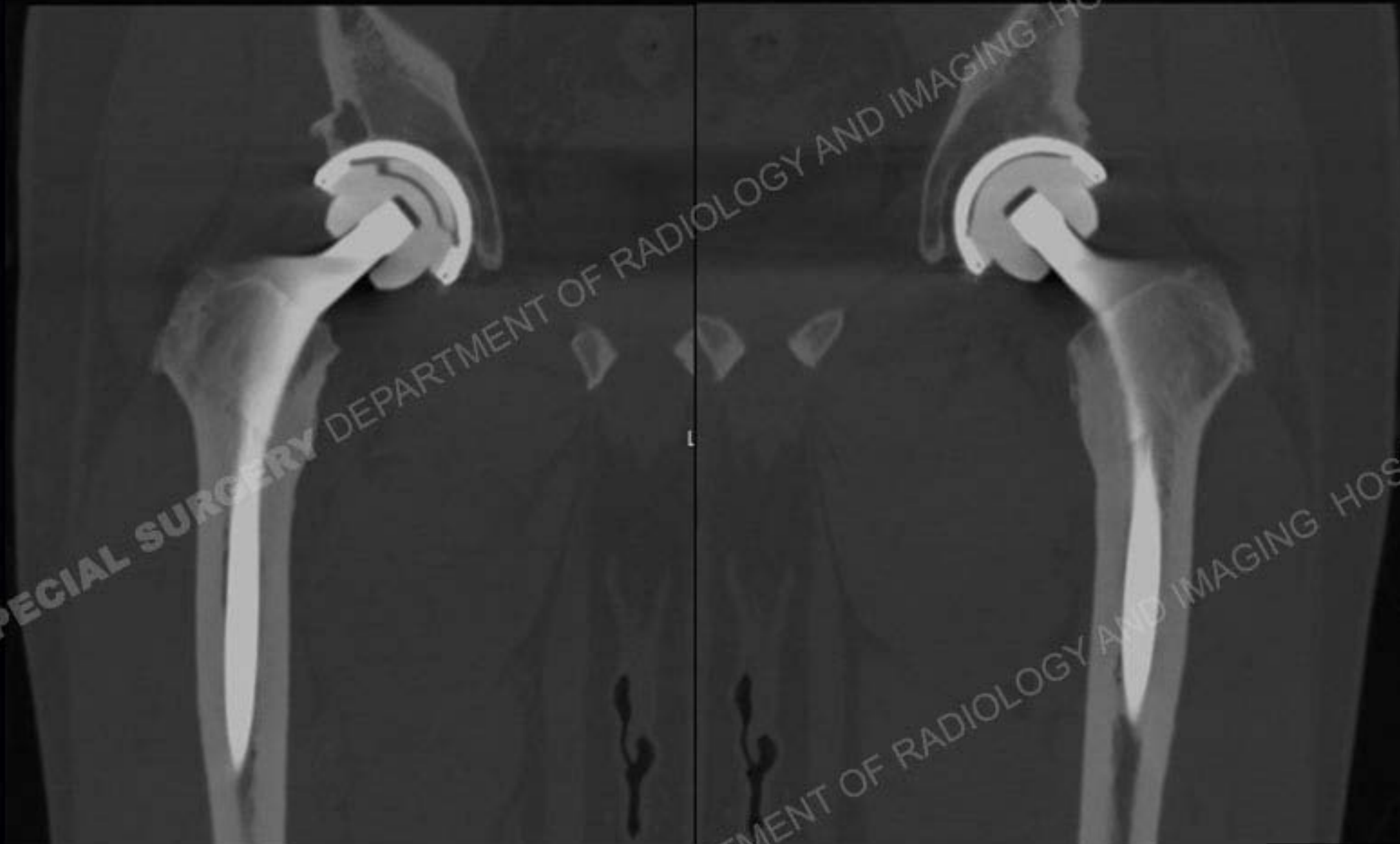
Axial IR MAVRIC



Coronal PD



Axial PD



Coronal Reformats of CT of right and left hip

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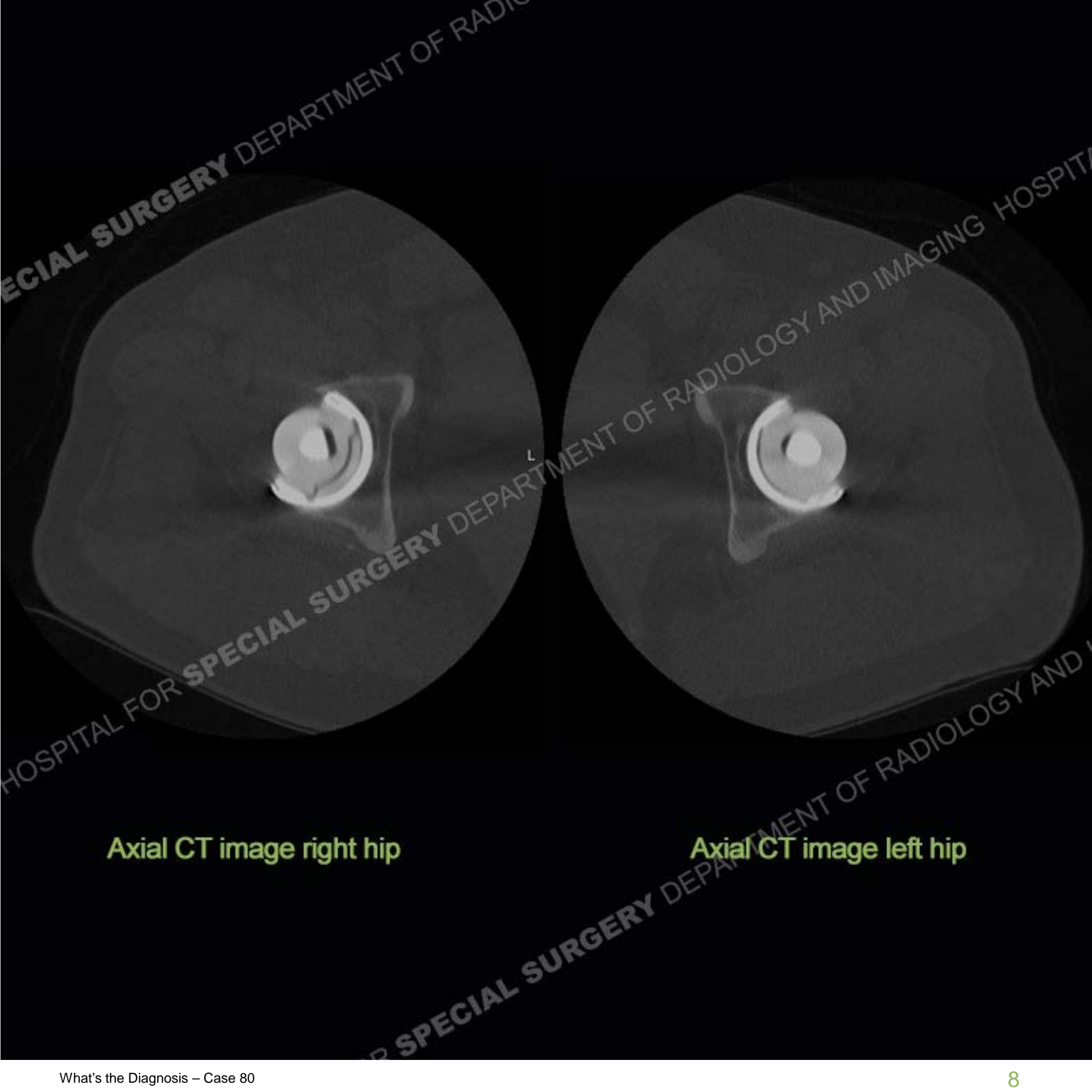
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Right Hip Sagittal Reformat

Left Hip Sagittal Reformat

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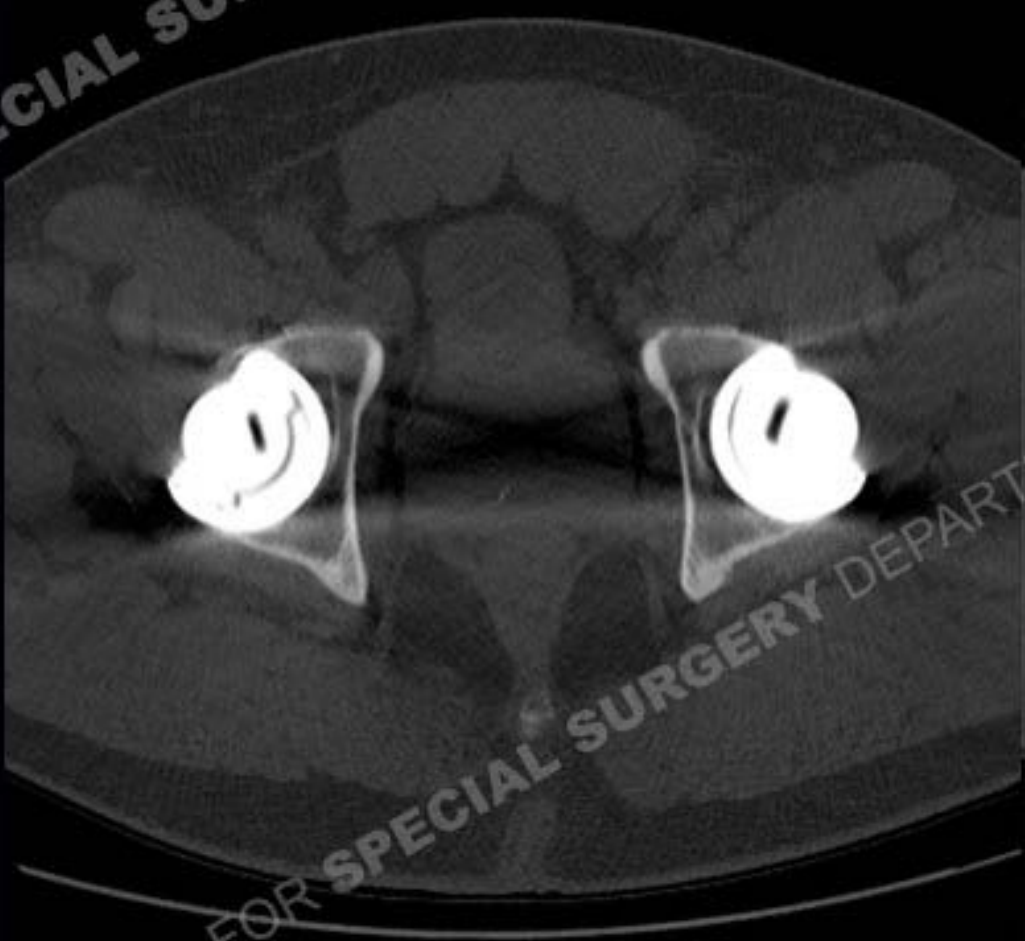


Axial CT image right hip

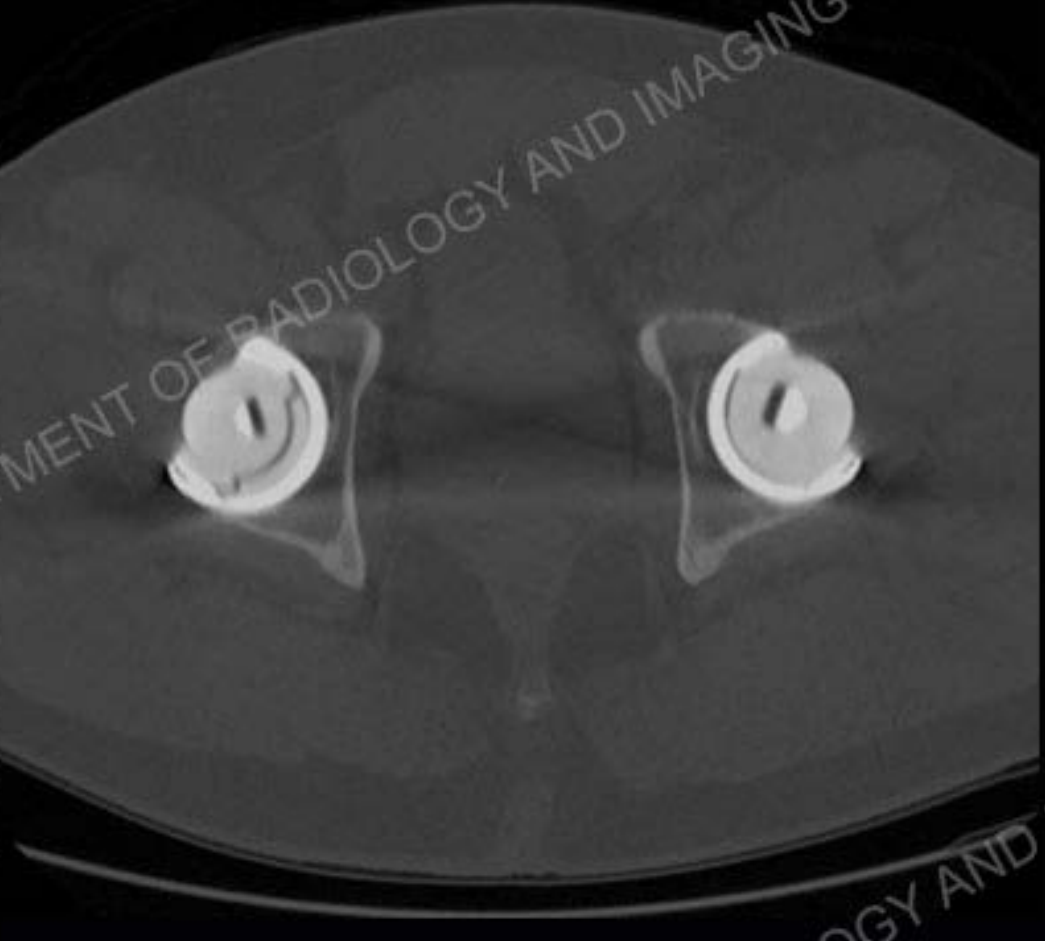
Axial CT image left hip

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Axial CT with soft tissue window



Axial CT with bone window

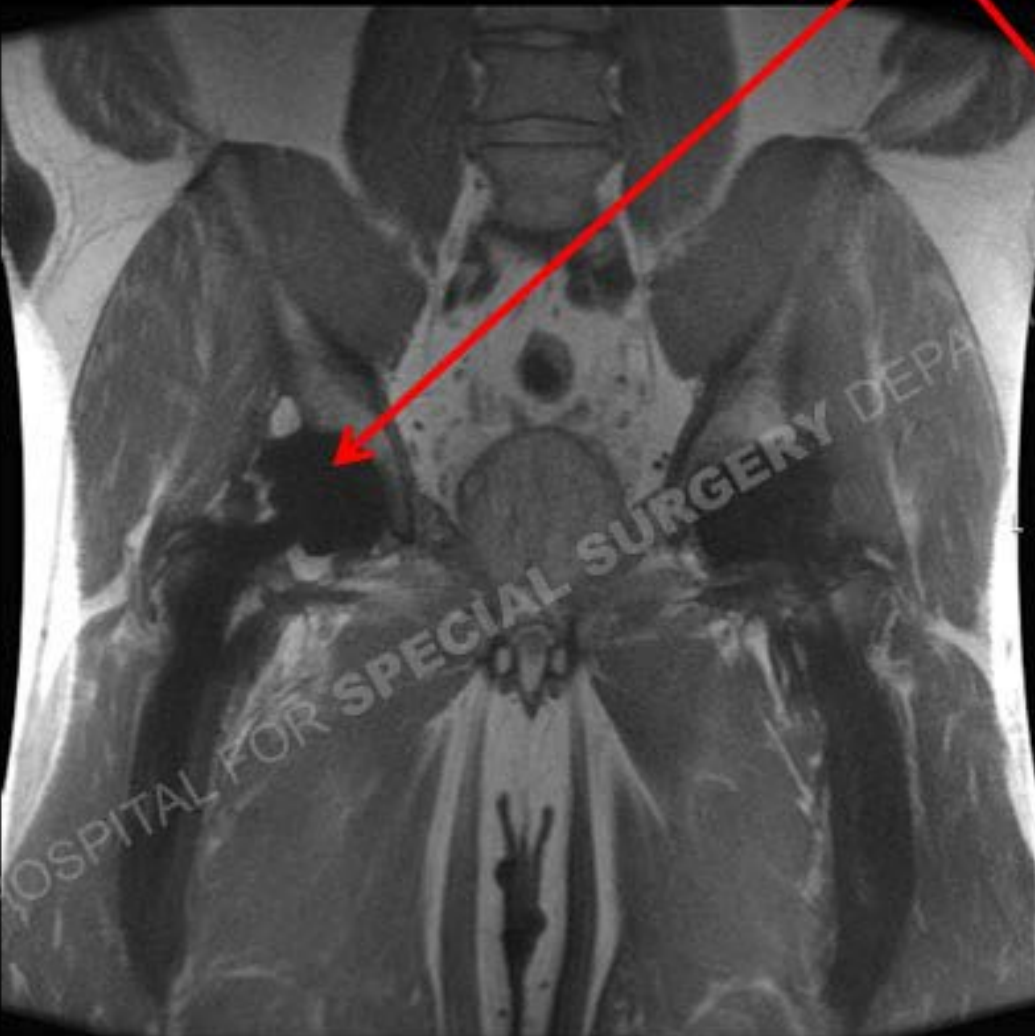
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Findings

In this case, there are no findings to be made on the radiographs or on the MRI examination. On the CT examination, there is a lucent line in the liner of the acetabulum. The relative difference in attenuation at the articulation of the total hips and the adjacent metal components indicates these are ceramic on ceramic (COC) total hip arthroplasties. Additionally, the axial CT images demonstrate the necessity of appropriate windowing and technique in being able to generate the appropriate diagnosis.

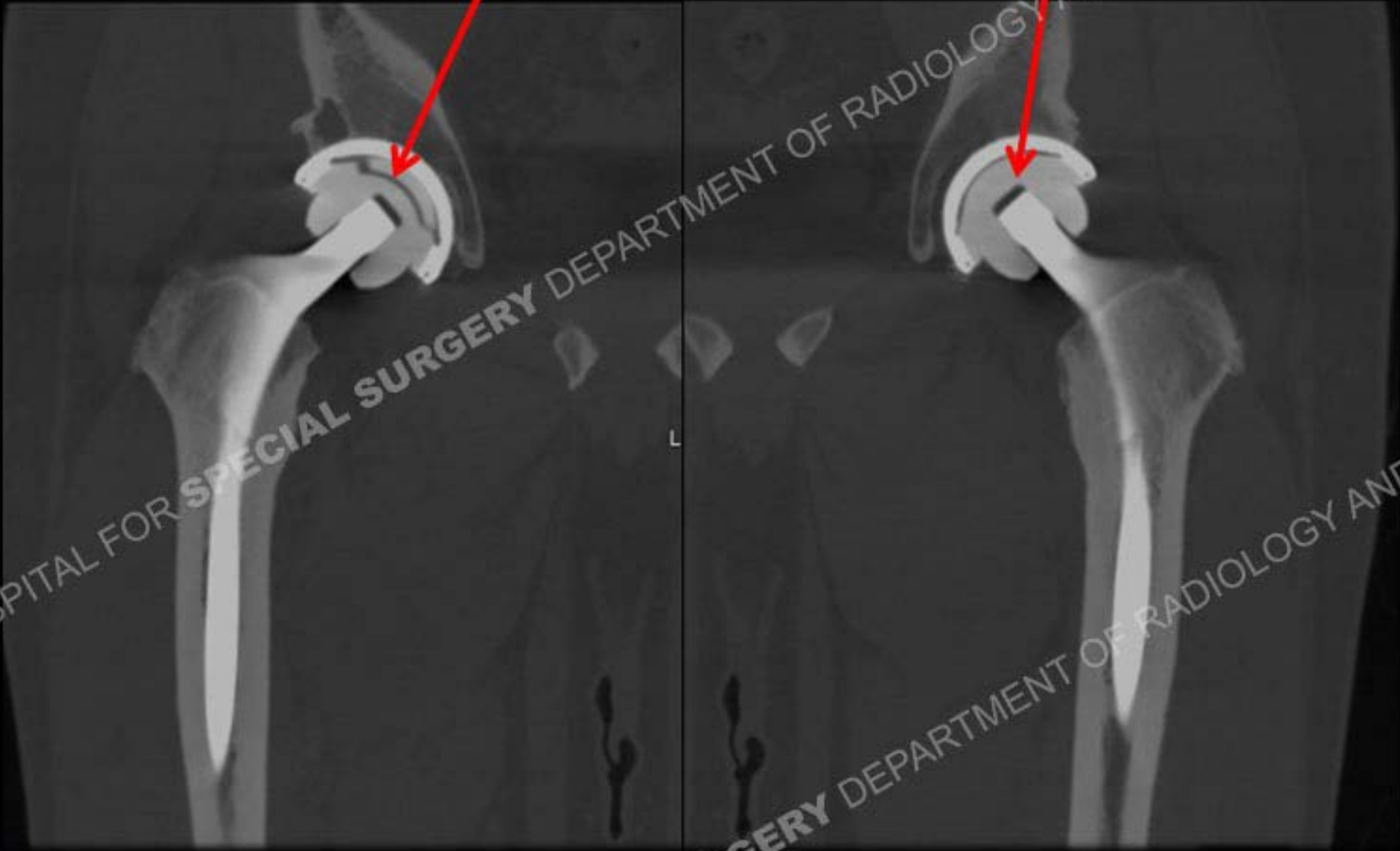


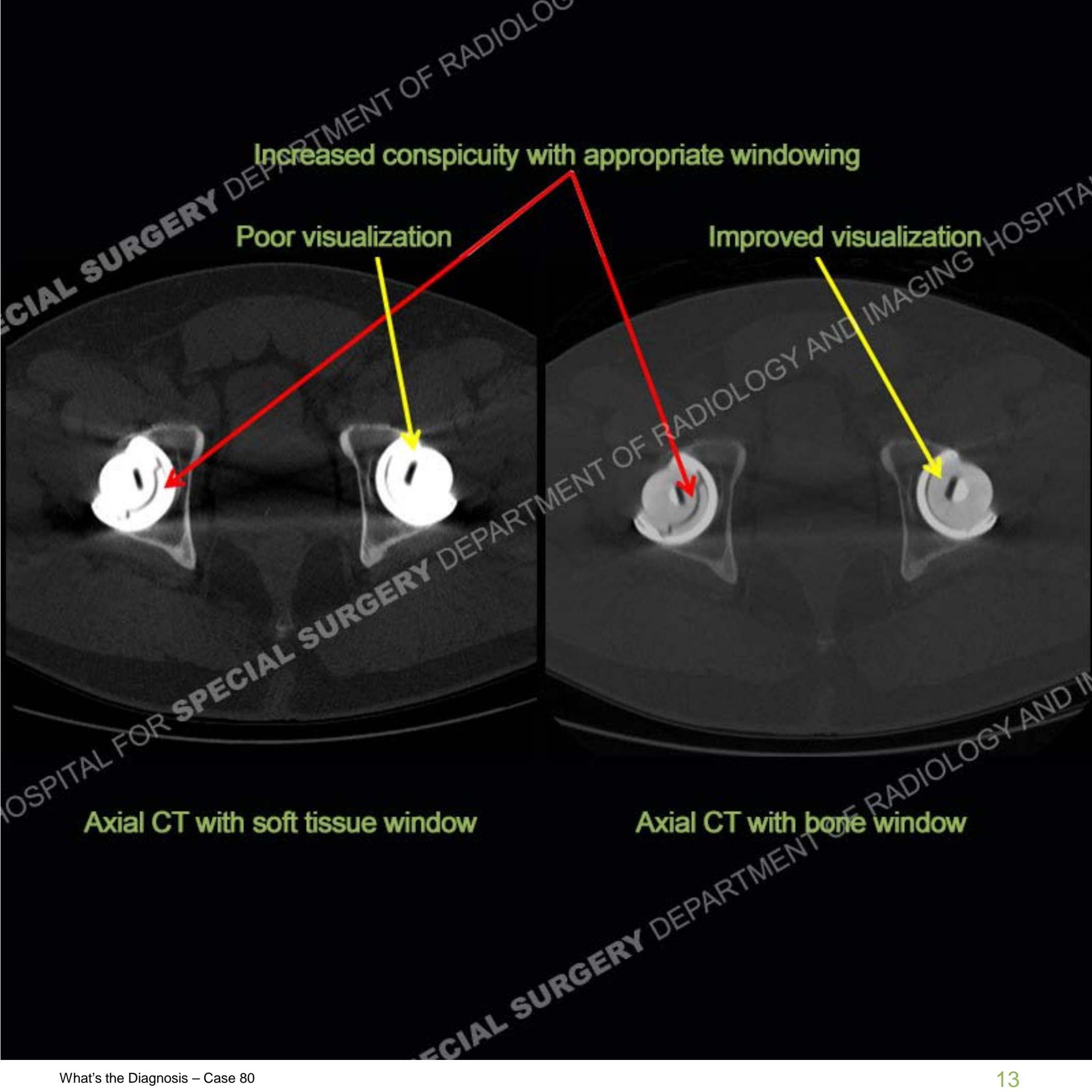
No abnormality seen of the cup



Lucent defect of ceramic liner of acetabulum

Normal articulation





Increased conspicuity with appropriate windowing

Poor visualization

Improved visualization

Axial CT with soft tissue window

Axial CT with bone window

Diagnosis: Ceramic Liner Fracture

A rare complication of a ceramic on ceramic total hip arthroplasty related to the brittle architecture of the ceramic components. Improvements have been made in the components but this complication does still present. It classically presents with a squeaking with ambulation but does not have to. This often signifies a non-displaced crack that can go on to a catastrophic fragmentation of the prosthesis. This complication necessitates revision as was done in this example.

This case highlights a couple of other points. It is important to understand the limitations of any given radiology exam and frequently, no individual exam can answer every question. MRI, particularly with recent advances in artifact reduction, is an exquisite tool at diagnosing complications in THA but even that can not answer all questions. In this case the ceramic on ceramic articulation is better seen with a CT exam. However, both the technique at acquiring the exam and then reading the exam must be tailored in such a way to allow optimal visualization of the hardware. Also, comparison to older exams is helpful to help prevent erroneous diagnoses. In this case, a degenerative, subchondral cyst could be mistaken for a focus of osteolysis which may confound the clinical picture.



Primary



Revision with metal on poly THA

Degenerative subchondral cyst without change. Not an area of osteolysis



Coronal IR Postoperative



Coronal IR Postoperative

References

Ceramic liner fractures presenting as squeaking after primary total hip arthroplasty. Abdel MP, Heyse TJ, Elpers ME, Mayman DJ, Su EP, Pellicci PM, Wright TM, Padgett DE. J Bone Joint Surg Am. 2014 Jan 1;96(1):27-31.

Ceramic-on-ceramic bearings in hip arthroplasty: state of the art and the future. Jeffers JR, Walter WL. J Bone Joint Surg Br. 2012 Jun;94(6):735-45.

