from false-negative imaging studies and institutional costs, when settlement costs are taken into account (Fig 1).

► This article addresses the overall cost of helical CT in comparison with plain film radiography in urban trauma centers.

CT was performed for moderate- or high-risk patients, which included those with neurologic deficits, head injuries, a high-energy mechanism, or age older than 50 years and a moderate energy mechanism. The authors took into account the sensitivity and specificity of plain films and CT scans and the cost of litigation for missed fractures resulting in paralysis.

Although this article does have some glaring deficiencies, overall, it is a helpful article speaking for the use of helical CT in this manner.

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## Hip

**Hip Morphology Influences the Pattern of Damage to the Acetabular Cartilage: Femoroacetabular Impingement as a Cause of Early Osteoarthritis of the Hip**

Beck M, Kalhor M, Leunig M, et al (Univ of Bern, Switzerland)
*J Bone Joint Surg Br* 87-B:1012-1018, 2005 3–8

*Abstract*.—Recently, femoroacetabular impingement has been recognised as a cause of early osteoarthritis. There are two mechanisms of impingement: 1) cam impingement caused by a non-spherical head and 2) pincer impingement caused by excessive acetabular cover. We hypothesised that both mechanisms result in different patterns of articular damage. Of 302 analysed hips only 26 had an isolated cam and 16 an isolated pincer impingement. Cam impingement caused damage to the anterosuperior acetabular cartilage with separation between the labrum and cartilage. During flexion, the cartilage was sheared off the bone by the non-spherical femoral head while the labrum remained untouched. In pincer impingement, the cartilage damage was located circumferentially and included only a narrow strip. During movement the labrum is crushed between the acetabular rim and the femoral neck causing degeneration and ossification.

Both cam and pincer impingement lead to osteoarthritis of the hip. Labral damage indicates ongoing impingement and rarely occurs alone.

► This is an extensive discussion of femoroacetabular displacement, and the authors conclude that the 2 types of femoroacetabular displacement give rise to different types of damage to the articular cartilage. In the cam type of impingement, the damage is mainly to the weight-bearing portion of the acetabulum, with undersurface tears separating the articular cartilage from the labrum. With the pincer type of impingement, there is circumferential damage to the cartilage. The authors also conclude that the 2 basic mechanisms of impingement rarely occur in isolation and that most impingement is a combination of the 2 basic mechanisms. The authors state that the poor results from labral trimming and resection of the damaged labrum in these patients may be

because the labral tear was treated without attention to the underlying cartilage abnormality caused by the impingement. This article does not have any MRI illustrations but is an orthopedist's review of femoroacetabular impingement.

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## SUGGESTED READING

Leunig M, Beck M, Kalhor M, et al: Fibrocystic changes at anterosuperior femoral neck: Prevalence in hips with femoroacetabular impingement. *Radiology* 236:237-246, 2005.

### Magnetic Resonance Arthrography Versus Arthroscopy in the Evaluation of Articular Hip Pathology

Keeney JA, Peele MW, Jackson J, et al (Washington Univ, St Louis)

*Clin Orthop* 429:163-169, 2004 3–9

*Abstract.*—In this study, we compared magnetic resonance arthrography results with hip arthroscopy findings to assess the diagnostic value of this imaging technique in evaluating acetabular labral tears and concurrent articular hip pathology. One hundred one consecutive patients (102 hips) with a clinical diagnosis of acetabular labral tear were assessed using magnetic resonance arthrography and had hip arthroscopy after failing to improve with nonoperative treatment. Magnetic resonance arthrography detected 71 of 93 (76%) acetabular labral tears (92 patients) with five false positive studies in five patients (4.9%). Articular cartilage findings diagnosed by magnetic resonance arthrography were confirmed by arthroscopy in 64 hips in 64 patients (62.7%). With respect to labral pathology, magnetic resonance arthrography showed a sensitivity of 71%, specificity of 44% positive predictive value of 93%, negative predictive value of 13%, and accuracy of 69%. With respect to articular cartilage pathology, magnetic resonance arthrography had a sensitivity of 47%, specificity of 89%, positive predictive value of 84%, negative predictive value of 59%, and accuracy of 67%. Although magnetic resonance arthrography is an excellent positive predictor in diagnosing acetabular labral tears and articular cartilage abnormalities, it has limited sensitivity. A negative imaging study does not exclude important intra-articular pathology that can be identified and treated arthroscopically.

► The authors report a very large series of MR arthrograms of the hip and compare them with arthroscopic results. The conclusion was that arthroscopy is more accurate than arthrography in evaluating labral tears and articular hip pathology. The mean age of their patients was 37.6 years.

It is well known that labral pathology may manifest in the young, and osteoarthritis of the hip with labral abnormalities is often seen in elderly patients. Note that the articular cartilage abnormalities not detected by MR arthrogra-