



Atypical knee pain

The patient found it hard to climb stairs—and to complete a particular task when getting dressed. Difficulty with that task provided a useful diagnostic clue.

AN 83-YEAR-OLD WOMAN, with an otherwise noncontributory past medical history, presented with chronic right knee pain. Over the prior 4 years, she had undergone evaluation by an outside physician and received several corticosteroid and hyaluronic acid intra-articular injections, without symptom resolution. She described the pain as a 4/10 at rest and as “severe” when climbing stairs and exercising. The pain was localized to her lower back and right groin and extended to her right knee. She also said that she found it difficult to put on her socks. An outside orthopedic surgeon recommended right total knee arthroplasty, prompting her to seek a second opinion.

Examination of her right knee was unrevealing. However, during the hip examination, there was a pronounced loss of range of motion and concordant pain reproduction with the FABER (combined flexion, abduction, external rotation) and FADIR (combined flexion, adduction, and internal rotation) maneuvers.

The patient’s extensive clinical and diagnostic history, combined with benign knee examination and imaging (FIGURE 1), ruled out isolated knee pathology.

- WHAT IS YOUR DIAGNOSIS?
- HOW WOULD YOU TREAT THIS PATIENT?

FIGURE 1

Knee x-ray provided no explanation for the patient’s pain



The x-ray revealed normal knee anatomy, with the patellofemoral and tibiofemoral joint spaces maintained and no evidence of joint effusion. Minimal arthritic changes were seen bilaterally.

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Dx: Right hip OA with referred knee pain

The patient’s history and physical exam prompted us to suspect right hip osteoarthritis (OA) with referred pain to the right knee. This suspicion was confirmed with hip radiographs (FIGURE 2), which revealed significant OA of the right hip, as evidenced by marked joint space narrowing, subchondral sclerosis, and osteophytes. There was also superior migration of the right femoral head relative to the acetabulum. Additionally, there was loss of sphericity of the right femoral head, suggesting avascular necrosis with collapse.

■ **Hip and knee OA** are among the most common causes of disability worldwide. Knee and hip pain are estimated to affect up to 27% and 15% of the general population, respectively.^{1,2} Referred knee pain secondary to hip pathology, also known as *atypical knee pain*, has been cited at highly variable rates, ranging from 2% to 27%.³

Eighty-six percent of patients with atypical knee pain experience a delay in diagnosis of more than 1 year.⁴ Half of these patients require the use of a wheelchair or walker

for community navigation.⁴ These findings highlight the impact that a delay in diagnosis can have on the day-to-day quality of life for these patients. Also, delayed or missed diagnoses may have contributed to the doubling in the rate of knee replacement surgery from 2000 to 2010 and the reports that up to one-third of knee replacement surgeries did not meet appropriate criteria to be performed.^{5,6}

Convergence confusion

Referred pain is likely explained by the convergence of nociceptive and non-nociceptive nerve fibers.⁷ Both of these fiber types conduct action potentials that terminate at second order neurons. Occasionally, nociceptive nerve fibers from different parts of the body (ie, knee and hip) terminate at the same second order fiber. At this point of convergence, higher brain centers lose their ability to discriminate the anatomic location of origin. This results in the perception of pain in a different location, where there is no intrinsic pathology.

Patients with hip OA report that the most common locations of pain are the groin, anterior thigh, buttock, anterior knee, and greater trochanter.³ One small study revealed that 85% of patients with referred pain who underwent total hip arthroplasty (THA) reported complete resolution of pain symptoms within 4 days of the procedure.³

A comprehensive exam can reveal a different origin of pain

As with any musculoskeletal complaint, history and physical examination should include a focus on the joints proximal and distal to the purported joint of concern. When the hip is in consideration, historical inquiry should focus on degree and timeline of pain, stiffness, and traumatic history. Our patient reported difficulty donning socks, an excellent screening question to evaluate loss of range of motion in the hip. On physical examination, the FABER and FADIR maneuvers are quite specific to hip OA. A comprehensive list of history and physical examination findings can be found in the TABLE.

The differential includes a broad range of musculoskeletal diagnoses

The differential diagnosis for knee pain in-

FIGURE 2
Anteroposterior pelvic x-ray revealed advanced osteoarthritis



IMAGE COURTESY OF YALE MEDICAL CENTER, NEW HAVEN, CT

TABLE

Osteoarthritis history and physical exam findings

Patient history	
History	Symptoms
Female > male	Hip pain
Increased age	Referred pain patterns
Genetics	Pain at night or at rest
Developmental or acquired hip deformities	Hip stiffness
Articular trauma	Instability
Muscle weakness	Locking
Heavy physical stress at work or high-impact sports	Catching
Physical examination	
General findings	Hip findings
Impaired gait	Lack of full extension (> 5 degrees flexion contracture)
Leg length discrepancy	Lack of full flexion (< 90 degrees)
Straight leg test negative	Limited internal rotation
	Pain with flexion, abduction, and external rotation (FABER) or with flexion, adduction, and internal rotation (FADIR)

cludes knee OA, spinopelvic pathology, infection, and rheumatologic disease.

■ **Knee OA** can be confirmed with knee radiographs, but one must also assess the joint above and below, as with all musculoskeletal complaints.

■ **Spinopelvic pathology** may be established with radiographs and a thorough nervous system exam.

■ **Infection**, such as septic arthritis or gout, can be diagnosed through radiographs, physical exam, and lab tests to evaluate white blood cell count, erythrocyte sedimentation rate, and C-reactive protein levels. High clinical suspicion may warrant a joint aspiration.

■ **Rheumatologic disease** can be evaluated with a comprehensive physical exam, as well as lab work.

Management includes both surgical and nonsurgical options

Hip OA can be managed much like OA in other areas of the body. The Osteoarthritis Research Society International guidelines provide direction and insight concerning outpatient nonsurgical management.⁸ Weight loss and land-based, low-impact exercise programs

are excellent first-line options. Second-line therapies include symptomatic management with systemic nonsteroidal anti-inflammatory drugs (NSAIDs) in patients without contraindications. (Topical NSAIDs, while useful in the treatment of knee OA, are not as effective for hip OA due to thickness of soft tissue in this area of the body.)

Patients who do not achieve symptomatic relief with these first- and second-line therapies may benefit from other nonoperative measures, such as intra-articular corticosteroid injections. If pain persists, patients may need a referral to an orthopedic surgeon to discuss surgical candidacy.

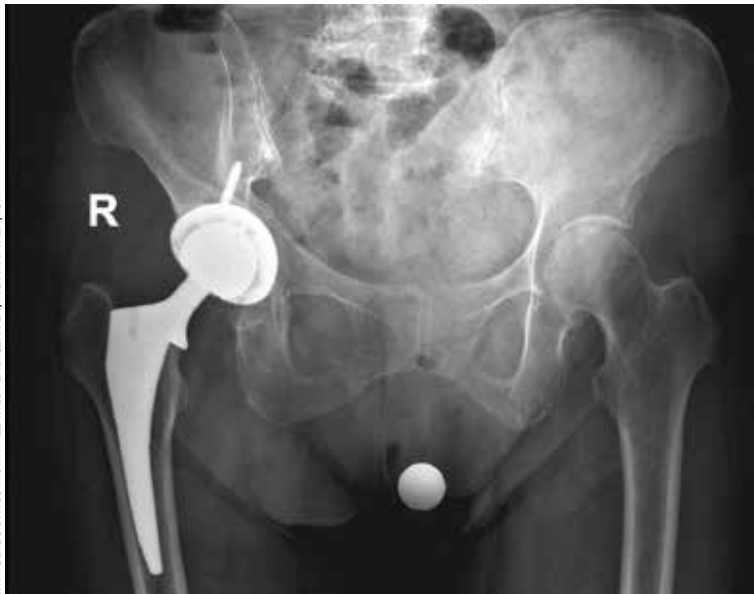
■ **Following the x-ray, our patient** received a fluoroscopic guided intra-articular hip joint anesthetic and corticosteroid injection. Her pain level went from a reported 6/10 prior to the procedure to complete pain relief after it.

However, at her follow-up visit 4 weeks later, the patient reported return of functionally limiting pain. The orthopedic surgeon talked to the patient about the potential risks and benefits of THA. She elected to proceed with a right THA.

Six weeks after the surgery, the patient presented for follow-up with minimal hip

FIGURE 3
Postoperative pelvic x-ray at 6 weeks

IMAGE COURTESY OF YALE MEDICAL CENTER, NEW HAVEN, CT



pain and complete resolution of her knee pain (FIGURE 3). Functionally, she found it much easier to stand straight, and she

was able to climb the stairs in her house independently. **JFP**

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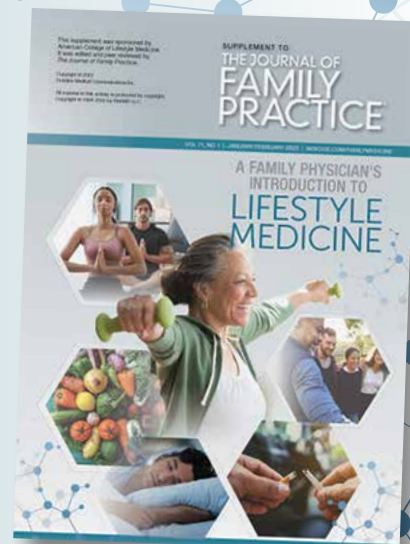
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