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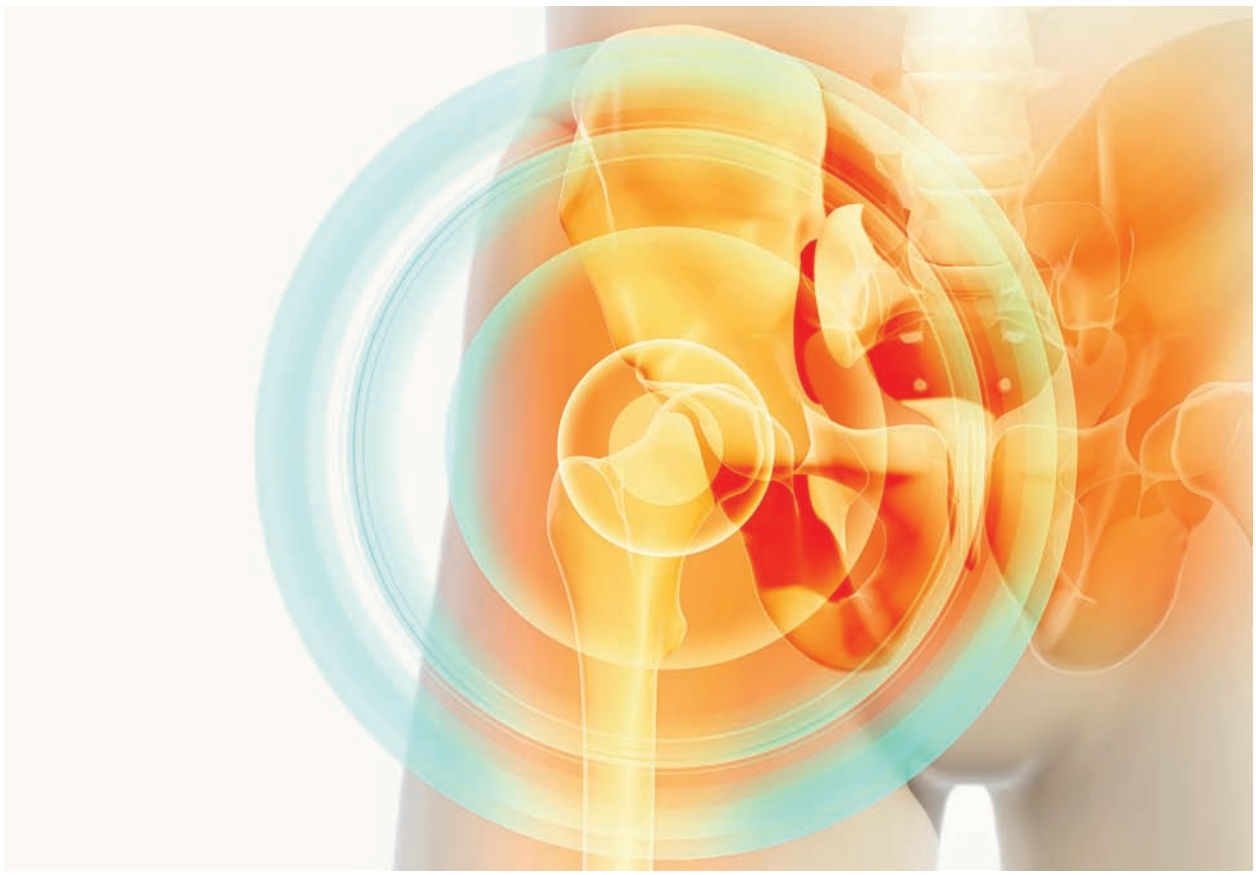

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Caring for adults with hip pain

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Abstract: This article discusses the pathophysiology, assessment techniques, and management of hip pain in adults and the role of nurses in caring for patients with hip pain.

Keywords: acetabular labral tears, femoroacetabular impingement, gluteal tendinopathy, hip fractures, hip pain, osteoarthritis, rheumatoid arthritis

Hip pain is a common complaint that nurses are likely to encounter from patients with or without a history of trauma or surgery. To effectively help patients manage their pain, nurses need to understand the pathophysiology of the underlying causes of hip pain. The majority of patients who experience hip pain are over the age of 60 and experience hip pain due to many underlying etiologies, including osteoarthritis (OA).

This article discusses the pathophysiology, assessment techniques, and management of hip pain in adults and the role of nurses in caring for patients with hip pain. The following topics are addressed: common arthritic and nonarthritic causes of hip pain in adults, including OA, rheumatoid arthritis (RA), hip fractures, gluteal tendinopathy (GT), femoroacetabular impingement (FAI), and acetabular labral tears.

Normal hip anatomy and physiology

The hip is a ball-and-socket joint in which the femoral head articulates deeply in the acetabulum.[2] The proximal part of the femur consists of a head, neck, and greater trochanter.[2] The vascular anatomy of the femoral head, which receives its main blood supply from the lateral and medial circumflex femoral arteries and the obturator artery, is of critical importance in any hip disorder (see *Blood supply of the femur head and neck*).[2]

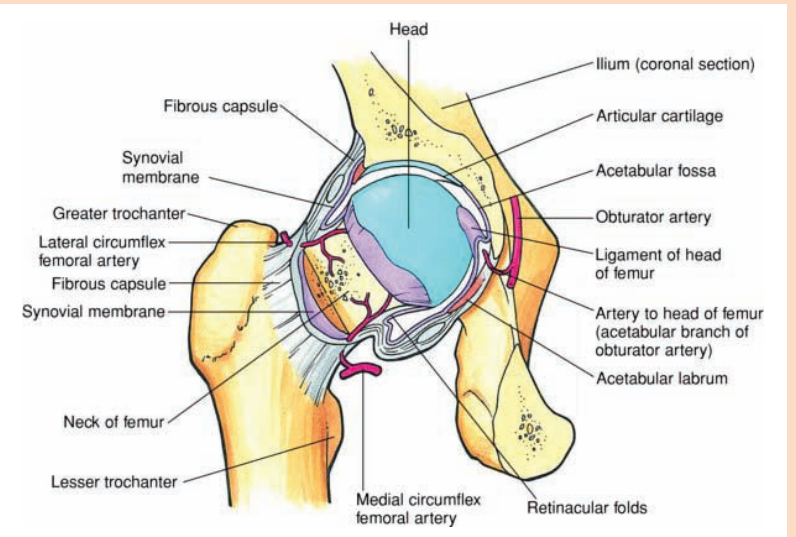
Pathophysiology

Osteoarthritis

OA is the most common source of hip pain in adults over the age of 50, with clinical prevalence ranging from 0.4% to 27% and a small predisposition in males.[3] OA is characterized by progressive deterioration of the joint structure and remodeling of the bone.[4] Altered stress within the joint disrupts cellular homeostasis of the femur and acetabulum, leading to thinning of the bone beneath the articular cartilage.[5] The space within the joint subsequently narrows, and the surfaces become rough, leading to pain, stiffness, and functional disability.[4] Hip OA can progress for months, years, or decades before the onset of pain or radiographic evidence.[3,5] Thus, early clinical findings and screening are essential.

Risk factors for developing hip OA are multifactorial, including abnormal joint morphology, prior joint injury, and reduced hip range of motion (ROM).[3,5] Additional risk factors include age over 50, high bone mass, high body mass index (BMI), doing high-impact or prolonged loading activities, and occupations such as working in a warehouse.[3,5] Likewise, the progression of hip OA is multifactorial and involves all components of the joint.

Blood supply of the femur head and neck



Note: This shows the anterior view. A section of the bone has been removed from the femoral neck.

Source: Porth C. *Essentials of Pathophysiology: Concepts of Altered States*. 4th ed. Philadelphia, PA: Wolters Kluwer Health; 2014.

Rheumatoid arthritis

RA is a chronic, systemic, autoimmune, inflammatory disorder of unknown etiology that primarily involves synovial joints. In RA, systemic inflammation may cause damage to the heart, lungs, kidneys, skin, and joint structures.[4] Systemic signs and symptoms such as fever, weakness, and fatigue may occur.[4] Within the joint, the synovial membranes may be destroyed, and the joints may be damaged to the point of dysfunction. Patients may complain of swelling, redness, warmth, stiffness, and pain.[4] RA tends to first affect the small joints in the hands and feet but can destroy any joint.[6]

Hip fracture

Hip fractures are the most common reason for emergency surgery in older adults and are associated with high morbidity and mortality.[6] Up to one-third of patients who experience a hip fracture will die within 1 year. Aging patients, particularly those with osteoporosis, are at higher risk for fractures with falls. Hip fractures may occur at the proximal femur or within the hip capsule and are classified as intracapsular (the femoral neck or femoral head) or extracapsular (intertrochanteric or subtrochanteric).[6]

Gluteal tendinopathy

GT is a degenerative process involving the bone, bursa, and tendons of the gluteus medius (GMed) and gluteus minimus (GMin). This occurs when altered stress to the GMed and GMin tendons leads to progressive degenerative changes, reduced load-bearing capacity, and increased susceptibility to tendon tears.[7,8] Intrinsic risk factors include being female, over 40 years of age, and having muscle imbalances.[7,8] The strongest extrinsic risk factor is repetitive overuse of the GMed and GMin tendons.[7,8]

Other risk factors

FAI and acetabular labral tears are risk factors for chronic hip pain and may result in osteoarthritis and the eventual need for surgical interventions

if not diagnosed early. FAI results from abnormal hip joint morphology where there is impingement between the proximal femur and the acetabulum within a functional ROM.[9] Repetitive contact may accelerate degenerative changes resulting in OA.[9,10]

The acetabular labrum increases the surface area of the hip socket and is vital to the stability of the hip joint. It also protects the underlying articular cartilage.[10] Labral tears have been identified as a source of hip and groin pain. The leading causes of labral tears are FAI syndrome, trauma, dysplasia, capsular laxity, and degeneration that produce significant shear forces, eventually leading to failure of the labrum.[11] Patients will often report clicking or popping, and left untreated will contribute to the development of hip osteoarthirtis.[11,12]

Clinical manifestations

Patients with symptomatic hip OA report an insidious onset of pain during prolonged standing, walking, squatting, and crossing their legs.[13] Pain is often localized to the proximal-medial thigh, lateral or posterior hip, typically with minimal referred pain beyond the hip.[13] The patient may describe the pain as deep, achy, stiff, and occasionally sharp.[13] Other associated symptoms can include joint crepitus with hip motion. Patients with hip OA frequently present with an antalgic gait or abnormal walking pattern secondary to pain.[13] The patient may also have a decreased hip ROM and muscle weakness. OA symptoms do not always correlate with radiographic findings.[3]

While the pain caused by OA increases with activity, patients with RA tend to have less pain with activity.[4] RA signs and symptoms tend to occur bilaterally and may include inflammation of joints and organs.[4] RA can affect almost any part of the body and result in severe debilitation. If recognized early, RA can be effectively treated by a rheumatologist.

Symptoms of GT include insidious onset of lateral hip pain in the greater trochanter region aggravated by lying on the painful side at night, standing, walking, ascending or descending stairs, and sitting with crossed legs.[7] Pain can be intensified or replicated with a single-leg stance on the affected leg, with resisted hip abduction, or when palpating over the GMin and GMed muscles.[8]

Patients with a fractured hip typically complain of pain over the outer thigh or groin.[6] The onset of pain is acute, and the patient will present with an inability to walk.[6] Often, these patients will be over the age of 70 years.[6]

Patients with FAI often report anterior hip and groin pain, although pain may also present in the lateral hip, anterior thigh, low back, and buttock.[12] Activities involving flexion, adduction, and internal rotation, such as squatting and rising from a low seat or out of the car, may cause discomfort. Individuals are usually limited in those motions and have decreased strength of the hip adductors, abductors, flexors, and external rotators.

Like in patients with FAI, the most common complaint of patients with acetabular labral tears is anterior hip or groin pain which may radiate to the knee. The pain is generally described as a constant dull pain that may worsen with specific movements.[12]

Health history

Obtaining the patient's health history is essential for nurses to effectively care for patients. The chief complaint and review of systems help identify the patient's source of pain and dysfunction. Interview techniques should reflect care and empathy for the patient. Avoiding weight bias and obesity stigma are also essential. Humiliation or shaming due to obesity may increase emotional stress, resulting in increased circulating C-reactive protein and cortisol that may lead to an increase in hunger, poor eating habits, and more weight gain.[14] Since pain is the most common complaint among adults with hip disorders, nurses should obtain a comprehensive pain history, including the time of onset (sudden, gradual, traumatic, or nontraumatic), location (lateral, anterior, or posterior hip), radiation (to or from the low back), duration, character or quality (such as sharp, dull, stabbing, burning, crushing, throbbing), aggravating factors (such as increased pain with weight-bearing), relieving factors (such as analgesics), severity, and associated symptoms (such as paresthesia, mechanical symptoms such as catching, systemic symptoms such as fever).[15]

Patients may describe hip pain as acute, chronic primary pain (CPP), or chronic secondary pain (CSP).[16] An example of acute pain is a fractured hip; CPP, pain from a primary source after 3 months such as osteoarthritis; CSP, pain that originates from another source such as rheumatoid arthritis.[16]

Physical activity can play a major role in hip disorders and pain. A sedentary lifestyle is a risk factor for poor muscle tone and weight gain that increases stress on the hip. Patients with a high BMI also have an increased risk for osteoarthritis.[3,5] High-intensity activity and compressive or tensile loading of tendons can result in GT.[7,8]

Comorbidities and current medications are an important element of the patient's history to understand the risk factors which may affect the hip. Nurses should consider diseases that increase the patient's risk for hip fractures, especially osteoporosis—a silent disease responsible for approximately 8.9 million fragility fractures that result from low-energy trauma, with the hip being one of the most common sites of injury in aging adults.[17]

Hip pain pattern with differential diagnosis

Disorder	Location	Characteristics
Osteoarthritis	Deep anterior or lateral pain during weight-bearing on the affected side	• Swelling, grinding, catching, and locking • Painfully limited passive hip flexion and/or internal rotation ROM • Slow onset of symptoms • Morning stiffness less than 1 hour
Rheumatoid arthritis	Thigh and groin	• Morning stiffness longer than 1 hour, relieved by rest • Rapid onset of symptoms • Polyarthritis symmetrical joints • Fatigue
Hip fracture	Thigh or groin	• Acute pain over the hip or groin • Shortened, externally rotated leg • Inability to weight bear on the affected leg
Gluteal tendinopathy	Lateral pain in the greater trochanter region	• Painful single-leg stance • Painful resisted hip abduction • Painful palpation of GMed/GMin tendons • Pain when laying on the side, standing, walking, ascending or descending stairs, and sitting with crossed legs

Medications that inhibit calcium absorption in the bone include thyroid hormones, proton pump inhibitors, and iron supplements.[17] Glucocorticoids, anticoagulants, and drugs used to treat cancers can contribute to the development of osteoporosis.[17] Foods that may interfere with calcium absorption include those high in phytate sodium, such as navy beans and peas, caffeine, and sodium.[17] When obtaining the history, the nurse may recommend that patients increase calcium intake if they are on diets high in protein and supplement with vitamin D, which helps with calcium absorption. Alcohol use disorder and smoking are additional risk factors for osteoporosis.[17]

Cognitive impairment also plays a role in the occurrence of hip fractures, with an increased incidence in older adults.[6] Older adults diagnosed with mild to moderate Alzheimer disease are at an increased risk for falls.[18] The onset of dementia is associated with reduced gait speed and results in two to three times more falls in older adults.[18] It is important to ask both the patient and caregiver about fall history.

Obtaining a thorough family history is relevant for disease processes, including osteoporosis and autoimmune diseases. Osteoporosis tends to be a familial disease seen particularly in women.[17] Diseases such as lupus, rheumatoid arthritis, and psoriatic arthritis are all autoimmune diseases that have genetic, hormonal, and environmental factors that activate an inflammatory response in the joint.[19]

Physical examination

After obtaining a thorough health history, the nurse should document the location of the hip pain. Patients may localize their pain by placing their thumb posterior to the greater trochanter and fingers extending to the groin area on the affected hip, referred to as the "C-sign."[13] This may indicate intra-articular pain such as osteoarthritis, labral tears, and femoroacetabular impingement.[13] Inspect the hip joint to assess for ecchymoses, erythema, and muscle atrophy.

The patient should be observed in a standing position to assess posture and pelvic and spinal alignment.[13] The patient's gait should be assessed for symmetry, noting speed and antalgic gait.[13,20]

Inspection includes assessing the patient during hip flexion, extension, side bending, and single-leg stance while standing to determine if any movements reproduce pain or cause weakness or instability.[20] Normally, the pelvis stays level when a patient stands on one leg. When standing on the affected leg, the pelvis tilts downward toward the unaffected side because of gluteal muscle weakness on the affected side, referred to as a positive Trendelenburg test. Provocation of the chief complaint and any limitations should be noted while the patient performs active, passive, and resistive ROM in supine, prone, and side-lying positions.[20]

Palpation includes assessing for the presence of lymphadenopathy and muscle tenderness. The neurovascular examination includes assessing peripheral pulses and sensation.[20]

Calcium and vitamin D recommendations

Calcium recommendations	
• Females 19-40 years	1,000 mg/d
• Females over 50 years	1,200 mg/d
• Males 19-70 years	1,000 mg/d
• Males over 70 years	1,000 mg/d
Vitamin D recommendations	
• Females and males 19-70 years	600 international units/d
• Females and males over 70 years	800 international units/d

A hip fracture may be recognized by an abducted, externally rotated leg that appears shortened.[6] Patients with suspected hip fractures should be transported to an ED for further evaluation and potential surgery. Radiographs are used to evaluate for displacement and type of fracture.[6] Patients with hip fractures are not able to bear weight on the affected leg and should not be encouraged to attempt standing or walking (see *Hip pain pattern with differential diagnosis*).

Management

Both nonpharmacologic and pharmacologic interventions are available for hip pain. Guideline-based recommendations for conservative management of hip OA are multimodal.[3] Patient education includes activity modification and weight loss to mitigate excessive weight-bearing stress on the joint. Dietary counseling and weight reduction for patients with a BMI greater than 25 can significantly decrease hip pain.[3,16,21-23] New guidelines from the National Institute for Health and Care Excellence[16] recommend an exercise program and physical activity as a priority over medication administration for chronic pain. Self-management to decrease pain may include activities such as aquatic exercises, stretching, weight training, and aerobics.[3,21-23]

Exercise may help strengthen muscles early in the disease process or as a part of rehabilitation post-surgery. Patients may perform abduction and external rotation resistance exercises to strengthen the hip muscles.[3] This is important in the early stages of OA and may help prevent or delay surgery. Additional unloading of the painful hip may include gait training with an assistive device such as a cane or crutch if needed.

Physical therapy referrals for rehabilitation can delay surgery or enhance postoperative recovery. Rehabilitation therapists help with gait training, muscle strengthening, and movement. Occupational therapists can help patients return as closely as possible to their normal activities of daily living.[24]

Acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), duloxetine, serotonin, and norepinephrine reuptake inhibitors are often prescribed to decrease pain.[22] The nurse should be aware of liver and renal function when administering acetaminophen. In addition to hepatotoxicity, chronic acetaminophen use may be associated with chronic kidney disease, hypertension, chronic daily headache, and peptic ulcer disease. NSAIDs are more effective in reducing pain than acetaminophen but also carry an increased risk of serious cardiovascular thrombotic events and gastrointestinal bleeding, particularly in older adults.[22] Education should be provided regarding signs and symptoms of adverse events and ensure that the patient is taking safe dosages of NSAIDs. Duloxetine should be avoided in patients with hepatic or severe renal insufficiency. Gradual tapering is recommended at discontinuation to prevent withdrawal symptoms.

Education should be provided for all patients who have been prescribed a drug therapy that may decrease or interfere with the absorption of calcium and lead to a risk for osteoporosis and subsequent bone fractures. Patients can benefit from nurse case-managed care osteoporosis clinics where nurses offer in-person education, counseling, and guideline-based treatments.[25] Fall prevention strategies should be included in the instruction provided. Home care to reduce fall hazards includes good lighting, clearing obstructions, and making sure floors are not slick.[17] Patients tend to trust expert care from nurses and appreciate the personalized information regarding their bone health in these specialized clinics.[25] Nurses can take the time needed to provide education related to treatment options, supplements, diet, and exercise.[25]

Nutritional supplements aimed at decreasing the incidence of osteoporosis include calcium and vitamin D.[25] Nurses should be aware of the recommended amounts of calcium and vitamin D in women and men at different ages starting at 19 years (see *Calcium and vitamin D recommendations*). Calcium deficiency is a common cause of fragile bones.[26] There are several calcium supplements available, and patients must be reminded that all are more readily absorbed when taken with food.[26] Calcium is especially important for postmenopausal women. They lose approximately 1% of bone mineral density per year after menopause due to a lack of estrogen.[26]

As patients age, it is important to note if they are eating healthy, balanced meals. Nurses should also evaluate eating habits in patients with diminished cognition.

Bone density screenings should be performed on all women over 65 and men over 70 years of age, postmenopausal women, and men and women who have a risk of bone loss.[17] Two classifications of agents are used for women who have poor bone density, antiresorptive agents, including bisphosphonates (BPs); and selective estrogen receptor modulators (SERM).[17] Nurses should educate patients on the possibility of gastrointestinal adverse reactions when taking BPs.[17] Oral BPs may cause local irritation of the upper gastrointestinal mucosa, resulting in reflux, esophagitis, and esophageal ulcers. The incidence of these adverse reactions is very low if proper administration instructions are followed. Patients should stay upright for at least 30 minutes after taking oral BPs. Other major but uncommon adverse reactions of BPs include femur fractures and osteonecrosis of the jaw.[17] Good oral hygiene and regular dental visits should be encouraged. Raloxifene, a SERM, effectively reduces vertebral fractures in postmenopausal women.[17] When taking raloxifene long-term, patients should be made aware of associated venous thromboembolic risks.[17]

Patients diagnosed with RA should be referred to a rheumatologist for evaluation and early treatment to prevent further joint and organ damage.[19] Disease-modifying antirheumatic drugs (DMARDs) decrease bone erosion and subsequent disability.[19] Patients should be aware of possible adverse reactions associated with DMARDs, including bone marrow, liver, and lung toxicity.

Patients with hip fractures should be assessed for common comorbidities such as cardiac disease, hypertension, kidney disease, cognitive impairment, and dementia.[6] Patients will need venous access, baseline labs, an ECG, and hip X-rays prior to making surgical decisions.[6]

Cognition can be evaluated using common tools such as the Mini-Mental State Examination and the Montreal Cognitive Assessment tool.[6] The 4'A's Test can be used to screen for delirium.

While hospitalized, patients should be evaluated for fluid and electrolyte imbalances. Renal dysfunction is common in older adults with hip fractures.[6] Malnutrition is also common in older adults with hip fractures, which increases infection risk and slows rehabilitation postsurgery.[6] The Malnutrition Universal Screening Tool is a five-step screening tool to identify adults who are malnourished, at risk for malnutrition, or obese. Early mobilization and frequent skin assessments can help reduce pressure injuries. The Braden Scale is an effective tool used to predict pressure injury risk.[6]

Conclusion

Hip pain is a common complaint in older adults, occurring in 30% to 40% of adult athletes, and affects approximately 14% of the US population over 60 years old.[27,28] Nurses have an important role in caring for patients with hip pain, including obtaining a thorough health history, performing a focused physical assessment, administering prescribed therapies, and educating patients and their families. They also serve as a patient advocate and share pertinent information with the multidisciplinary healthcare team. Medication safety is crucial, particularly in older adults who are frequently prescribed multiple medications. Nurses should be aware of potential adverse reactions and drug-to-drug interactions. Nurses play a valuable role in patient education, particularly by providing strategies to help reduce pain and prevent the pathologies that cause pain. Nurses should take the opportunity to encourage adequate exercise, a well-balanced diet, weight control, and avoidance of sedentary lifestyles. ■

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