

# NON SURGICAL MANAGEMENT OF HIP AND KNEE OSTEOARTHRITIS TOOLKIT

## EVALUATION AND DIAGNOSIS OF OSTEOARTHRITIS IN PRIMARY CARE



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## EVALUATION OF SUSPECTED OA

Patients with knee OA may present with either localized or diffuse knee pain that is activity related. Patients with hip OA typically present with groin pain or buttock pain that is activity related. Occasionally, patients with hip OA may present with knee pain. It is imperative to examine both the hip and knee in patients with either knee or hip pain. A patient with an abnormal hip examination may result in early detection of hip OA.

## HISTORY TAKING

### *Assess for current symptoms:*

- Pain
- Stiffness
- Swelling

### *Assess Risk Factors:*

- Overweight (Obesity)
- Increasing Age
- Female gender
- Previous joint injury
- Occupational/recreational overuse
- Family History

### *Assess development of pain:*

- Acute or chronic
- Aggravating factors
- Associated events
- Response to treatment

### *Evaluate impact on patient's lifestyle*

- Patient's needs/expectations
- Ability to adapt to functional impairment
- Availability of social support

### *Assessment Questions:*

- Do you have any pain or stiffness in your muscle, joints or back?
- Can you dress yourself completely without any difficulty?
- Can you walk up and down stairs without difficulty?
- How long can you stand before you feel pain or have to sit down? (standing tolerance)
- How long can you walk before you start to feel pain or have to stop walking? (walking tolerance)
- Does the pain go through (radiate) your leg, buttock?

## PHYSICAL EXAMINATION

### Introduction

*Gain verbal consent to examine*

### Inspection:

- Scars
- Swelling
- Rashes
- Muscle wasting
- Gait
- Alignment (varus/valgus) especially of knee

### Palpation

- Temperature
- Swelling
- Tenderness

### Move

- Full range of movement – active and passive
- Restriction – mild, moderate or severe

### Function

- Functional assessment of joint

## Red Flags in the Evaluation of Knee or Hip Pain

*Assess for red flags which suggest an alternative diagnosis:*

- » Severe local inflammation
- » Erythema
- » Effusion with signs of inflammation
- » Systemic features such as fever, chills, or night sweats
- » Progressive pain unrelated to use
- » Night pain which wakes from sleep
- » Catching or locking
- » Inability to bear weight

## PHYSICAL EXAMINATION OF THE KNEE

### INSPECTION (LOOK):

- From the end of the exam bed and with the patient's legs straight, observe the knees, comparing one with the other, for symmetry and alignment.
- Is the posture of the knee normal?
  - » Look for valgus deformity – where the leg below the knee is deviated laterally (knock-kneed) – or
  - » Varus deformity – where the leg below the knee is deviated medially (bow-legged).
- Check for a knee flexion deformity (distinguishing this from hip flexion deformity by examining hip movements [see hip examination]).
- Check for muscle wasting or scars.
- Look for redness suggesting inflammation or infection.
- Look for obvious swelling (effusion).

NOTE: Popliteal swelling, varus and valgus deformities may be more apparent with the patient weight-bearing.

### Gait and Alignment:

The most common pattern for knee OA is primarily medial compartment degeneration with progressive development of genu varum (bow legged). Less commonly patients may display genu valgum (knock knee) or primary lateral compartment degeneration. Patients with some form of mechanical malalignment are at higher risk to develop osteoarthritis. It is important for the health care provider to record overall knee alignment as well as gait patterns. Patients with knee OA may ambulate with an antalgic gait favoring the involved knee or walk with a stiff and semi-flexed involved knee.

### Common abnormalities in OA of the knee:

- *Genu varum / genu valgum*
- *Flexion deformity*
- *Swelling (effusion)*

## PALPATION (FEEL)

- Using the back of your hand, feel the skin temperature. Compare the mid-thigh to the temperature over the knee. Compare one knee to the other.
- Palpate for tenderness along the borders of the patella.
- With the knee flexed to 90°, palpate for tenderness and swelling along the joint line from the femoral condyles to the inferior pole of the patella, then down the inferior patella tendon to the tibial tuberosity.
- Feel behind the knee for a popliteal (Baker's) cyst.
- A Patients with OA occasionally may have an effusion that can be detected on physical examination.
  - » Assess for an effusion by performing a patellar tap, (see Figure 1).



Figure 1. Patellar tap test.

Slide your hand down the patient's thigh, compressing the suprapatellar pouch. This forces any effusion behind the patella. With two or three fingers of the other hand push the patella down gently. In a positive test the patella will bounce and tap.

- » If there is no obvious patellar tap, assess for a fluid bulge by cross fluctuation (see Figure 2).



Figure 2. Cross fluctuation ('The Bulge Sign').

Stroke the medial side of the knee upwards towards the suprapatellar pouch. This empties the medial compartment of fluid. Then stroke the lateral side downwards (distally). The medial side may refill and produce a bulge of fluid, indicating the presence of an effusion.

### Key abnormalities in OA include:

- *Tenderness to palpation along the joint line or borders of the patella.*
- *Effusion*
- *Popliteal Cysts "Baker's Cyst"*

## RANGE OF MOTION (MOVE)

Stiffness and limitations in range motion are often found in OA, especially, lack of terminal extension or flexion contracture. Joint Line Tenderness and Crepitus: Although non-specific, patients with symptomatic osteoarthritis may have localized or more diffuse knee tenderness. Crepitus, especially involving the patella-femoral joint can be picked up on passive knee range of motion testing.

- » Ask the patient to flex the knee as far as possible to assess active movement. Making sure the patient is fully relaxed, assess passive movement. This is done by placing one hand on the knee (feeling for crepitus) and flexing the knee as far as possible, noting the range of movement. Assess full flexion and extension of the knees, comparing one to the other.

### Abnormalities in OA include:

- *Loss of flexion*
- *Loss of full extension*
- *Crepitus with range of motion*

## FUNCTION

- Ask the patient to stand and then walk a few steps, looking again for a varus or valgus deformity (see Figure 5).

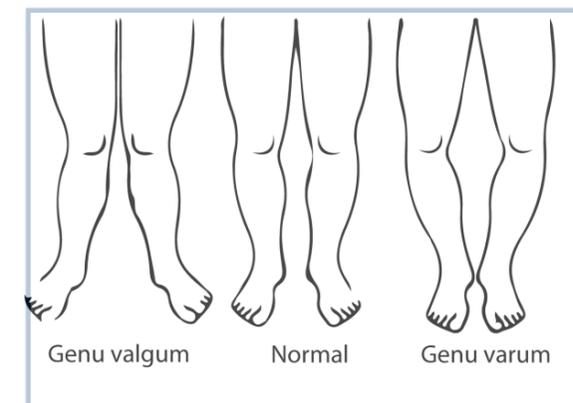


Figure 5. Genu varus and genu valgus deformity.

Genu varus is associated with the medial compartment OA and genu valgus is associated with lateral compartment OA.

## PHYSICAL EXAMINATION OF THE HIP

### INSPECTION (LOOK):

- With the patient standing, assess for muscle wasting (gluteal muscle bulk in particular).
- With the patient lying flat and face up, observe the legs, comparing one side with the other – is there an obvious flexion deformity of the hip?
- Check for scars overlying the hip.

### PALPATION (FEEL)

- Palpate over the greater trochanter for tenderness. Lateral hip tenderness suggests trochanteric regional pain syndrome.

### RANGE OF MOTION (MOVE)

Hip OA often results in loss of motion as well as pain at the extremes of motion. Flexion is best measured with the patient supine and the contralateral hip in full extension to stabilize the pelvis. Likewise, in order to assess for a flexion contracture (lack of full extension) the contralateral hip should be maximally flexed to see if the involved hip can extend to touch the exam table. Internal and external rotation can be easily measured with the hip and knee flexed to 90 degrees. Loss of internal rotation is frequently seen in hip osteoarthritis.

- With the knee flexed at 90°, assess full hip flexion, comparing one side with the other and watching the patient's face for signs of pain.
- Assess for a fixed flexion deformity of the hip by performing Thomas' test (see Figure 6).



Figure 6. Thomas' test for flexion deformity of the hip.

Keep one hand under the patient's back to ensure that there is no lumbar lordosis. Fully flex one hip and observe the opposite leg. If the opposite leg lifts of the bed there is a flexion deformity in that hip. (As the pelvis is forced to tilt a normal hip would extend allowing the leg to remain on the bed.)

#### Abnormalities in OA include:

- *Hip flexion contracture*

- With the hip and knee flexed at 90°, assess internal and external rotation of both hips. This is often limited in hip disease. Pain with internal rotation is a sign of osteoarthritis.

- Assess the hip and proximal (gluteal) muscle strength by performing the Trendelenburg test (see Figure 7).



Figure 7. Trendelenburg Test

The Trendelenburg test assesses hip and gluteal muscle strength. This involves the patient alternately standing on each leg alone. In a normal test the pelvis remains level or even rises. In an abnormal test the pelvis dips on the contralateral side.

#### Abnormalities in OA include:

- *Loss of flexion on exam*
- *Pain with internal rotation*
- *Pain with resisted straight leg raise and negative passive straight leg raise.*

### Other Special Tests:

- Resisted straight leg raise may reproduce hip pain in osteoarthritis. A passive straight leg raise will not produce pain.  
A passive straight leg raise can help to differentiate nerve root tension signs from true intra-capsular hip pathology.  
The Patrick or Faber test (flexion, abduction, external rotation) stresses the femoroacetabular as well as the sacroiliac joint.  
The passive log roll is the most specific test for hip pathology as only the femoral head is moving in relation to the acetabulum; however, it is not very sensitive.  
More sensitive special tests include the anterior "impingement test" where the hip is brought into maximal flexion, adduction and internal rotation. Additionally, a resisted straight leg raise or Stinchfield reproducing groin pain is sensitive at identifying intra-articular pathology. This maneuver works by generating more force than walking across the hip joint.

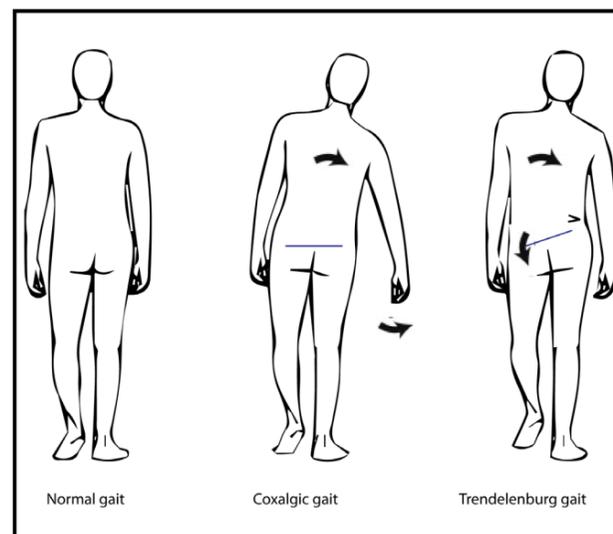
## FUNCTION

- Ask the patient to walk – look for an antalgic (coxalgic) or Trendelenburg gait. An coxalgic gait simply means a painful gait as a result of hip pathology, normally resulting in a limp. A Trendelenburg gait results from proximal muscle weakness and commonly results in a ‘waddling’ walk.

### Gait and stance:

Patients with a painful hip will often stand with a slightly flexed hip and knee to relax the hip joint capsule. Furthermore, while seated, they may feel more comfortable shifting their weight to the contralateral hemipelvis and slouching to avoid excessive flexion or internal rotation of the involved hip.

When ambulating, they may walk with an abductor lurch while standing on the involved hip. During the stance phase the patient will shift their center of mass over the involved hip. This serves to relax the hip abductors (gluteus medius and gluteus minimus) thereby decreasing the joint reactive forces about the hip (coxalgic gait pattern)..



**Abnormalities in OA include:**

**A coxalgic gait**

## IMAGING

**Consider Radiographic Imaging to confirm diagnosis of OA and to rule out other diagnoses.**

### X-Ray

- History and examination alone are usually sufficient to give a working diagnosis of osteoarthritis (OA) in adults (age > 45 years). Radiographic findings in OA are often non-specific, may be absent in the early stages, and often correlate poorly with symptoms and disability. Note that the presence of typical radiographic changes of osteoarthritis does not exclude other diagnoses in patients with joint pain. X-rays, particularly of weight-bearing joints, used to exclude trauma.
- Although radiographs are not required to make a diagnosis of knee or hip osteoarthritis, they can be used to confirm the diagnosis and to rule out fracture, osteonecrosis, malignancy, or other red flags.

### Typical radiographic changes of OA include:

- » Narrowing of cartilage space
  - » Marginal osteophyte formation
  - » Subchondral sclerosis
  - » Subchondral bone cysts
  - » Joint subluxation.
- If radiographic imaging is considered in adults with non-traumatic knee pain, obtain a weight bearing AP knee as well as a weight bearing flexed knee view in 30 degrees of flexion (also known as a tunnel or Rosenberg view), in addition to a lateral and merchant view (also known as a sunrise or skyline view). Weight bearing radiographs of the knee especially the Rosenberg view are the most sensitive for detecting early joint space narrowing.
  - In adults with non-traumatic hip or groin pain, obtain a weight bearing (standing) AP pelvis radiograph and non-weight bearing frog lateral of the affected hip. Plain radiographs may be used to confirm the diagnosis and to rule out fracture, osteonecrosis, malignancy, (either primary or metastatic) or other red flags.

### MRI

Most knee/hip pain can be diagnosed by a focused history and physical examination. MRIs can show soft tissue and bone injuries that may not be visible on traditional x-ray. As a tool for routine diagnosis for OA, MRI is not recommended.

- An MRI may be considered in patients without radiographic evidence of osteoarthritis, especially in patients with an acute injury and normal radiographs. Meniscal tears are common in the setting of osteoarthritis; however, the osteoarthritis and not the meniscal tear is often the primary source of the pain.

There is no evidence that routine plain radiography in patients with knee or hip pain is associated with a greater improvement in patient outcomes. In addition, exposure to unnecessary ionizing radiation should be avoided. Routine advanced imaging (computed tomography [CT] or magnetic resonance imaging [MRI]) is also not associated with improved patient outcomes and identifies many radiographic abnormalities that are poorly correlated with symptoms but could lead to additional, possibly unnecessary interventions.

Magnetic resonance imaging may be considered for evaluating patients with OA who have concomitant signs and symptoms of loose body, meniscal pathology, or an acute injury or incident associated with a sudden onset of pain and effusion.



*This guide for Diagnostic Evaluation of OA in Primary Care is based on the VA/DoD Clinical Practice Guideline for Non-Surgical Management of Hip and Knee Osteoarthritis, 2014.*

*The guideline includes evidence-based recommendations for the diagnosis and treatment of patients with pain in the knee and/or hip.*

*The full text of the Guideline can be found at:*

*<https://www.qmo.amedd.army.mil> or*

*<http://www.healthquality.va.gov>*