

# ORTHOPAEDICS

## FOR PRIMARY HEALTH CARE



**Volume 2**

**Non-Emergency and Non-Trauma Pathology**

**Edited by Michael Held**

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# Osteoarthritis

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## Learning objectives

- Understand epidemiology and pathophysiology.
- Learn how to make a diagnosis with clinical and radiological features.
- Understand treatment options and management principles.

## Introduction

Osteoarthritis (OA) is the most common form of arthritis. It's also known as degenerative joint disease, wear and tear arthritis and osteoarthrosis. It can be primary or secondary.

Primary OA is idiopathic and is associated with increasing age and obesity. The incidence of OA ranges from 10–20% in people over the age of 60 and females are affected more than males. It commonly affects the hands, shoulders, spine, hips and knees.

Secondary OA can be post-traumatic, post-infective or as a result of any condition that causes an abnormality in the shape of the joint surface or destruction of the articular cartilage.

The pathology involves softening and erosion of the articular cartilage resulting in bone-on-bone articulation. Typical radiological features are joint space narrowing, osteophyte formation, subchondral sclerosis and subchondral cysts.

## Hip OA

### Clinical findings

#### History

Insidious onset typically described as dull start-up pain felt in the groin, radiating down the front of the thigh. Occasionally presents as knee pain only. Consider referred pain from the back if the pain radiates below the knee. Activities of daily living (ADLs) affected are activities involving hip flexion, such as putting on shoes and socks, and sleep disturbance due to pain.

#### Examination

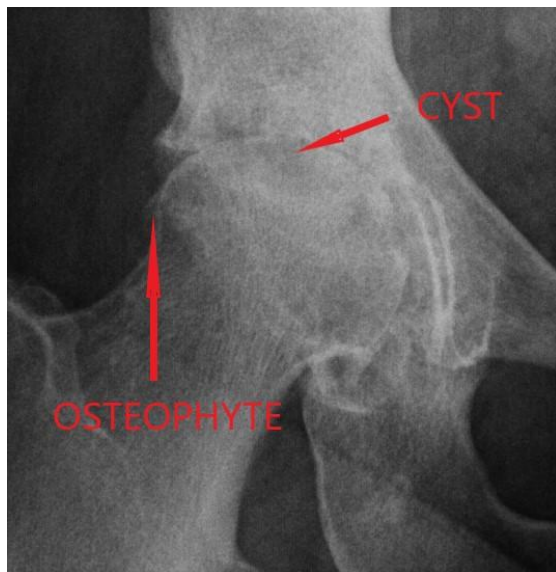
- Trendelenberg gait.
- There may be a leg length discrepancy (LLD).
- Loss of internal rotation is an early sign.
- Later on, a fixed flexion deformity (FFD) may occur (Thomas test).

## Special investigations

### Imaging



**Figure 1:** Anterior-posterior (AP) pelvis x-ray with OA of the right hip which shows joint space narrowing, osteophytes, sclerosis and cysts



**Figure 2:** Magnified x-ray image of the right hip showing osteophytes, cysts and complete joint space obliteration with bone-on-bone contact

## Management

If conservative treatment fails and the patient wants surgery, refer to an orthopaedic surgeon.

### Non-surgical

- Activity modification.
- Walking aids.
- Analgesia and nonsteroidal anti-inflammatory drugs (NSAIDs).

### Surgical

- Total hip arthroplasty (replacement) (THA or THR).
- Arthrodesis (fusion) of the joint is not commonly performed nowadays.

## Knee OA

### Clinical findings

#### History

Start-up pain or stiffness that eases a little with movement. Can be worsened by walking up stairs and may be associated with clicking, locking or giving way.

#### Examination

- May have an effusion.
- There may be a varus or valgus deformity.
- Later on, a FFD may occur, typically at 10-15 degrees.

## Special investigations

### Imaging



**Figure 3:** X-ray of the left knee showing medial joint space narrowing, osteophytes and sclerosis with an irregular joint surface (no bone-on-bone contact yet)



**Figure 4:** Lateral x-ray of the left knee indicating moderate osteoarthritic changes with osteophytes, joint space narrowing and subchondral sclerosis of the tibio-femoral and patellofemoral joint

## Management

### Non-surgical

- Activity modification.
- Walking aids.
- Analgesia and NSAIDs.

### Surgical

- Total knee arthroplasty (replacement) (TKA or TKR).

## Hand OA

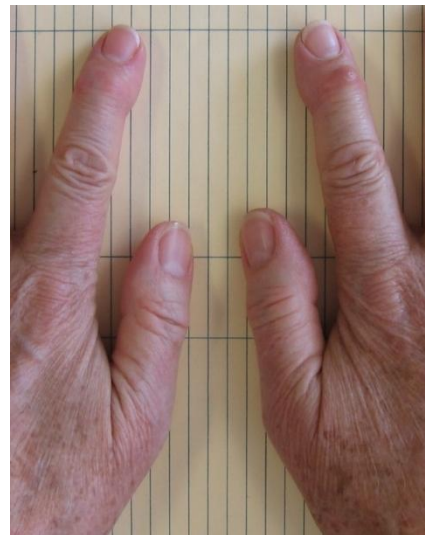
### Clinical findings

#### History

Specific joints are painful with activity, unlike rheumatoid arthritis, which typically has a period of generalised, symmetrical, small joint morning stiffness.

#### Examination

- Distal interphalangeal joint (DIPJ) swellings or Heberden's nodes.
- Reduced range of motion and painful motion of the affected joints, commonly the base of thumb (BOT) and DIPJs.



**Figure 5:** Clinical picture of the hands showing Heberden nodules which indicate osteoarthritic changes in the DIPJs

## Special investigations

### Imaging



**Figure 6:** X-ray of the thumb showing BOT OA

## Management

### Non-surgical

- NSAIDs
- Bracing or splinting.
- Steroid injections.

### Surgical

- Arthrodesis.
- Interposition arthroplasty.

## Shoulder OA

### Clinical findings

#### History

Can involve the glenohumeral joint or the acromioclavicular joint (ACJ) and symptoms relate to the joint involved, difficulty doing overhead tasks and inability to sleep on the affected side.

### Examination

- ACJ tenderness.
- Crepitus in the glenohumeral joint.

## Special investigations

### Imaging



**Figure 7:** AP x-ray of the left shoulder showing joint space narrowing and subchondral sclerosis of the glenohumeral joint. There is also narrowing of the subacromial space which points towards rotator cuff pathology. There is narrowing of the ACJ indicating OA.



**Figure 8:** Glenohumeral joint OA



## Management

### Non-surgical

- NSAIDs
- Activity modification
- Steroid injections.

### Surgical

- Excision of ACJ.
- Total shoulder arthroplasty (TSA or TSR).

## Spinal OA

### Clinical findings

#### History

Cervical spondylosis presents with neck pain and stiffness. Radiating pain down the arms suggests radiculopathy. Lumbar spine OA and facet joint arthropathy presents with mechanical back pain; radiculopathy usually radiates down one leg.

#### Examination

- Tenderness over the spinous processes and there may be paraspinal muscle spasm.
- Pain and stiffness when assessing range of motion (ROM).
- Straight leg raise (SLR) positive for pain going down the leg. Note at what degree of hip flexion the pain starts. In severe cases, there is pain when performing SLR on the contralateral side.

## Special investigations

### Imaging



**Figure 9:** Lateral lumbar spine x-ray showing degenerate disk disease at L2/L3 with facet joint space narrowing, osteophytes and sclerosis

## Management

### Non-surgical

- NSAIDs
- Physiotherapy

### Surgical

- Fusion surgery

## Key takeaways

- Diagnosis is made with history, examination (look, feel, move) and x-rays.
- Management starts with modification of activities and lifestyle, including weight loss if needed and splints or walking aids to alleviate pressure or reduce motion of the affected joint.
- Surgery (often major surgery) is reserved for failed conservative treatment and patients should be medically optimised.

## Assessment

1. A 67-year-old patient presents with a 2-year history of gradually worsening hip pain that is starting to impact on their ADLs. Which one of the following is most commonly reported in hip OA?

- A. Difficulty putting on shorts
- B. Difficulty doing their shoes and socks
- C. Needing to lean on the shopping trolley and
- D. bend forward to ease the pain
- E. Sleep disturbance
- F. More than 30 minutes of morning stiffness

The answer is (B). Not being able to do their shoes and socks is a typical ADL affected by hip OA.

2. When performing the physical examination of a patient with hip OA, which one of the following statements is most correct?

- A. There is an absolute LLD if the medial malleolus of both ankles do not line up next to each other
- B. There is a LLD if one knee is flexed when standing
- C. The femoral head can be palpated medial to the greater trochanter
- D. Rotation range is usually determined with the patient lying supine and the hip flexed to 90 degrees
- E. Abduction can be measured by measuring the angle formed between both lower limbs with the patient supine

The answer is (D). Flexing the hip and the knee to 90 degrees makes it easy to assess the degree of rotation.

## References and further reading

Miller, M. D. & Thompson, S. (2019) Miller's review of orthopaedics (8th ed.). Elsevier, Amsterdam

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## ABOUT THE BOOK

This is the second volume of the *Orthopaedics for Primary Health Care* textbook edited by Michael Held, first published in 2021.

Most patients with orthopaedic pathology in low- and middle-income countries are tested by non-specialists. This book was based on a Delphi consensus study\* with experts from Africa, Europe and North America to identify topics, skills and cases concerning orthopaedic trauma and infection that need to be prioritised in order to provide guidance to these health care workers.

The aim of this book is to be student-centred.

\*Held et al. Topics, Skills, and Cases for an Undergraduate Musculoskeletal Curriculum in Southern Africa: A Consensus from Local and International Experts. JBJS. 2020 Feb 5;102(3):e10.



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The information in this book is meant to supplement, not replace, orthopaedic primary care training.

The authors, editor and publisher advise readers to take full responsibility for their safety and know their limits. Before practicing the skills described in this book, be sure that your equipment is well maintained, and do not take risks beyond your experience, aptitude, training or comfort level.

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