

Knee Assessment: An Overview

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Abstract

The Knee joint is constructed by connecting the femur bone with the tibia and patella and covered by synovial membrane. It has the synovial fluids which lubricates the joint for articulation and allows weight bearing. The knee joint can be affected by degenerative changes which causes pain, swelling and restricted movements.

Keywords: Knee; Joints; Synovial Fluid; Articulation.

Introduction

Knees provide support to the body for flexing and straightening to do all activities. The client those presenting with knee pain, knee stiffness, limited

range of motion of knee joint needs intense assessment of knee. Assessment is an initial step in any health care institutions for those seeking care.

Anatomy and Physiology of Knee Joint

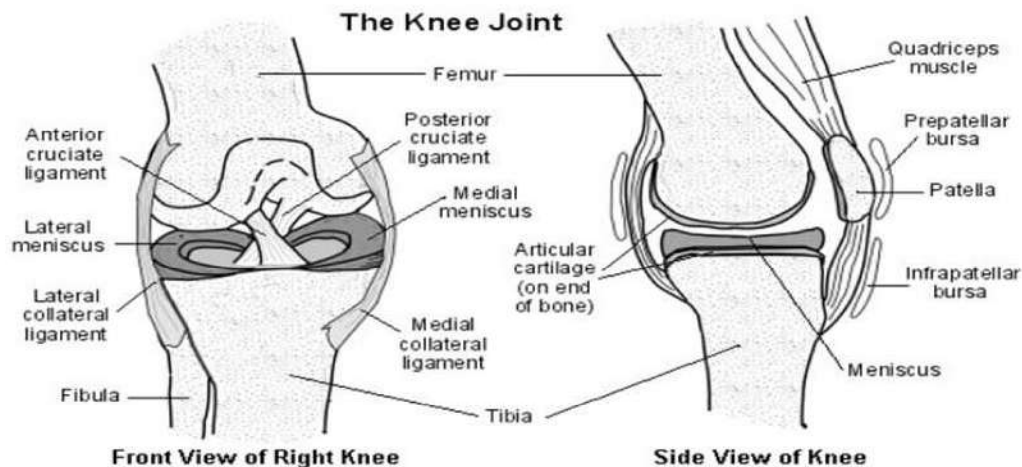


Fig. 1: Anatomy of Knee

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Knee Joint

There are two joints in the knee

- Patella femoral
- Tibiofemoral (knee joint)

- **Ligaments**

There are 4 ligaments in the knee joint

- Anterior Cruciate Ligament (ACL)-prevents the rotational movement and prevents forward movement of the tibia
- Posterior Cruciate Ligament (PCL)- prevents the forward sliding of femur in relation to tibial plateau
- Lateral Collateral Ligament (LCL)- prevents the medial movement of tibia over the knee against the resistance
- Medial Collateral Ligament (MCL)-prevents the lateral movement of tibia over the knee against the resistance .

- **Menisci**

There are 2 menisci in the knee joint

- Medial and lateral menisci which absorb pressure and protect the knee. It also stabilizes and lubricates the knee.

Facts about Knee

In general, in a normal knee exam:

- Symmetry of Both knees- look and move in the same way.
- Both knee has its natural strength.
- No signs of fluid in and around the knees.
- Normal alignment of knee and leg during ligament examination.
- No abnormal clicking, popping, or grinding when knee structures are moved or stressed.
- Normally Toes are pink and warm , and there should not be any numbness in lower leg or foot.
- Active flexion angle of knee joint is 0-130 degree.
- Active extension of knee joint is 0-120 degree.

Principles of Knee Examination

General Observations

- Look
- Feel and
- Move

Steps in Knee Assessment

Preliminary Preparation

- Wash hands

- Self Introduce.
- Clarify client identity.
- Explain the reason for assessment.
- Gain client cooperation.
- Ensure both knees are exposed.

Knee Examination

Inspection (LOOK)

- *Gait*: ask the client to walk and observe for any limp, any deformities (bow legged, knock knees) and muscle wasting, popliteal swelling (Baker's cyst). Watch for smoothness, speed, atalgic gait.
- Make the client to lie on bed. Look for symmetry, redness, scars, rashes, muscle wasting, fixed flexion abnormalities.

Palpation (FEEL)

- *Temperature*: check temperature with back of the hand and compare with surrounding areas.
- *Tenderness*: Palpate the borders of the patella for tenderness and back of the knee for swelling and joint lines.

Percussion (MOVE)

- Tap the patella for large effusion.
- Sweep test for small joint effusion.

Special Tests

- *Anterior Drawer Test*: flex the knee 90 degree ankle. Sit over the client foot pull forward on the tibia just distal to the knee. Normally there should not be any movement. If there is anything indicates anterior cruciate ligament tear.
- *Posterior Drawer Test*: with knee flexion observe at the sides for any lag , which indicates posterior ligament tear.
- *Test for Collateral Ligament*: hold the knee at 15 degree, give medial and lateral stress over the knee. Excessive movement indicates collateral ligament damage.
- *Test for Meniscal Damage*: Hold the knee flexed fully and hold at foot. Give lateral and medial stress to the foot. pain or click is positive for meniscal damage.

Clinical Findings

- *Scars*: Suggestive of joint replacement

- Swelling/effusion: rheumatoid arthritis, gout, septic arthritis.
- Popliteal swelling: baker's cyst,aneurysm.
- Knee injuries.

Investigative Procedures

In addition to the clinical examination, confirmation of diagnosis may require objective test results.

- Knee joint aspiration – for diagnostic or therapeutic purposes.
- X-ray knee joint reveal fracture and psudogout.
- MRI- cartilage /ligament damage.

Knee Osteoarthritis if Any of the following are Presents

- Age greater than 50 years.
- Morning stiffness lasting less than 30 minutes.
- Crackling or grating sensation (crepitus).
- Bony tenderness of the knee.
- Bony enlargement of the knee.
- No detectable warmth of the joint to the touch.

References

Common Knee Related Disorders

- Arthritis.
- Cartilages injuries and disorders.
- Ligament injuries.
- Tendon injuries and disorders.

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