Class 11 notes Pelvis and Hip

Sacroiliac joint (SIJ)

The sacrum supports the spine and is supported in turn by an ilium on each side. The SIJ is strong, supporting the entire weight of the upper body. It can lock and is shock absorbing joint during movements.

SIJ is a synovial plane (type) joint with irregular elevations and depressions that produce interlocking of the two bones. SIJ are paired C-shaped or L-shaped joints capable of a small amount of movement (2–18 degrees). The joints are covered by two different kinds of cartilage; the sacral surface has hyaline cartilage, and the iliac surface has fibrocartilage

SIJ act as shock absorbers, transfer weight from spine to lower extremities, decreases force to spine and upper body during jumping, running etc

The joint's surfaces are flat (planar) in early life. Walking, creates distinct angular orientations, and elevated ridge along the iliac surface and a depression along the sacral surface. The ridge and corresponding depression, along with the very strong ligaments, increase the sacroiliac joints' stability.

The ligaments of the sacroiliac joint include the following:

1. Anterior sacroiliac ligament
2. Interosseous sacroiliac ligament
3. Posterior sacroiliac ligament
4. Sacrotuberous ligament
5. Sacrospinous ligament
6. Iliolumbar ligament – stabilizes L5

The motions of the sacroiliac joint

1. Anterior innominate tilt of both hip bones on the sacrum (where the left and right move as a unit)
2. Posterior innominate tilt of both hip bones on the sacrum (where the left and right move together as a unit)
3. Anterior innominate tilt of one innominate bone while the opposite innominate bone tilts posteriorly on the sacrum (antagonistic innominate tilt) which occurs during gait

4. Sacral nutation (flexion) Motions of the sacrum occur simultaneous with motion of the ilium so you must be careful in the description of these as isolated motions.

All these movements are occurring when either spine is moved, or hip joint is moved and SIJ follows. There is no muscle that work directly on SIJ.

Active movements that stress the sacroiliac joint (SIJ)

1. Forward flexion of the spine 40 to 60 degrees
2. Rotation at the lumbar spine: 3-18 degrees
3. Flexion of the hip 100 to 120 degrees

Nutation – forward motion of the sacrum into the pelvis, most stabile position

Counternutation – opposite motion of sacrum

If stride is decreased most likely SIJ is not free

Special tests

1. Gapping (Transverse anterior) test
   a. The patient lies supine with the examiner applies crossed arm pressure to the ASIS. Examiner pushes down and out. + if there is pain in SIJ or in gluteal region.
   b. This test produces anterior gap and posterior closure. + can indicate anterior sacroiliac ligament sprain
   c. Modification – pushing on ASIS from outside – produces gapping posteriorly
2. Sacroiliac rocking test (knee to shoulder test)
   a. Stresses sacrotuberous ligament
   b. The patient is in supine position and examiner flexes patients hip and knee fully and then adducts the hip (take to opposite shoulder). Add rocking motion to stress SIJ. + if there is pain in SIJ area
3. Thigh thrust test
   a. The patient lies supine while examiner passively flexes the hip to 90 degrees. Examiners one hand palpates SIJ and other hand thrust down the patient knee on the tested side

4. Straight leg raising (Lasegues) test
    a. Primarily test for lumbar issues
    b. Pain that occurs after 70 degrees will be most likely be joint pain – lumbar facet joints, SIJ, hip joint
    c. Modification – passive bilateral SLR test, pain before 70 can indicate SIJ issue, if pain after 70 degrees can indicate lumbar joint problem.
5. Flamingo (Stork, Gillets) test
    a. The patient stands while examiner palpates posterior superior iliac spin (PSIS) with one thumb and palpates S2 level sacrum with other thumb. Then patient is asked to stand on one leg and bring the hip into 90 degrees of flexion or more
    b. The PSIS on tested side should rotate posteriorly (PSIS drops/moves inferiorly)
    c. Test is positive if there is limited motion, no motion, or pain = hypomobility of SIJ
6. SIJ distraction test
    a. The patient lies supine and examiner applies a vertically oriented, posteriorly directed force to both ASIS
7. SIJ compression test
    a. The patient in a side lying position and examiner hands are placed over upper part of the iliac crest and pressed down towards the floor. + pain, discomfort in SIJ.
8. Sacral thrust test
    a. Patient in prone and examiner applies an anterior directed pressure over sacrum. + test pain in SIJ area.

Hip joint

Ball and socket join: head of femur and acetabulum of the hip joint

Iliofemoral lig, ischiofemoral, pubofemoral lig

Ilium + ischium + pubis = coxal bone

AROM

1. Flexion: 110- 120

2. Extension: 10-15
3. Abduction: 30-50
4. Adduction: 30
5. Lateral rotation: 40-60
6. Medial rotation: 30-40

PROM – the same

RIM – the same

Special tests

1. Faber (Patrick) test (Figure 4 test)
    a. The patient lies supine and the examined leg is placed in figure 4 position = hip joint flexion, hip joint abduction, external (later) rotation and the foot rest on the opposite knee. Examiner stabilizes opposite ASIS and applies slight downward pressure on the examined legs knee.
    b. Joint that can be stressed – hip joint, SIJ, Lumbar facet joints
    c. External hip rotation pain in groin – hip joint
    d. External hip rotation pain in SIJ area – SIJ problem
2. Trendelenburg test
3. Torque test
    a. Patient in supine lying position close to the edge of the table. The examined leg gets abducted, extended and medially rotated at the hip joint. Examiners other hand applies posteriorlateral pressure on neck of the femur. + pain, clicking, locking (reproduced patients symptoms)
4. Ortolani's sign (Usually performed with Barlow maneuver)
    a. Examiner performs flexion to 90 degrees, examiner palpates the greater trochanter and gently abducts infants leg
    b. It relocates the dislocation of the hip joint produced by Barlow's maneuver
5. Barlow maneuver
    a. Examiner adducts the hip (bringing the thigh towards midline) while applying pressure on the knee – examiner tries to dislocate the hip joint

6. Sign of the buttock
    a. Examiner performs SLR test if there is limitation, examiner flexes the patients knee. If there is no increase in range it is not sciatic, it is most likely issue in the buttock
7. Thomas test
    a. Hip flexion contracture
    b. Patient in supine position legs straight. Examiner checks for excessive lumbar lordosis. Patients bring one knee to the chest, if straight leg rises = flexor contracture
    c. Patients straight leg rises and abducts = iliotibial band tightness
8. Rectus femoris test – the patient lies supine with the knees bent over the end of the edge of the table. Patient brings one knee to the chest. The opposite leg should stay on the table. Test is positive if opposite leg start straighten in the knee and thigh is lifting of the table = rectus femoris contracture
9. Ely's test – patient lies prone, examiners one hand stabilizes lower back and other hand rapidly flexes the patient knee by bringing heel to the buttocks. Rectus femoris tight if on knee flexion patient hip flexes from the table.
10. Ober's test – assessment of tensor fascia latae. Patient on the side with lower leg flexed at the hip and knee. Examiner passively extends and abducts tested limb at the hip joint. Examiner slowly lowers the limb. If there is contracture limb stays up.
11. Hamstring contracture test – patient sits with one knee flexed and other fully extended. Patient tries to touch the toes of extended lower extremity. If patient cannot touch toes indicates hamstring tightness.

SIJ pain

1. Cause flexion or extension with rotation, incorrect lifting practices, pregnancy.
2. Mechanical SIJ dysfunction usually causes a dull unilateral low back pain, mild to moderate ache around the dimple or posterior superior iliac spine (PSIS) region.

3. The pain may become worse and sharp while doing activities such as standing up from a seated position or lifting the knee towards the chest during stair climbing.
4. Referred pain into the hip, groin, buttock and occasionally back of the thigh.
5. Low back pain and stiffness, often unilateral, that often increases with prolonged sitting or prolonged walking.

Hip joint issues

1. Osteoarthritis of the hip
2. Trochanteric bursitis