



...going one step further



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Femoral Fracture and Hip Osteoarthritis

Femoral fracture is a bone injury to the upper leg. These fractures most commonly occur in the area of the femoral neck or in the bony prominences located below (greater and lesser trochanter). Femoral neck fracture is the most common bone fracture in elderly persons as the bone structure is less dense for age-related reasons (osteoporosis), and the bone may consequently be unstable. Even a minor fall may cause a bone fracture.

Coxarthrosis or hip osteoarthritis is a chronically progressive, painful disease of the hip joint caused by wear and tear on the cartilage and bone tissue in older persons resulting e.g. from inflammations or metabolic disorders. Hip osteoarthritis leads to the formation of bony outgrowths at the edges of the socket of hip and the femoral head as well as deformation of the femoral head. The joint cartilage is progressively destroyed, perhaps also the ligament of head of femur (ligamentum capitis). Movement of the hip joint is increasingly restricted.

The model shows the right hip joint of an elderly person, reduced to a half of his natural size; the relief representation on the base shows a frontal section through the femoral neck.

1. Medial femoral neck fracture

Depending on the type of fall (while leg is drawn up or stretched out) the femoral neck tears at various angles in the area of the joint capsule (intraarticular), with or without compression of the joint head. These angles are the basis of Pauwel's classification: the steeper the angle the higher the risk that the bone fragments shift against each other in opposite directions.

Pauwel's classification:

1a: Type I: Angle of up to 30° to the horizontal (stable under pressure load).

1b: Type II: Angle of up to 70° to the horizontal (increasing effect of shearing forces).

1c: Type III: Angle of over 70° to the horizontal (bone healing is prevented).

2. Lateral femoral neck fracture

Typical lateral extracapsular injury in older persons, rare.

3. Fracture through the trochanteric region ("pertrochanteric femoral fracture")

Typical injury in older persons.

4. Fracture below the trochanters ("subtrochanteric femoral fracture")

Also occurs in younger patients as a result of a high impact of force (turning or bending) below the lesser trochanter, always unstable.

5. Fracture in the area of the femoral shaft ("femoral shaft fracture")

Caused by an impact of force on the femur.

6. Fracture in the area of the femoral head ("femoral head fracture")

Caused by direct or indirect impact of force, usually in case of dislocation of the femoral head.

7. Fracture of the greater trochanter ("greater trochanter fracture")

Caused by direct impact of force.

8. Fracture or avulsion of the lesser trochanter ("avulsion fracture of the lesser trochanter")

Common sports injury in younger persons.

9. Degenerative hip osteoarthritis ("coxarthrosis")

Causes formation of bony outgrowths at the edges of the socket of hip and the femoral head as well as deformation of the femoral head. The joint cartilage (painted blue on the model) is destroyed, in some cases also the ligament of head of femur (ligamentum capitis).

9a: Reminders of joint cartilage (blue)

9b: Spurlike bony outgrowths

9c: Femoral head deformation

9d: Ligament of head of femur



