The iliofemoral articulation

The iliofemoral articulation, commonly known as the hip, is responsible for a few most important motion activities. It's a joint suscebtible to injuries and diseases, especially coxarthrosis.

The contusion of the joint practically excludes the patient from active life. Luckily enough, orthopaedists have been able to treat even the most complicated ilnesses of the hip for many years now, as the first total hip replacement surgery was performed in 1952.

The hip is a multiaxial, spherical and acetabular joint. It consists of the acetabulum of the iliac bone. In the acetabulum there's a surface covered with hyaline cartilage. The bottom of the acetabulum is filled with adipose tissue and synovial villi. The whole joint is surrounded with the articular capsule. The interior of the capsule is covered with synovium.

In order to realize how important the hip is and how complicated actions it must do, we need to remember the number of motions done by the femoral bone in this joint: extension, flexion, abduction, adduction, external rotation, internal rotation and circumduction. All these motions are possible to make thanks to hip ligaments: the iliofemoral ligament (the strongest in human organism, sustains a load of 350kg), the pudofemoral ligament, the ligament of the femoral head and the so-called circular layer. This layer is a fiber tract that goes around the femoral neck. It strengthens the joint capsule, stabilizes and makes the hip more flexible.

THE MOST COMMON ILNESSES OF THE HIP ARE:

- FAI (femoro acetabular impigement),
- Tearing of the glenoidal labrum,
- Snapping hip,
- Avascular Necrosis of the Femoral Head (AVN),
- Coxarthrosis.

FAI (femoro acetabular impigement)

FAI occurs when the head of the femoral bone doesn't fit in the acetabulum of the coxa. About 70% of early degenerative changes in patients below 55 suffer from it. There're three basic types of FAI:

1. **CAM** – it's a confilct of incongruence caused by aspherical shape of the head of the femoral bone. It leads to damaging of the front upper part of the acetabulum cartilage, together with its separation from the bone. During flexion the cartilage is

rubbed away by the asymmetric head of the femoral bone, whilst the labrum remains untouched. The causes of the damage aren't known. It seems that inborn deformations, osteophytes and adolescent ilnesses of the hip are of importance.

2. **PINCER** – the pincers conflict is caused by excessive coverage of the head of the femoral bone with the acteabulum (the head is too deep in the iliac bone). The damages of the cartilage are localized circumflexly and it covers a narrow tract of the cartilage at the labrum. During motion the labrum is crushed between the ring of the acetabulum and the femoral neck, which leads to the degeneration and/or even to ossification of the labrum.

3. COMBINED (most frequent)

CAM occurs 2 to 3 times more frequently in men, women suffer mostly from PINCER. Both, CAM and PINCER, may lead to degenerative changes of the hip.
First pain ailments and gait disorders can be observed as early as at the age of 15-17.

FAI - treatment (find out more)

Tear of the glenoidal labrum

Over 30% of all injuries and pain in sportsmen and people physically active are ilnesses of the glenoidal labrum. Cartilage injuries come second, injuries of the round ligament come third.

The labrum is an intraarticular structure of the fibrous cartilage, a direct continuity of the bony acetabulum of the hip joint. It protects the head of the femoral bone so that it doesn't hit into the bony marge of the acetabulum and it secures full motion in the joint. It is possible, as it anatomically deepens the acetabulum. The labrum is vascularized and innervated thus it's extremely prone to pain. Most often instable ruptures or tears occur. On the other hand though, thanks to being so vascularized, the labrum heals itself quite fast, provided the treatment is right. If the injury is so extensive that it can't be repaired, the damaged structures are being removed outside the joint.

The labrum might be damaged during one severe injury or as a result of many microinjuries (when doing sports).

The labrum might be diagnosed with MRI with contrast administered into the joint or with a diagnostic arthroscopy. Other symptoms might be: pain in the groin, the feeling of leaping in the joint, limitation of motion and lameness.

Tear of the glenoidal labrum - treatment (find out more)

Snapping hip (friction syndrome of the ilio tibilal tract in the hip area)

Snapping hip is a condition where during motion friction, snapping and leaping in the joint are felt. Depending on the kind and area of the syptom occurence, we distinguish two kinds of the pathology:

1) External snapping hip – caused by friction and leaping of the hard and wide structure: the ilio tibial tract together with a part of the gluteal fascia over the greater trochanter. The disease has many causes: inborn anomalies, postinjection contractures and faulty positioning that leads to asymmetric pelvis position or hip instability. This disease, apart from positioning that makes everyday life more difficult, compels atypical limb position and incorrect gait patterns, which, in turn, lead to overloading and hip/knee ilnesses. The picture of the snapping hip is complete with pain ailments of the hip area (to be more exact: of the trochanter of the femoral bone) and the inability to fold legs. Snapping occurs most frequently during flexion and is well sensed under the skin. The basis of the diagnosis is a doctor's examination, which sometimes needs to be completed with an MRI (to exclude the injury of the femoral attachment of the medium gluteal muscle).

2) Internal snapping hip can be divided into:

- "intraarticular" - caused by pathologies of the hip joint: labrum pathologies, CAM and PINCER syndromes, injuries of the cartilage, loose bodies and/or progressive degenerative changes. Quite frequently the reason behind the intraarticular snapping hip is bone "roughness" left after healed fractures of the acetabulum or the head of the femoral bone. The diagnosis is based on an examination completed with X-ray tests and, if necessary, other imaging tests.
- "extraarticular" - caused by reasons far from the hip joint itself. Most frequently the pathology here is the friction and leaping of the ilio lumbar muscle in the area of the smaller trochanter or in the front area of the hip joint. This situation occurs in people with hip instability or with faulty positions, inborn atypical localisation of the acetabulum or after endoprosthetics. The diagnosis is based on a doctor's examination and an X-ray test that confirms or excludes bone changes that might be the reason behind the ilness. In some cases we must have an MRI to confirm changes in the muscle or occurence of fluid in the friction area.

Snapping hip – treatment (find out more)

Avascular Necrosis of the Femoral Head (AVN)

AVN occurs due to partial ischemia. The weight bearing site becomes ischemic, which leads to the collapse of the head of the femoral bone and to progressive degeneration.

The symptoms are as follows: pain at rest, permanent pain ailments in the groin area or a non specific spine pain and progressing limitation of the hip mobility and lameness.

At the beginning of the disease, the symptoms are not visible on X-ray pictures and so the disease cannot be diagnosed, especially when the symptoms are much alike the non specific spine pain. This is why we use MRI tests and scintigraphy. Early diagnosis is important because quick treatment brings about best effects.

So far there're no unequivocal guidelines of surgical treatment of the ANV. Thus, if the subcartilage layer of the femoral bone doesn't collapse, we perform the following: drilling of the femoral head, reaming and supporting the subcartilage layer with grafts. Growth factors are administered, too.

AVN – treatment (find out more)

Coxarthrosis

The most frequent disease of the hip is coxarthrosis, caused by a too shallow acetabulum (dysplasia), wear, the femoro acetabular impingements or the tearing of the labrum. The ilness develops faster in patients with high cholesterol and triglycerides levels, diabetes, obesity as well as limb inequality or scoliosis. It's worsened by contusion, injuries and childhood hip problems.

The most significant symptom is pain. At first, it occurs in the groin and hip, aggravates during standing up and walking. It radiates into the knee, but it may be felt only in the knee. The patient starts to lame. As the disease progresses, pain appears after longer weight bearing, during resting and it may last up to 8 hours. There's a significant limitation of motion in the joint and compulsory limb positioning.

Coxarthrosis – treatment (find out more)

Osteoarthrosis

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