Congenital hip dysplasia/dislocation

Hip dysplasia is a malformation (before birth/dysplasia) at the hip joint with insufficient maturation of the acetabulum, which is not sufficiently developed to completely accommodate and cover the femoral head. With congenital hip dislocation, the femoral head even partially or completely leaves the acetabulum. Hip dysplasia is one of the most common congenital skeletal diseases. Girls are more often affected than boys.

How does the delayed/non-existent maturation of the hip joint occur in the infant?

In the newborn, the hip joint consists mainly of cartilage. As part of normal development, the cartilage substance is continuously replaced by bone substance in infancy (3 to 9 months of age). This takes place both in the acetabulum and in the head of the thighbone (femur). For the regular ossification of the hip joint, a correct position from the femoral head to the acetabulum is essential.

What problems can this misalignment cause in the medium and long term?

In some cases, the hip socket and femoral head cannot develop properly in shape and size, with poor function of the hip joint and subsequent damage (osteoarthritis/adults).

What causes and risk factors can contribute to hip dysplasia?

The cause of hip dysplasia is multifactorial:
Factors such as lack of space in the uterus (oligohydramnios) or genetic predispositions play a role in the development of hip dysplasia.

How do you find out whether an infant has hip dysplasia?

The pediatrician must examine the hip joints of every child in the first weeks (1st to 4th week of life) after birth. The informative value is limited, but useful as a first measure.
Anomalies in the clinical examination are:

- Asymmetrical folds in the thighs and buttocks
- Asymmetry of leg posture, pelvis and spine
- Restricted movement / preventing the legs from splaying apart
- Instability of the hip joint
- Apparent shortening of the affected leg (with dislocation)

In addition to abnormalities in the clinical examination or the presence of risk factors, ultrasound of the hip joints is always indicated, this being the first choice in the diagnostic method.

Ultrasound

The doctor examines both hips one after the other with the help of the ultrasound machine.
Two ultrasound images are created for each hip joint.
These images are then measured: Two angles are determined (alpha and beta angles), according to which each hip is assigned a type.
Depending on the type or result, targeted treatment may be initiated or further ultrasound follow-up checks may be provided.

X-ray diagnostics

With increasing age, approx. after 6-8 months of life, the X-ray examination (pelvis a.p.) can be used. Correct positioning of the child must be ensured.
By default, the roofing of the femoral head is specified with the acetabulum / socket angle (AC angle).

When is hip dysplasia therapy required and what does this therapy look like?

If the hip sonography is abnormal, therapy is started from type IIa- according to Graf.
A distinction is made between the following types of therapy:

Maturation treatment

As long as the femoral head is still stable in the acetabulum, the therapy consists of applying a squat-spread orthosis (Tübinger splint, see Figure 1; Pavlik bandage).
The duration of treatment depends on the severity of the dysplasia and is continued until the acetabulum is fully mature, usually 8-12 weeks. This process is checked at regular intervals using ultrasound.

Closed reduction

If the femoral head of a child with hip dysplasia is unstable or has even slipped out of the acetabulum (luxation), it must be "set" in the acetabulum (reduction) and then held there (retention).

There are various possibilities.

Bandages: Belt harness according to Pavlik. The reduction of the dislocated hip joint can be achieved by kicking the child. Disadvantage: correct and permanent settings are difficult.
Extension methods: Overheadextension (see Figure 2). There are 2 bars mounted on the bed, which are connected to a cross bar above the bed. Weights are attached to the child's legs with adhesive bandages, which are suspended from pulleys on strings.
Subsequent retention treatment: Pelvic leg plaster in the sit-squat position according to Fettweis. This remains for at least 4 weeks, possibly followed by a splint splint treatment. The position of the hip joint is checked by an MRI (magnetic resonance examination) under sedation/anesthesia.
Open reduction: If a closed reduction (conservative therapy) is not successful, an open adjustment of the femoral head in the joint must be carried out by means of an operation. Without stable reduction, additional bony corrections are required. The result is also secured with a pelvic leg plaster.

Which therapy methods are available in childhood and adolescence?

If hip dysplasia remains undetected in infancy, an osseous operation is necessary in older children, adolescents or adults.
There are various surgical procedures available to improve the position of the joints on the thigh and pelvis.

In which time periods do follow-up inspections take place?

Successfully treated hip dysplasias/hip maturation disorders are checked in the pediatric orthopedic consultation during the course of growth in order to detect rare secondary deteriorations at an early stage.

In addition to the clinical examination, x-rays at the begin to walk and at the age of 6 and 12 are also provided for control purposes.

Figure 1: Maturation of the affected hip joint in the Tübinger splint

Figure 2: Overheadextension - step-by-step adjustment/pulling the dislocated femoral head

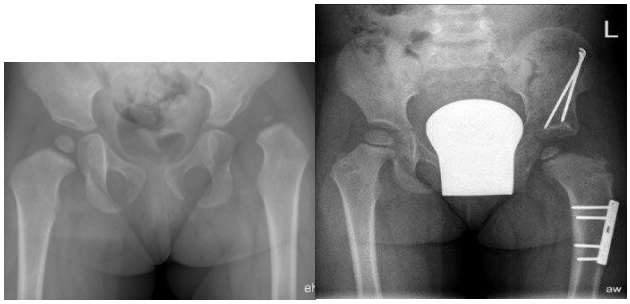

Figure 3: Complete dislocation of the femoral head on the left (not in the acetabulum).

Figure 4: After surgical adjustment by osseous corrective surgery on the thighbones and pelvis.