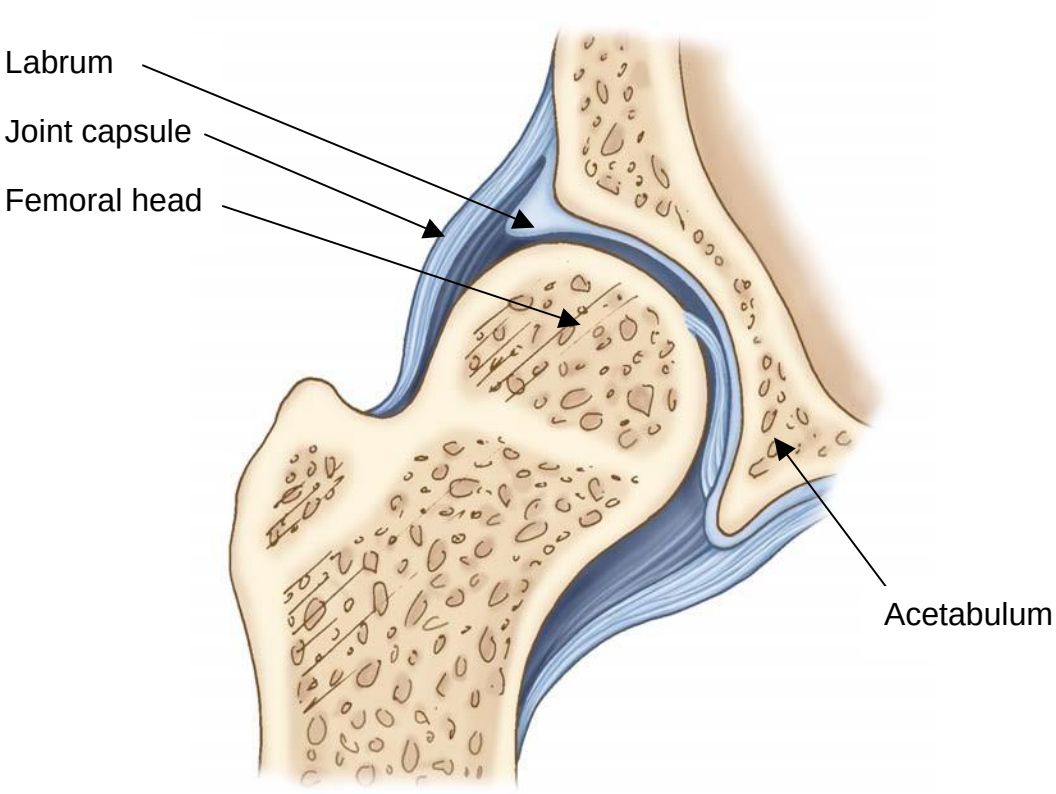
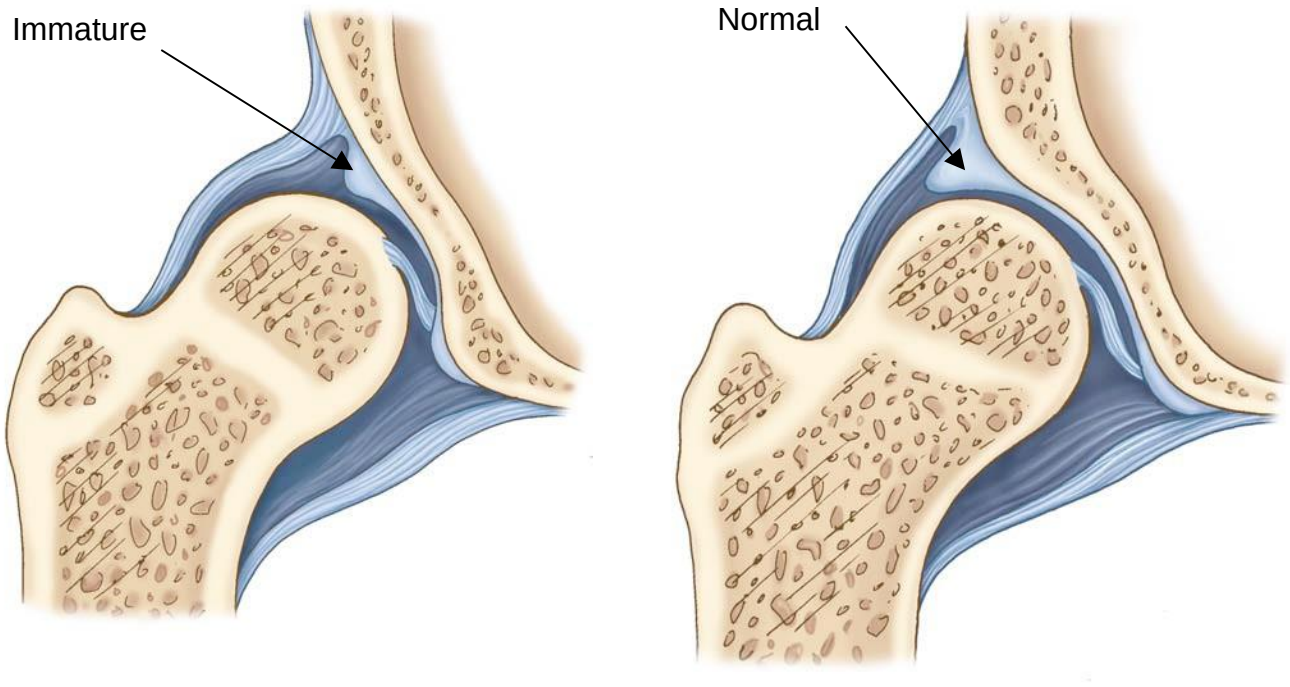
Developmental Dysplasia of the Hip

The development of the hip begins within the first six to eight weeks of a pregnancy. The hip has three major parts: the ball or femoral head, the socket or acetabulum and the O-ring or labrum . The continued normal growth of the hip requires that muscles move the ball-and-socket joint during the time in the womb. Any interruption in this process may result in a hip socket that is abnormal. Some abnormalities that result will be identified before the age of walking and others may not be identified until adulthood.

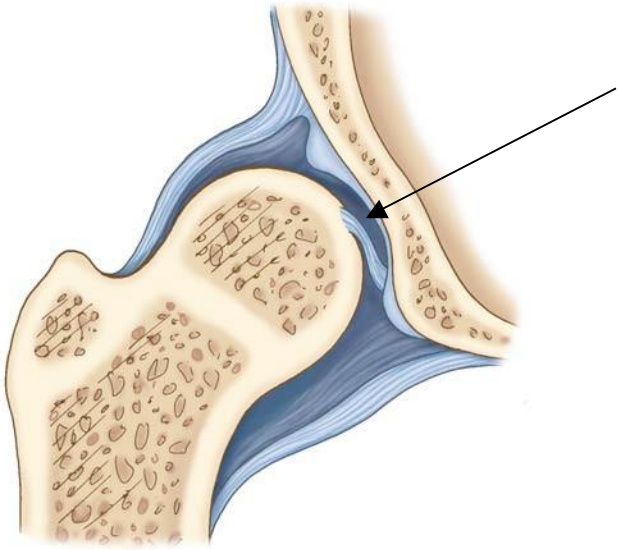


The classification of Developmental Dysplasia of the Hip(DDH) is based on the amount of space between the femoral head and the hip socket. In the milder forms of DHD, the o-ring that keeps the 2 bones together has been not formed properly but the femoral head cannot be pushed away or out of the socket. The diagnosis is not based on the physical examination which is normal but on the ultrasound exam of the

hip. The hip may be described as "immature" and is likely to improve with only observation or use of a brace for a few months.

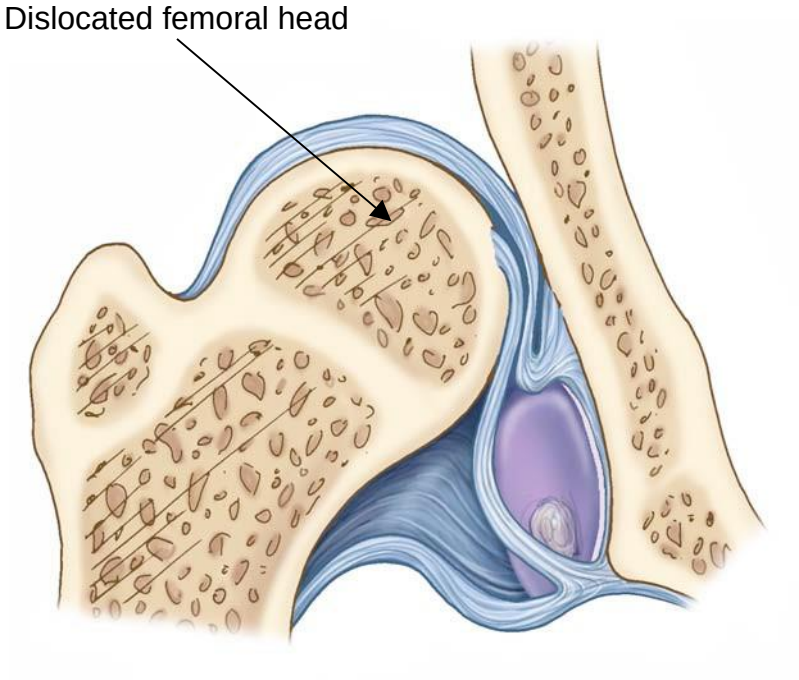


In the next stage, there is now a space between the two bones and this is called a "subluxation." The subluxation is a result of excessive twist of the of the upper end of the femur, a shallow socket, abnormal labrum, tight muscles or combinations of these. The physical examination may reveal the excessive motion in the hip socket. Prior to the onset of walking, the hip joint may become normal with bracing.



Subluxated hip demonstrates an increased space between the femoral head and acetabulum

The next stage is called “dislocated” and occurs when the femoral head no longer touches or has contact with the socket. The dislocation may begin in the womb or after the child is walking. The deformities to the femoral head, acetabulum, labrum and muscles are now more severe and do not always result in a normal hip with treatment. A dislocated hip can be identified at birth with physical examination, x-rays, and hip ultrasound. After the age of walking, a “limp” may also aid in the diagnosis of late presenting cases.



Treatment

Treatment options are divided into observation, closed treatment with a brace, surgical placement of the hip back into the socket followed with casting, and surgical treatment with bony reconstruction of the hip socket and casting.

Observation

Infants that are in the breech position or are first born are susceptible to developing an abnormal labrum. The ultrasound may demonstrate an “immature” hip that has the potential to grow into a normal hip within the first eight weeks of life with only observation.

Bracing

A hip that is subluxated or dislocated prior to the onset of walking can be initially treated with a Pavlik harness. The action of holding the hip in a flexed position may allow the femoral head to become better centered deep in the socket. If the hip reduces within the first 4-6 weeks of treatment, the likelihood of success is improved. Brace-wear will continue until the x-ray and physical examination are normal.

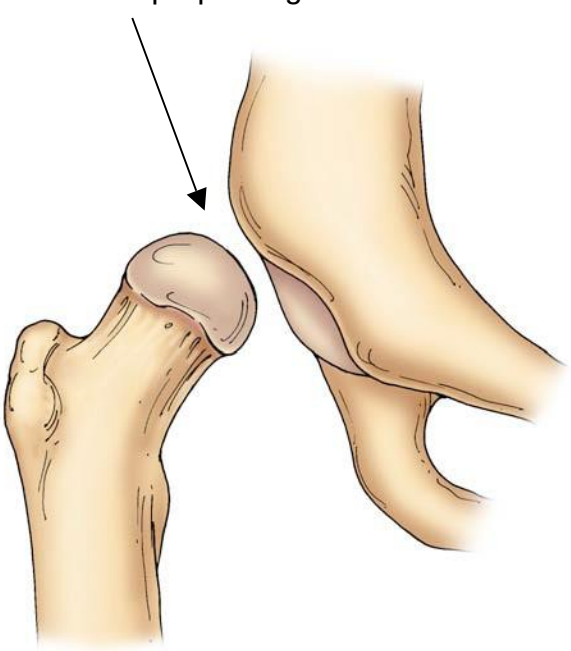
Surgical Treatment and Casting

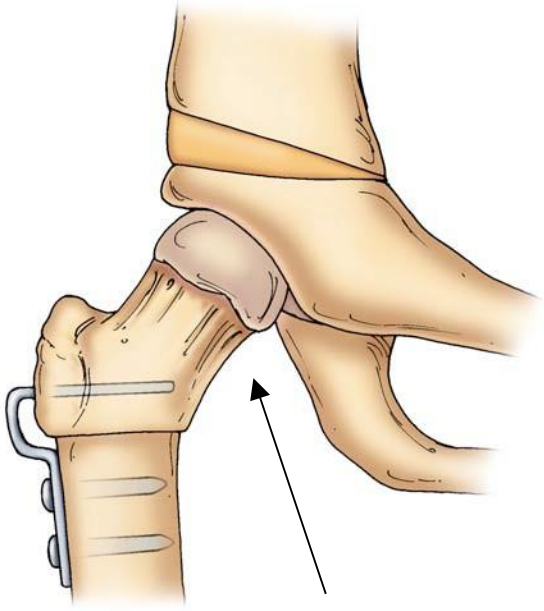
The decision that brace-wear cannot achieve a “located” hip is not considered a failure. The labrum and shortened muscles can be pushing the two bones apart, requiring surgical correction. After surgically relocating the hip, the infant must be kept in a body cast for three to four months. Cast changes every month are performed under general anesthesia. Brace-wear can follow this treatment path until the x-ray and physical examination are normal.

Surgical Treatment and Bony Reconstruction

DDH that presents after the onset of walking usually has bony deformities that must be corrected to achieve a located hip. The ligaments and tendons that are restricting the hip from becoming located are lengthened. Next, the femur will be cut into two pieces and a small piece removed. The femur is repaired with a plate and screws. If there is a secondary deformity of the socket it must be repaired at this time in order for the two bones to heal and grow properly. Postoperatively, the child will be immobilized in a body cast. After cast removal, therapy may be used to improve the walking pattern over several months. Once the x-ray and physical examination is normal, the long-term prognosis is favorable.

Femoral head and acetabulum require surgery to restore proper alignment





Femoral head and acetabulum have been realigned with osteotomies.

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