

# Developmental Dysplasia of the Hip (DDH)

## *Introduction*

The hip is a “ball-and-socket” joint. The “ball” is the upper of the thigh bone (femur). The “socket” is the rounded cup that is part of the pelvis bone. This type of joint allows a lot of motion in many different directions. Even though the hip has a lot of motion, the hip joint is very tight and strong. The ball and socket fit very closely together. In developmental dislocation/ dysplasia of the hip (DDH), the ball is loose in the socket, or the ball may be partially or completely out of the socket. DDH can be present at birth or develop during a baby’s first year of life.

## *Definitions*

**Acetabulum** - This is the socket part of the joint. The acetabulum is part of the pelvis. The acetabulum is shaped like a cup.

**Femoral head** - This is the ball part of the joint. This is the top of the femur bone.

**Dysplasia** - This means that the bone is not formed normally. This can happen to either the acetabulum or the femoral head, or both. Dysplasia in either bone can lead to the hip joint being out of place.

**Dislocated** - The femoral head is completely out of the acetabulum.

**Dislocatable** - The femoral head is in the acetabulum, but the head can be pushed out of the acetabulum during a physical exam.

**Subluxatable** - This is the mildest form of DDH. The femoral head is in the acetabulum but loose. The femoral head can be moved in the acetabulum but does not dislocate (pop out of place).

**Reduced** - The hip joint is in place.

## *Description*

In DDH, the acetabulum is not shaped normally. The “cup” is not as deep or curved, so the femoral head does not fit tightly in the joint. The strong ligaments and joint tissue may also be loose. In the United States, there are 1 or 2 babies born with DDH for every 1,000 babies born. All babies are checked for DDH when they are born during their first examination. Your pediatrician will check for DDH at every check-up during the first year of life.

DDH does run in families. It is more common in girls and first born children. Babies who are in the breech position (where the baby’s bottom, instead of the head, is positioned to be delivered first) also have a risk of DDH. Low amniotic fluid during pregnancy is also associated with DDH.

## *Doctor Examination*

Many times, there are no signs of DDH in a baby. A careful examination is needed to diagnose DDH. Your doctors will examine the hip motion in both hips. He or she will also stress the hip to see if the hip dislocates or subluxes. He or she will look at the length of the legs and the skin folds in the thigh. Sometimes the first sign of DDH is when a baby starts to walk, and the parents or pediatrician notice limping, toe walking on one side, or a waddling walk.

## *Other Studies*

**Ultrasound** - ultrasound uses sound waves to produce pictures and videos of the hip. It is very safe and does not use radiation. In babies who have a high risk of DDH, such as a female baby who was in breech position, the ultrasound is used to make sure the baby does not have DDH. Ultrasound is also used if the doctor’s examination

has a finding that is worrisome for DDH.

**X-rays** - In older infants and toddlers, an X-ray is a better test to look at the bony details of the hip joint.

### ***Treatment***

When DDH is found, the treatment depends on the age of the child.

#### **0 to 6 months:**

A Pavlik harness is a soft brace that keeps the hip in place for 1 to 3 months while the tissue around the hip tightens. By keeping the femoral head in the acetabulum, the acetabulum develops more normally. Babies in Pavlik harnesses can still kick their legs, and it is easy to change diapers. The doctor will check the progress of the hip with repeat ultrasounds every week or two. If the hip continues to sublux or dislocate with Pavlik harness treatment, some orthopaedists will try a stiffer brace to keep the hip in the socket. Or, your orthopaedist will recommend a closed reduction under anesthesia. While your baby is safely asleep, your orthopaedist will guide the hip back into place and inject some dye into the joint to better see that the hip is in the proper position. He or she will then place a body cast, known as a spica cast to hold the hip in position. A CT scan or MRI may be performed after the cast is placed to check that the hip has stayed in the joint.

#### **6 months to 2 years:**

This age is too big and strong for a Pavlik harness. A closed reduction under anesthesia with a spica cast is often needed to get the hip joint back into place and keep it there. Some orthopaedists will use traction for a few weeks before the closed reduction. If a closed reduction does not work, then an open reduction surgery is needed. Your surgeon will need to make an incision to remove tissue that is preventing the femoral head from staying in the acetabulum. If it is very difficult to get the hip back in place, sometimes the femur bone needs to be shortened, or the pelvic bone needs to be cut and shifted to make the acetabulum deeper. After open reduction surgery, a spica cast is needed during healing.

#### **Older than 2 years:**

Open reduction surgery with shortening of the femur and pelvic osteotomy is usually needed to reduce the hip joint. A spica cast is used for 2 or 3 months to keep the hip reduced.

### ***Outcomes***

Long term follow-up with X-rays is needed to make sure that your child's hip continues to develop normally after treatment. Many infants who are treated early will have a normal hip and have full function. However, hip dysplasia may still be present after your child is treated correctly, and future surgery may be needed in some patients. Untreated dysplasia can cause pain and arthritis in young adults.

### ***FAQs***

**Q: If my child is in a spica cast for 3 months, will this lead to problems with his/her development?**

Infants who are near walking age may have a delay in walking if they are put in a spica cast. However, once the spica cast is removed, toddlers catch up and get back to normal walking development.

**Q: I heard that swaddling leads to DDH. But, swaddling is the only way my baby will fall asleep!**

If you swaddle your baby, make sure that the legs are not wrapped tightly together. The hips and knees should be able to flex and bend in the swaddle. There is a risk of developing DDH if the legs are tightly swaddled with the hips and knees straight. In swaddling, make sure there is enough room at the bottom of the blanket for your baby to bend his/her legs up and out from his/her body. There are also "hip-friendly" commercially available swaddles.

**Q: Do hip problems run in families?**

If your child has DDH, there is an increased risk of DDH for your child's future siblings as well as your child's own future children.

**Q: My baby is being treated for DDH in a Pavlik harness. How will we know whether it is working?**

Your baby will be checked with multiple ultrasound exams of the hips to see if there is any change over the course of treatment. Ultrasound is very safe – in fact, this is the same ultrasound that is used to look at the baby during pregnancy!

**Q: My child's orthopaedist said everything looks great, but we still have to keep coming back to see her/him! Why?**

As your child grows and develops, his/her bones are also growing and developing. It is important to have regular checks by the doctor and with X-rays to make sure that the hip continues to develop normally and that the dysplasia does not come back.

**Q: The pediatrician sent us to the orthopaedist because my baby has clicking in his/her hips. The orthopaedist said my baby does not have DDH. So why is the hip clicking?**

The hip has a lot of ligaments, muscles, and tendons that can all snap or pop when the hip is moving. While hip clicks may mean that the hip is dislocating or subluxating, there are many babies with normal hips that click. Ultrasound and an orthopedic surgeon's examination of the hips are needed to make sure there is no DDH.

**Q: My mother in law said we should double or triple diaper our infant who was diagnosed with DDH?**

Double and triple diapering may put the hips in a bent position that is better for growth of the hip joint. However, double and triple diapering has not been shown to improve results compared to no treatment. Double or triple diapering is not the same as the treatment an orthopedic surgeon would provide. If DDH is known or suspected, it is best to be checked and treated by a pediatric orthopedic surgeon.