

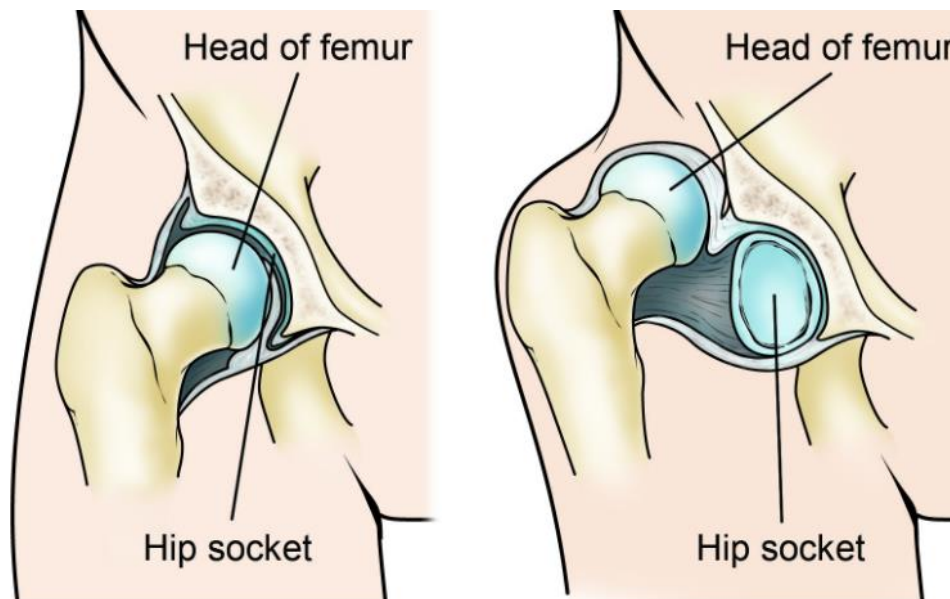
**Division of Orthopaedic Surgery**  
**Developmental Dysplasia of the Hip (DDH)**

Developmental dysplasia of the hip (DDH) is a problem with the formation of the hip joint. The hip is a ball and socket joint. The ball is the femoral head and is at the top of the thighbone (femur). The socket is called the acetabulum and is part of the pelvis.

DDH may be found at birth during the baby's newborn exam. It may also show up later and is discovered during a normal well baby visit with your pediatrician. It can affect one or both hips, but the left hip tends to be more commonly affected.

There are varying severities of hip dysplasia including the following:

- Mild Dysplasia: Ball is located in the socket, but the socket is shallow.
- Moderate Dysplasia: Ball is partially in the socket (subluxated) or is coming in and out of the socket. The socket is also shallow.
- Severe: Ball is out of the socket (dislocated), and the socket has little to no development.



(Left) In a normal hip, the head of the femur fits firmly inside the hip socket. (Right) In severe cases of DDH, the thighbone is completely out of the hip socket (dislocated).

***Why does it happen?***

The exact cause of DDH is not known. However, genetic factors are thought to play a role in causing DDH, as it can run in families. There are also factors known to increase the chance of DDH:

- Less than normal amniotic fluid
- Female babies
- First-born children
- Babies in breech position (buttocks or legs presented first)

- Certain muscle and nervous system problems

### ***How is it diagnosed?***

DDH may be diagnosed by a physical exam. Ultrasound of the hip may be done to confirm the diagnosis. In older infants and children, an x-ray of the hip may be taken.

### ***What is the treatment?***

The treatment depends on the child's age and the response to previous treatments, if any. Babies are usually treated with a Pavlik harness. This is a soft positioning device that helps to hold the femoral head in the acetabulum using straps that fasten around the chest and legs, and holds the legs in the proper position. This treatment encourages the socket to form properly as the baby grows.

A plastic brace called a hip abduction brace is also used in some cases where the child has outgrown a Pavlik harness or the harness is not working, but they still require treatment. Like the Pavlik harness, the brace holds the legs in the appropriate position to encourage proper hip development.

Sometimes surgery is required for infants and children who do not respond to non-surgical treatment or if the dysplasia is discovered at later age than bracing is effective. In general, the goal of surgery is to position the ball in the socket in order to give the hip the best chance to develop. The surgical plan is developed by your surgeon and it is specific to each patient. There are several different surgical options including the following:

- **Closed Reduction:** The child is given anesthesia to let the muscles relax. The tight adductor tendon is loosened through a small groin incision (adductor tenotomy), and the hip is manually positioned into the socket. A small amount of dye is injected into the joint to confirm reduction (arthrogram), and a two-legged spica cast is applied
- **Open Reduction:** Performed if closed reduction is unsuccessful or for older children. The child is given anesthesia and an incision is made on the front or inside of the hip joint. The tight adductor tendon is loosened through a small groin incision (adductor tenotomy), and the surrounding hip muscles are loosened. The hip joint is opened and the tissues in the socket are cleared. The ball is positioned into the socket and the hip capsule is closed over the ball. A hip spica cast is applied.
- **Pelvic Osteotomy:** Performed for children over 18 months of age or children with persistent dysplasia. It is done through the same incision as an open reduction. A partial cut is made into the pelvis bone and the socket is bent down in order to deepen it. It allows the socket to "catch up." A hip spica cast is applied.
- **Femoral Osteotomy:** Performed in older children. It is done at the same time as an open reduction or pelvic osteotomy, and requires a separate incision on the side of the thigh. The femur (thigh bone) is shortened or rotated to help improve the position of the ball in the socket. Plate and screws are used to hold the femur in the correct position until it heals. A hip spica cast is applied and implants are removed 6-12 months later through a second surgery. The decision to perform a femoral osteotomy is typically made at the time of surgery.

After surgery, the child is placed in a type of body cast (spica cast) to keep the hip bone in the joint

during healing. The length of time in the cast is based on the surgery performed. After surgery, a CT scan or MRI may be performed to confirm reduction of the hip joint.

***What are the risks and benefits of treatment?***

The risks of Pavlik harness treatment include pinching the femoral nerve (femoral nerve palsy) while the child is being treated in the harness. If the child stops kicking out one or both legs, this could indicate a problem with the nerve. Remove the harness immediately and call your orthopaedic doctor. There is also a risk of avascular necrosis of the hip, which occurs when the blood supply to the head of the femur is disrupted. In addition, failure of treatment or residual dysplasia can occur, which may require additional treatment. Lastly, a delay in walking can also occur if the child is treated in a body cast. However, once the cast has been removed, the child should be able to catch up without any long term delays. If surgical treatment is necessary, the specific risks will be described by your surgeon.

The main benefit of treatment is to increase the chance of normal growth of the hip. The hip socket will not form properly if the femoral head is not well positioned in the socket during growth. Problems of untreated hip dysplasia can include waddling, difference in leg lengths, fatigue with walking, pain and early arthritis. Therefore, hip dysplasia should be diagnosed and treated early. Long term follow-up with x-rays is needed to make sure that your child's hip continues to develop normally after treatment.

***Contact Numbers:***

If you have a question or concern about your child, please call us:

- Weekdays (8-4:30pm): 510-428-3238 and ask to speak to your surgeon's nurse
- After 4:30pm or Weekend/Holiday: 510-428-3000 (main hospital number) and ask to speak to the orthopedic resident on-call

Please visit [www.hipdysplasia.org](http://www.hipdysplasia.org) or <https://orthokids.org> for more information.