HIP DYSPLASIA

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DEFINITION:

Hip dysplasia occurs when the hip socket does not completely cover the ball portion of the upper thighbone or femur. Hip subluxation is a partial dislocation and occurs when the ball is less than 30 to 33 percent covered by the socket, and hip dislocation occurs when the ball is completely uncovered.

TYPICAL ANATOMY

In typical anatomy, the hip joint is a ball and socket type joint. The ball is the top of the femur (femoral head), and the socket is the acetabulum of the pelvis – the femoroacetabular joint. The joint surface is covered with cartilage for smooth movement. The socket is typically quite deep, and the femur is held in place by ligaments, muscles and tendons. In a typical hip joint, hip dislocation is very uncommon.

HIP JOINT DEVELOPMENT

Infants do not start out with a stable hip joint. This joint is initially made of soft cartilage that ossifies, becoming bone, over time. The socket itself is quite shallow at birth and begins to mold in response to the femoral head, deepening. Some typical developing infants are born with such shallow hip sockets leading to congenital hip dysplasia. Early treatment, such as a soft brace, can correct this in most cases.

The hip joint is the largest weight-bearing joint in the body and typical development depends on synchronized growing of the acetabulum and femoral head. Grow depends on weight-bearing and muscle pull on bone.

HIP DYSPLASIA

Hip dysplasia occurs in some typically developing infants and can be corrected. Hip dysplasia also occurs in children who have other developmental issues. Lack of weight-bearing and asymmetrical muscle pull affects bone development and can lead to subluxation and dislocation.

Weight bearing is critical to drive the head of the femur into the hip socket. This speeds ossification of the bones as well as shapes the socket itself. Bones are constantly being remodeled through absorption and deposition. Remodeling depends on the amount of stress placed on bones to develop adequate strength (rather than osteoporosis) as well as develop in the correct alignment (rather than becoming distorted). If forces are not experienced in the necessary degree and alignment, bones will tend to lose strength and may begin to lose correct alignment. When muscles pull on bones asymmetrically, bones will remodel in response to these forces. For example, if the hip adductors and the muscles which internally rotate the hip are more active than opposing muscle groups, the influence of these forces can mechanically rotate the femoral head out of the socket as well as cause actual rotation of the femur bone itself through remodeling.

TREATMENT

Positioning the hip joint in a neutral position is important. Sometimes positioning in some hip abduction and external rotation can further 'seat' the femoral head in the acetabulum. Weight-bearing while the hip joint is in neutral or slight abduction/external rotation can also reduce hip dysplasia. As the child grows and the hip ossifies, these strategies are less effective and other medical interventions may be explored. These interventions may include tone management and surgeries.

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