Hip-healthy swaddling

New light is being shed on the long-held practice of wrapping an infant in a blanket snugly with legs fully extended and together, which experts say can lead to hip subluxation and dislocation.

The AAP Section on Orthopaedics has teamed up with the Pediatric Orthopaedic Society of North America and the International Hip Dysplasia Institute to recommend swaddling so that hips are free to move and in safe abducted position.

Read the literature review and Parent Plus information for distribution on page 11.

Photo courtesy of International Hip Dysplasia Institute
Improper swaddling a risk factor for developmental dysplasia of hip
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Focus On Subspecialties

Improper swaddling a risk factor for developmental dysplasia of hip

by Charles T. Price, M.D., FAAP, and Richard M. Schwend, M.D., FAAP

Swaddling has many benefits and has grown in popularity among U.S. parents. However, traditional swaddling as practiced in many cultures with the legs fully extended and wrapped together can cause hip subluxation and dislocation (see Figure 1). This has been known for decades, long before swaddling was widely practiced in North America.

The AAP Section on Orthopaedics has teamed up with the Pediatric Orthopaedic Society of North America (POSNA) and the International Hip Dysplasia Institute (IHDI) to promote “hip-healthy swaddling.”

The IHDI has issued the following statement with support from POSNA, “It is the recommendation of the International Hip Dysplasia Institute that infant hips should be positioned in slight flexion and abduction during swaddling. The knees should also be maintained in slight flexion. Additional free movement in the direction of hip flexion and abduction may have some benefit. Avoidance of forced or sustained passive hip extension and adduction in the first few months of life is essential for proper hip development.”

A systematic review of swaddling noted that developmental dysplasia of the hip (DDH) is more prevalent when the legs are bound so they are not free to move (van Sleuwen BE, et al. Pediatrics. 2007;120:e1097-e1106).

Studies of Native American Indians prior to the 1950s demonstrated a very high prevalence of hip dislocation in tribes that carried babies on a “cradle board” with the hips and knees strapped in an extended and adducted position. The frequency of childhood hip dislocation decreased dramatically among Navajos after cloth diapers were introduced. This decrease was attributed to the slightly flexed and abducted position from the bulky cloth diapers even when the infants were strapped on the cradle board. As the frequency of cradle board use in Navajo society has diminished recently, the prevalence of hip dysplasia has further decreased from a rate of six times the U.S. average to a similar prevalence.

Improper swaddling a risk factor for developmental dysplasia of hip

Figure 1: Traditional swaddling with the legs together and extended is associated with an increased risk of hip dislocation. Figure 2: Cultures that carry their children in the straddle position have very low rates of hip dislocation. Figure 3: Contemporary swaddling should allow ample room for hip and knee flexion with free movement of the legs.

A somewhat similar experience has been documented in Japan where the incidence of DDH was 1.5%-3.5% before 1965. Following implementation of a national program to eliminate swaddling with the hips and knees in an extended position, the incidence of DDH decreased to 0.2%. (Yamamuro T, Ishida K. Clin Orthop Relat Res. 1984;184:34-40).

A significant relationship between swaddling and hip dysplasia also was identified in Turkey (Kurtlu A, et al. J Pediatric Orthop. 1992;12:598-602). Although the frequency of traditional swaddling has been reduced in Turkey, traditional swaddling during infancy still is the greatest risk factor for hip dysplasia compared to breech birth, family history or gender (Dogruel H, et al. Int Orthop. 2008;32:415-419).

Newborn infants have hip and knee flexion contractures because of their normal intrauterine position. These contractures resolve over time with normal development. Animal studies have shown that forced hip and knee extension in the neonatal period leads to hip dysplasia and dislocation because of increased tension in the hamstring and iliopsoas muscles that stress the hip capsule, which can have underlying laxity or instability (see previously cited paper by Yamamuro and Ishida in Clin Orthop Relat Res).

Comprehensive ultrasoundscreening during the immediate newborn period has demonstrated hip laxity in approximately 15% of infants (Rosendahl K, et al. Pediatrics. 1994;94:47-52). The combination of capsular laxity and abnormal muscle tension is the most likely mechanism of DDH for infants who are maintained with the lower extremities extended and wrapped together.

In contrast, cultures that carry their children in the straddle or “jockey” position, as seen in warmer climates (Figure 2), have very low rates of hip dislocation compared to cultures that wrap their children tightly with the legs together and extended (Salter RB. Can Med Assoc J. 1968;98:933-945).

Harvey N. Karp, M.D., FAAP, has pointed out that contemporary methods of swaddling emphasize upper extremity wrapping while allowing ample room for hip and knee flexion (Karp HN. Pediatrics. 2008;121:1075-1076) (see Figure 3). However, that message may not have been clearly understood by parents.
who swaddle their children or by nurses who instruct parents at discharge following birth.

Prevention of DDH should begin with encouragement of flexed and abducted hip positioning during early infancy. Infants who have been swaddled tightly with the hips and legs bound together in extension should have focused attention to their periodic clinical hip examination.

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RESOURCES

Practice safe swaddling to protect baby's hips
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Practice safe swaddling to protect baby’s hips

Many babies take comfort in being swaddled in a blanket. However, swaddling the wrong way can cause hip dislocation.

The cozy feeling of a blanket snugly wrapped around the baby’s body resembles the mother’s womb. The American Academy of Pediatrics supports safe swaddling of infants that leaves the hips and legs free to move. Studies have found that straightening and tightly swaddling a baby’s legs can lead to hip dislocation or hip dysplasia, an abnormal formation of the hip joint where the top of the thigh bone is not held firmly in the socket of the hip.

When swaddling a baby, use the following techniques from the International Hip Dysplasia Institute:

- **Swaddle the baby on a square blanket.** Place the baby’s head above the middle of one edge, tuck the right arm down and fold the right side of the blanket over the baby between the left arm and under the left side. Then tuck the left arm down and fold the left edge of the blanket over the baby and under the right side. Fold or twist the bottom of the blanket up and loosely and tuck it under one side of the baby.

- **Swaddle a baby using the diamond shape technique.** Fold one corner of a square blanket down and place the baby with its head in the center above the folded corner. Straighten the right arm and fold the right corner of the blanket over the baby between the left arm and under the left side. Then tuck the left arm down and fold the left corner of the blanket over the baby and under the right side. Fold or twist the bottom of the blanket loosely and tuck it under one side of the baby.

Legs should be able to bend up and out. When using a commercial swaddling blanket, make sure it is loose around the baby’s hips and legs.

To reduce the chance of sudden infant death syndrome, parents should place babies on their backs to sleep and keep loose bedding and soft objects out of the crib.

— Trisha Korioth

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