



Choosing a Carrier

Infant Carriers and Spinal Stress

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As we are finally realizing the benefits of “wearing” our infants as we perform our daily activities, we must be careful not to compromise the integrity of our child’s spine through the use of improper carriers. Spondylolisthesis (specifically, Type II - isthmic) is a condition that can result in the low back from excessive stress, such as a baby’s spine might experience in certain carriers on the market today. It is relatively uncommon, but when aggravated is extremely painful. This article describes the styles of baby carriers that promote healthy spine development in an infant, and explains the unnecessary stresses and resulting spinal condition that can result from using an improper carrier.

A healthy adult spine has four curves when viewed from the side (see figure 1-Rob, insert from original article), located in the neck (cervical spine), mid-back (thoracic), low back (lumbar) and base of the spine (sacrum). Upon entering the world, a newborn has only two curves in his spine: the mid-back and the base of the spine. These two curves are called the primary or kyphotic curves. They have an apex or “hump” at the back of the body. The curves in the neck and low back develop later in life and are termed secondary or lordotic curves. The curve in the cervical spine develops as the child begins to lift his head and the neck muscles are strengthened. The curve in the lumbar spine results as the child starts to crawl. The lordotic curves have an apex at the front of the body from the side view. These four curves -two primary and two secondary - are extremely important in the spine (both adult and child), for this is how the body handles the stress of gravity. If these curves do not exist, the body’s center of balance is shifted causing undue stress on the spinal column and spinal cord.

A baby’s spine is placed in a compromising position in many of today’s popular carriers. If the carrier positions the infant upright, with legs hanging down and support at the base of the child’s spine, (fig. 2-Rob, insert picture from original article) it puts undue stress on the spine causing a condition called spondylolisthesis, and compromises developing curves in the spine.

A spondylolisthesis is defined as the forward slipping of a vertebra on the one below it. The degrees of seventy are determined using the Meyerding grading scale, having grades 1-5, with 1 being the least amount of slippage and grade 5 being complete slippage off the vertebra below. This condition may have a related stress fracture at the pars interarticularis. The pars interarticularis is a structure at the back of the vertebra that takes most of the stress inflicted on the spine when it is arched backwards. A spondylolisthesis occurs at the fifth lumbar vertebra 90% of the time, and at the fourth lumbar vertebra 9%.

Figure 1 – (Rob, insert photo of spine from original article.) A healthy adult spine viewed from the left side.



Spondylolisthesis is documented in approximately 5% of white males, but prevalent in native Eskimos (as high as 60% of the population is affected). There is much discussion on the high percentage of affected Eskimos to whether it is a genetic predisposition or related to environmental factors (i.e. papoose carriers). Knowing how dynamic and vital the biomechanics of the spine are, I believe that environmental factors are to blame. If the trend continues in this country to carry our infants in carriers (or place them in walkers, jumpers, etc.) that place our babies' spines in a weight bearing position before the spine is intended to do so, the percentage of spondylolisthesis will increase.

Spondylolisthesis has been referred to as congenital anomalies of the spine, but there is no supporting embryological or anatomical evidence for this assumption.' This statement is important because it reinforces the notion that the condition is acquired. There are factors that predispose a person to this condition, such as a weakness in the posterior structures of the vertebra, failure of muscles and ligaments to absorb forces, anomalies of the lumbosacral spine, and activities that place high stresses on the posterior structures of the spine. Little is known about spondylolisthesis. More research needs to be done, specifically addressing the weight bearing position of some carriers. In the meantime, we can take preventative steps by choosing alternate carriers, both for ourselves and as gifts for others.

What I have found to be the ideal carrier is the sling. There are many variations of the sling, but one should look for the following in any type of carrier:

- 1) Before an infant can hold his head on his own, the carrier should support the neck. A sling cradles the infant just like your arms would, unlike the carrier in fig. 2, which can actually allow a whiplash type injury.
- 2) The carrier should not place the infants spine in a weight bearing position before ready. (The young baby should be horizontal or inclined, with the spine supported along its length.)
- 3) When a baby wants to be more upright to see the world around him (around 4 - 5 months of age), the carrier should allow him to sit cross-legged, so his weight is dissipated through his legs and hips, as opposed to the style that has his legs hanging down, where again the young spine has to bear the entire weight.

Figure 2- This style of carrier can be harmful to baby's development. (Illustration by Silvana Tacchetti-Carelli)

When considering the purchase of a baby carrier, you can often just ask yourself if you would be comfortable in it. Would you feel like you were in a hammock (a sling), or in a parachute harness, with your legs hanging down? Laying in a hammock is better for all of Other benefits to the sling type carrier is easy accessibility to breastfeeding, ability to wear baby facing toward or away from wearer, ability to wear sling on back, front, or side.



You are probably wondering, “what about backpacks? Are they bad? At what age or stage of development is it okay to carry a child in a backpack? What should you look for when buying one?” When considering a backpack, be sure your child can sit alone well. The seat of the backpack should support his entire bottom, not just between his legs causing his legs to dangle. One that has a foot rest is preferred. If you are having trouble deciding if a backpack is appropriate for your child, imagine yourself sitting in the carrier and decide if you would be comfortable. If you think you would be, there is a good chance your child will be comfortable also.

The choice in infant carriers is a small thing when compared to all the other concerns that face parents, but it is a decision that can have life long effects. By choosing a sling type carrier, you may be preventing your child a lifetime of backaches and other spinal stresses that he will surely appreciate.

Summary

When purchasing a carrier, ask the following:

- Can a baby be worn in front, on the side, and in back?
- Will the carrier accommodate the child from birth through toddlerhood?
- Can a child be transferred from one wearer to another without being taken out of the sling?
- If a baby falls asleep vertically, can he easily be moved to a horizontal position without being taken out of the carrier?
- Can a baby be put into all carrying positions by the wearer, or is another person’s help necessary?
- Is it possible to easily adjust the carrier so that different points on your body feel the weight?
- Does the carrier let the baby be worn in many different positions? For example, horizontal facing toward wearer, horizontal facing up, inclined with legs stretched out, inclined with legs folded underneath, vertical facing outwards with legs folded underneath or in front, vertical facing outwards with legs stretched out, etc. A carrier with limited positions won’t meet a baby’s changing needs and desires.

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