Importance of Lumbosacral Kyphosis

Importance of Lumbosacral Kyphosis for Teens with Spondylolisthesis

The lives of children and teens with a condition known as spondylolisthesis can be negatively affected by the consequences of this problem. According to this study from Canada, spondylolisthesis in teens lowers their physical quality of life. They have back pain, tight hamstrings, and neurologic symptoms. The greater the angle of the lumbar vertebra on the sacrum, the higher the grade of spondylolisthesis and the lower the physical quality of life.

Normally, the bones of the spine (the vertebrae) stand neatly stacked on top of one another. Ligaments and joints support the spine. Spondylolisthesis alters the alignment of the spine. In this condition, one of the spine bones slips forward over the one below it. As the bone slips forward, the nearby tissues and nerves may become irritated and painful.

Any of the vertebrae can slip forward but in young people (under 20 years old), spondylolisthesis usually involves slippage of the fifth lumbar vertebra over the top of the sacrum. There are several reasons for this.

First, the connection of L5 and the sacrum forms an angle that is tilted slightly forward, mainly because the top of the sacrum slopes forward. This angle is referred to as the lumbosacral kyphosis or LSK. Second, the slight inward curve of the lumbar spine creates an additional forward tilt where L5 meets the sacrum. Finally, gravity attempts to pull L5 in a forward direction. All three of these bony alignments can be measured using X-rays.

In this study, 96 adolescents (teens) with spondylolisthesis were X-rayed using a digital radiographic system. Then they were given an opportunity to answer some questions in order to measure their physical quality of life. The slip angle, the lumbosacral angle, and the lumbosacral joint angle were all calculated using the X-rays. All X-rays were taken with the patients standing in a comfortable upright position.

Then scores from the health questionnaires were compared to each radiograph. They found a definite link between lumbosacral angles and quality of life. High-grade slippage (defined as more than 50 per cent of the vertebral body is slipped forward over the vertebra underneath it) was significantly linked with low quality of life.

The results of this study point out clearly (for the first time) how much a lumbosacral kyphosis impacts the lives of affected teens. The less contact there is between the surface of the L5 vertebra and the sacrum (S1), the greater the chances that individual will have changes the body can no longer compensate for.

For example, not only do the bones shift forward but when they shift that far forward, they can start to twist or rotate. This altered alignment can put increased pressure on the spinal nerves as they leave the spinal cord. The end-result can be severe deformity and neurologic impairment.

Physicians treating adolescents with spondylolisthesis are advised to routinely assess each child for the presence (and severity) of lumbosacral kyphosis. The three angles visible on radiographs are an important feature when determining the best plan of treatment for that patient.

Reference: Frédéric Tanguay, MD, et al. Clinical Significance of Lumbosacral Kyphosis in Adolescent