

Adult spinal deformity etiology

Deformity in [Adult spinal deformity](#) can be primarily due to asymmetric [disc degeneration](#) or secondary to [hip](#) pathology, [osteoporosis](#) and asymmetric loads.

It subsequently involves posterior elements (including [facet joints](#)) and thereafter [axial rotation](#), lateral olisthesis, and ligamentous laxity ^{1) 2)}.

Progressive facet and discogenic degeneration may lead to segmental [instability](#) and subsequent central/[foraminal stenosis](#) secondary to [ligamentum flavum hypertrophy](#) and [osteophyte](#) formation as well as [spondylolisthesis](#).

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The most common varieties include [childhood idiopathic scoliosis](#) that was present during adolescence (teenage years) and then became worse during adulthood, deformity that began in adulthood due to degenerative (wear and tear) changes in the spine and deformity that developed later in life after previous surgery during teenage years.

Other less frequent causes include curvatures due to osteoporosis (brittle bones), previous fractures of the spine due to an accident, spondylolisthesis (slipped vertebrae) and rarely, infections and tumors of the spine. Adult idiopathic scoliosis: This is a slow increase in curvature that began during teenage years in an otherwise healthy individual and progressed during adult life. Some of these patients may have had brace treatment during adolescence while others may have never sought treatment during their teenage years. This can occur in the thoracic (upper) and lumbar (lower) spine and has the same basic appearance as that seen in teenagers. They include shoulder asymmetry, a rib hump or a prominence of the lower back on the convex side of the curvature. These curves can get worse in the older patient due to degeneration of the discs which results in settling of the vertebrae (spinal segments). Additionally, arthritis sets in the joints of the spine (facets) which leads to the formation of bone spurs. This can result in pain and stiffness of the back. In more severe cases, patients may also develop shooting pain and numbness down the legs due to pinched nerves.

Post-surgical deformity: This type is seen in patients who had previously undergone spinal surgery either for scoliosis or for degenerative low back conditions. These patients develop a condition called "Flat Back Syndrome" where the lower back has lost its normal inward curvature or lordosis. As a result, patients with this condition are unable to stand upright and are usually "pitched forward". They are typically seen in patients who have had long fusions of the spine in the past. Another category of post-surgical deformity is "Junctional Kyphosis" which is an angular deformity (kyphosis) that develops just above or below a previous spinal fusion. Both these conditions result in an imbalance of the spine from the side (sagittal imbalance) and lead to progressive low back pain and stiffness.

see [Spinal deformity in Parkinson's disease](#)

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Silva FE, Lenke LG. Adult degenerative scoliosis: evaluation and management. Neurosurg Focus. 2010 Mar;28(3):E1. doi: 10.3171/2010.1.FOCUS09271. PubMed PMID: 20192655.

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Last update: **2024/06/07 02:49**

