Thoracolumbar spinal deformity

Thoracolumbar spinal deformity refers to an abnormal curvature or misalignment of the spine that occurs in the thoracolumbar region. Deformities in this region can have significant implications for an individual's spinal health, posture, mobility, and overall well-being.

Common types of thoracolumbar spinal deformities include:

Scoliosis: Thoracolumbar scoliosis involves a sideways curvature of the spine in the thoracolumbar region. This condition can result in an asymmetrical appearance of the waist, ribcage, or shoulders. Scoliosis can vary in severity and may lead to discomfort or pain, especially when it progresses.

Kyphosis: Thoracolumbar kyphosis refers to an excessive forward rounding of the spine in the thoracolumbar area. This can lead to a noticeable hump or hunchback appearance in the upper back. Severe kyphosis may affect posture and mobility and can cause pain.

Lordosis: Thoracolumbar lordosis involves an exaggerated inward curvature of the spine in the lower back. It can result in a swayback appearance and may cause lower back pain or discomfort.

Scheuermann's Disease: This is a specific type of kyphosis that often develops during adolescence. It is characterized by wedging of the vertebrae in the thoracolumbar region, leading to a rounded upper back.

Degenerative Disc Disease: Over time, the discs between the vertebrae in the thoracolumbar region can degenerate, causing a loss of disc height and contributing to spinal deformities and instability.

Thoracolumbar spinal deformities can have various causes, including congenital factors, developmental issues, degenerative changes, trauma, or underlying medical conditions. The severity of these deformities can vary, and treatment options may differ based on the individual's condition.

Treatment options for thoracolumbar spinal deformities may include:

Observation: In mild cases or when the deformity is not progressive and does not cause symptoms, observation may be the primary approach.

Physical Therapy: Physical therapy exercises and techniques can help improve posture, strengthen spinal muscles, and reduce pain associated with thoracolumbar deformities.

Bracing: For certain types of deformities, such as scoliosis, bracing may be recommended, especially for adolescents with developing spines. Bracing aims to prevent further progression of the curvature.

Surgery: Severe or progressive deformities, or those causing significant pain or functional impairment, may require surgical intervention. Surgery can involve spinal fusion, correction of the curvature, and the use of spinal instrumentation (such as rods and screws) to stabilize the spine.

The specific treatment approach will depend on factors such as the type and severity of the deformity, the individual's age, and the presence of symptoms. It's essential for individuals with thoracolumbar spinal deformities to consult with healthcare professionals, including orthopedic surgeons and physical therapists, to determine the most appropriate treatment plan tailored to their specific condition and needs. Early intervention and proper management can help improve outcomes and quality of life.

Classification

In contrast with adolescent spinal deformity, where magnitude of the spinal curvature plays a significant role in surgical indication, the aspects relevant in adult spinal deformity are pain and dysfunction that correlate with segment degeneration and imbalance. Previous classifications of adult deformity have been of little use for surgical planning.

Berjano and Lamartina from the IVth Spine Surgery Division, IRCCS Istituto Ortopedico Galeazzi, Milan, Italy, presented a chart review and classification of radiographic and clinical findings.

A classification of degenerative disc disease based on distribution of diseased segments and balance status of the spine is presented.

Four main categories are presented:

Type I (limited nonapical segment disease)

Type II (limited apical segment disease)

Type III (extended segment disease-apical and non apical)

Type IV (imbalanced spine: IVa, sagittally imbalanced; IVb, sagittally and coronally imbalanced).

Types I and II can be treated by fusion of a selective area of the curve.

Type III needs fusion of all the extension of the coronal curve.

Type IV usually needs aggressive corrective procedures, frequently including posterior tricolumnar spine osteotomy. This classification permits interpreting the extension, magnitude and can help establish a surgical plan regarding selective fusion and methods of sagittal correction. Future research is needed to validate the classification [1].

1)
Berjano P, Lamartina C. Classification of degenerative segment disease in adults with deformity of the lumbar or thoracolumbar spine. Eur Spine J. 2014 Sep;23(9):1815-24. doi: 10.1007/s00586-014-3219-9. Epub 2014 Feb 23. PubMed PMID: 24563272.