Cervical spine deformity

- Exercising Increased Caution Before Removing C-collars in Altered Patients and Patients With Chronic Cervical Spine Changes: Reports of Neurological Deficit or Injury Following C-collar Removal Despite Normal Imaging
- Cervical Muscle Composition in Degenerative Dropped Head Syndrome: A Propensity Score Matching Study
- Comprehensive Review of Multidetector Computed Tomography (MDCT) in the Assessment of Blunt Cervical Spine Trauma in Adults
- Triple-rod fixation with laminar screws for three-column cervical spine injury in ankylosing spondylitis: A case report
- Extensive longitudinal lupic myelitis: A case report with a literature review
- Symptom-specific Analysis of Surgical Outcomes and Predictors of Residual Symptoms in Patients with Mild Degenerative Cervical Myelopathy: An Analysis of Cases with Severe Cord Compression or Progressive Symptoms
- An analysis of potential cervical spine clearance in children with computed tomography alone
- Heterotopic calcification in a child presenting as acute on chronic myelopathy

Epidemiology

High prevalence of residual cervical deformity CD has been identified after surgical treatment of adult spinal deformity. Development of new onset CD is less understood and its clinical impact unclear.

A total of 47.7% of patients without preoperative CD developed new onset postoperative CD after thoracolumbar surgery. Independent predictors of new onset CD at 2 years included diabetes, higher preoperative T1 slope minus cervical lordosis, and ending instrumentation above T4. Significant improvements in health-related quality of life scores occurred despite the development of postoperative CD [1)].

Classification

see Cervical kyphotic deformity.

Despite the complexity of cervical spine deformity (CSD) and its significant impact on patient quality of life, there exists no comprehensive classification system.

Ames et al. proposed a classification that provides a mechanism to assess CSD within the framework of global spinopelvic malalignment and clinically relevant parameters. The intra- and interobserver reliabilities suggest moderate agreement and serve as the basis for subsequent improvement and study of the proposed classification [2)].

Etiology

Cervical deformities arise from a multitude of causes, including genetic, congenital, inflammatory, degenerative, and iatrogenic etiologies.

Although congenital and hereditary causes of cervical deformity require specialized attention to particular clinical features and operative considerations, postsurgical (iatrogenic) cervical deformity after surgery is the most common single cause.

The neck is extremely flexible. This flexibility often puts the neck at risk for injury. Some injuries (such as a dislocation or fracture) can create a spinal deformity within the cervical canal.

A deformity of the spine in the cervical region shows itself as an abnormal curve or angulation in the normally smoothly curved neck. The cause is degenerative facet or disc disease at multiple levels.

The normal neck alignment in the front to back view should be straight up and down and from the side, should display a backwards curve called a lordosis. The lordosis is caused by the trapezoidal shape of the discs. The bodies of the vertebra are square and stacking them up on top of each other without the discs and facets would form a straight tower.

If the discs or facets break down (and they normally do), but break down asymmetrically, an abnormal alignment occurs. If this breakdown occurs at only one level, the malalignment rarely causes an abnormal curve. If this breakdown occurs at multiple levels, a deformity of the spine will result. One level's abnormal angulation will add to the abnormal angulation above and below to cause a scoliosis or a cervical kyphotic deformity.

Clinical features

Cervical spine deformities can have a significant negative impact on the quality of life by causing pain, myelopathy, radiculopathy, sensorimotor deficits, as well as inability to maintain horizontal gaze in severe cases [3].

A deformity of the spine that may cause a curvature of the neck often causes the head to be held in an unusual posture when the neck is in a “relaxed” position. Muscle contraction is needed to hold the head in a normal position with chin neutral and eyes level. Chronic muscle contraction causes a dull crampy type of neck pain that is relieved with lying down.

Pain from neck deformities such as cervical kyphosis, as well as from degenerative conditions, can occur in each segment. That is-a bad disc or facet can cause nerve compression, disc pain, instability, degenerative spondylolysthesis as well as central stenosis and myelopathy (see each section for description of that disorder).

Treatment

Cervical spine deformity treatment

1)
Passias PG, Soroceanu A, Smith J, Boniello A, Yang S, Scheer JK, Schwab F, Shaffrey C, Kim HJ, Protopsaltis T, Mundis G, Gupta M, Klineberg E, Lafage V, Ames C; International Spine Study Group. Postoperative Cervical Deformity in 215 Thoracolumbar Patients With Adult Spinal Deformity: Prevalence, Risk Factors, and Impact on Patient-Reported Outcome and Satisfaction at 2-Year Follow-up. Spine (Phila Pa 1976). 2015 Mar 1;40(5):283-291. PubMed PMID: 25901975.
2)
Ames CP, Smith JS, Eastlack R, Blaskiewicz DJ, Shaffrey CI, Schwab F, Bess S, Kim HJ, Mundis GM Jr,

Klineberg E, Gupta M, O'Brien M, Hostin R, Scheer JK, Protopsaltis TS, Fu KM, Hart R, Albert TJ, Riew KD, Fehlings MG, Deviren V, Lafage V; International Spine Study Group. Reliability assessment of a novel cervical spine deformity classification system. J Neurosurg Spine. 2015 Dec;23(6):673-83. doi: 10.3171/2014.12.SPINE14780. Epub 2015 Aug 14. PubMed PMID: 26273762.

3)

Tan LA, Riew KD, Traynelis VC. Cervical Spine Deformity-Part 1: Biomechanics, Radiographic Parameters, and Classification. Neurosurgery. 2017 Aug 1;81(2):197-203. doi: 10.1093/neuros/nyx249. PubMed PMID: 28838143.