Cohere Medical Policy - Spinal Osteotomy

Clinical Guidelines for Medical Necessity Review

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Medical Necessity Criteria

Service: Spinal Osteotomy

Recommended Clinical Approach

Spinal osteotomy encompasses several invasive surgical procedures utilized to correct deformities of the spine including kyphosis, scoliosis, and lordosis. Posterior column osteotomies include the Smith-Peterson or Ponte osteotomy and are generally utilized for patients with non-fixed or mobile deformities in the sagittal or coronal planes. Three-column osteotomy procedures include pedicle subtraction osteotomy or vertebral column resection and are generally performed on patients with fixed or non-mobile, complex deformities. Spinal ligaments, bones, and facet joints may be removed and hardware such as hooks, rods and/or screws may be placed. There is often a high risk of bleeding and neurological complications with spinal osteotomies.[1] The goals of treatment include improving pain, balance, and preventing worsening of the deformity.[2-3]

Medical Necessity Criteria

Indications

- ➔ **Spinal osteotomy (cervical, thoracic, or lumbar)** is considered appropriate if **ANY** of the following is **TRUE**:
  - ◆ Posterior column osteotomy (Smith-Peterson or Ponte osteotomy) with **ALL** of the following[4-5]:
    - Radiographic or advanced imaging has confirmed spinal deformity; **AND**
    - **ANY** of the following:
      - Non-fixed (mobile) sagittal plane deformities (less than 30 degrees correction required); **OR**
      - Non-fixed (mobile) coronal plane deformities (less than 30 degrees correction required)[6]; **OR**
      - Long, gradual, rounded kyphosis (e.g., Scheuermann kyphosis)[7]; **AND**
    - Clinical documentation supports that additional conservative treatment interventions (preceding referral to

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spine surgeon) would not be expected to yield meaningful improvement; **AND**
- **ANY** of the following symptoms[1]:
  - Pain or neurological deficit; **OR**
  - Lack of balance when sitting or standing or functional disability; **OR**
  - Radicular leg pain or weakness; **OR**
  - Decreased cardiopulmonary function[8]; **OR**

◆ Three-column osteotomy (pedicle subtraction osteotomy or vertebral column resection) with **ALL** of the following[3,6]:
- Radiographic or advanced imaging has confirmed advanced spinal deformity; **AND**
- **ANY** of the following:
  - Ankylosing spondylitis[4,9]; **OR**
  - Flatback syndrome; **OR**
  - Fixed (non-mobile) sagittal plane deformity greater than 30 degrees[9]; **OR**
  - Fixed (non-mobile) coronal plane deformity greater than 30 degrees[1]; **OR**
  - Thoracic kyphosis greater than 50 degrees[9]; **OR**
  - History of circumferential fusion[10]; **AND**
- Clinical documentation supports that additional conservative treatment interventions (preceding referral to spine surgeon) would not be expected to yield meaningful improvement; **AND**
- **ANY** of the following symptoms[1]:
  - Pain or neurological deficit; **OR**
  - Lack of balance when sitting or standing or functional disability; **OR**
  - Radicular leg pain or weakness; **OR**
  - Decreased cardiopulmonary function.[8]

Non-Indications

➔ **Spinal osteotomy** is not considered appropriate if **ANY** of the following is **TRUE**:

◆ Inadequate pelvic bone stability to adequately provide spine support in thoracic or lumbar osteotomy[9,11]; **OR**

◆ Poor bone quality[11]; **OR**

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- The patient has normal sagittal and/or coronal alignment.[11]

Level of Care Criteria

Inpatient or Outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
22206	Osteotomy of spine, posterior or posterolateral approach, 3 columns, 1 vertebral segment (eg, pedicle/vertebral body subtraction); thoracic
22207	Osteotomy of spine, posterior or posterolateral approach, 3 columns, 1 vertebral segment (eg, pedicle/vertebral body subtraction); lumbar
22210	Osteotomy of spine, posterior or posterolateral approach, 1 vertebral segment; cervical
22212	Osteotomy of spine, posterior or posterolateral approach, 1 vertebral segment; thoracic
22214	Osteotomy of spine, posterior or posterolateral approach, 1 vertebral segment; lumbar
22220	Osteotomy of spine, including discectomy, anterior approach, single vertebral segment; cervical
22222	Osteotomy of spine, including discectomy, anterior approach, single vertebral segment; thoracic
22224	Osteotomy of spine, including discectomy, anterior approach, single vertebral segment; lumbar

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Medical Evidence

Passias et al (2022) published a retrospective cohort review (2008-2018) of adults with spinal deformity who were greater than or equal to 18 years of age. The three-column osteotomy was stated to have potential for spinal realignment; however, complication rates are high. There were 13 participating centers in the study of these adults having undergone surgical spinal deformity correction with fusion to the pelvis. A total of 752 patients met the inclusion criteria with 138 having received the three-column osteotomy. Group I contained 79 patients and Group II contained 59 patients. 85 percent of patients were treated surgically with a posterior-only approach and 15 percent received an anterior-posterior combination approach. The authors concluded that three-column procedures declined between 2014 and 2018, even in severe deformity cases. An increase in proximal junctional failure (PJF) prophylaxis occurred simultaneously, with a reduction in complication rates and a significant increase in positive patient outcomes.[12]

In a 2024 systematic review, Coskun and colleagues evaluated clinical and radiologic outcomes of posterior column extension, pedicle subtraction, and vertebral column resection osteotomies in adult chin-to-chest deformity. There were 16 non-comparative studies including 288 patients. Of these patients, 107 received posterior vertebral column extension osteotomy and 33 patients underwent vertebral column osteotomy. Spinal levels C7 to T1 were most commonly treated. The group ultimately concluded that the studies reviewed were lower quality and therefore limited the evidence. Corrective osteotomies were determined to have positive results as the visual analog scales and neck disability indexes improved with the patients reviewed in the study.[13]

MacConnell et al (2024) conducted a study of sequential correction of sagittal vertical alignment and lumbar lordosis in adult flatback deformity. Using two groups of human T10-sacrum specimens: one group of degenerative flatback specimens and an iatrogenic group, specimens were subjected to simulated standing posture with a nominal sacral slope of 45 degrees and weighted load was added. To correct the degenerative lumbar flatback deformity, anterior lumbar interbody fusion (ALIF), lateral lumbar

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interbody fusion (LLIF), and posterior column osteotomy (PCO) were performed at various lumbar levels. In the iatrogenic specimen group, flatback deformity was created with *in-situ* immobilization and eventually LLIF and PCO performed at the higher lumbar vertebrae areas. The group concluded that placement of ALIF cages in lower lumbar segments markedly improved the degenerative flatback specimens, and LLIF cages in addition to PCO improved alignment in both degenerative and iatrogenic flatback deformities.[14]

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