



Cohere Medical Policy – Kyphectomy

Clinical Guidelines for Medical Necessity Review

Version: 4
Effective Date: January 2, 2025

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Guideline Information:

Specialty Area: Disorders of the Musculoskeletal System

Guideline Name: Cohere Medical Policy - Kyphectomy

Date of last literature review: 11/13/2024

Document last updated: 01/02/2025

Type: ☒ Adult (18+ yo) | ☒ Pediatric (0-17 yo)

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Medical Necessity Criteria

Service: Kyphectomy

Recommended Clinical Approach

Kyphectomy effectively corrects kyphosis, marked by a rounding or outward curve of the upper backbone. Kyphosis may be present at birth or emerge due to growth, arthritis, osteoporosis, tumors, or radiation therapy to the backbone. The 3 types of kyphosis include postural, Scheuermann's, and congenital. Nearly 50% of patients have a complication, notably skin and wound breakdown. Compared to patients with idiopathic scoliosis (abnormal spinal curvature with no definite cause), patients with myelomeningocele (a severe form of spina bifida where the spinal cord and nerves protrude from the back in a sac that is exposed to the amniotic fluid) have an increased risk of complications, with failure of fusion in over 40% of patients and infection in over 40% of patients. Because conservative medical treatment (e.g. bracing) does not correct kyphosis, the timing of surgical intervention has been an issue of debate. Early kyphectomy is indicated in children with congenital gibbus malformation (collapse of one or more vertebral bodies) to prevent skin breakdown. The goals of kyphectomy are: (i) to provide sitting balance without using the arms and hands for support, (ii) to increase the lumbar height to allow room for abdominal contents, (ii) to provide better mechanics for breathing, and (iii) to prevent pressure sores by reducing the kyphotic prominence.¹

Medical Necessity Criteria

Indications

→ **Kyphectomy** is considered appropriate if **ANY** of the following is **TRUE**¹⁻⁷:

- ◆ Cervical spine deformity (including myelomeningocele, kyphosis, head-drop syndrome, post-laminectomy deformity, scoliosis) when **ANY** of the following is **TRUE**:²

- The patient has a clinically significant deformity and is unable to maintain a forward gaze or balanced sitting posture; **OR**
- The patient has **ANY** of the following substantial functional limitations:
 - Severe neck pain; **OR**

- Difficulty ambulating; **OR**
- Decreased ability to perform activities of daily living;
OR
- Progression of cervical deformity is documented; **OR**
- ◆ Lumbar spine deformity (e.g., scoliosis restricted to the lumbar spine or a thoracolumbar deformity that ends in the lumbar spine) when **ANY** of the following is **TRUE**:³
 - Failure of conservative management for greater than 3 months, including **ALL** of the following:
 - Anti-inflammatory medications, analgesics, or prescription medications (e.g., oral steroids, narcotics, neuropathic pain medications) if not contraindicated;
AND
 - Physical therapy; **OR**
 - The patient has **ANY** of the following substantial functional limitations:
 - Severe back pain; **OR**
 - Difficulty ambulating; **OR**
 - Decreased ability to perform activities of daily living;
OR
 - **ANY** of the following is **TRUE**:
 - Progression of lumbar deformity is at least 10 degrees (as measured on consecutive radiographs over 1 year); **OR**
 - Fixed curve greater than 30 degrees in the coronal plane; **OR**
 - Lateral listhesis of at least 10%; **OR**
 - Proximal junctional kyphosis as defined as a segmental Cobb angle of at least 10 degrees or 10 degrees of progression from the immediate postoperative images; **OR**
 - Sagittal or coronal imbalance of at least 5 cm is present (as measured on long-plate, standing radiographs of the entire spine); **OR**
 - Sitting imbalance (as measured on long-plate, sitting radiographs of the entire spine); **OR**
 - Skin breakdown or impending skin breakdown over the gibbus (severe, angular deformity of the spine);
OR

- ◆ Scheuermann's kyphosis when **ANY** of the following is **TRUE**⁴:
 - Thoracic kyphosis greater than 75 degrees causing unacceptable deformity; **OR**
 - Thoracic kyphosis greater than 75 degrees associated with pain; **OR**
 - Functionally progressive curve; **OR**
 - Neurologic deficit/spinal cord compression; **OR**
 - Symptomatic kyphotic deformity that is unresponsive to conservative, non-surgical treatment.

Non-Indications

→ **Kyphectomy** is not considered appropriate if **ANY** of the following is **TRUE**:

- ◆ Cervical radiculopathy from isolated foraminal stenosis treated with a partial medial facetectomy/foraminotomy.²

Level of Care Criteria

Inpatient or outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description
22818	Kyphectomy, circumferential exposure of spine and resection of vertebral segment(s) (including body and posterior elements); single or 2 segments
22819	Kyphectomy, circumferential exposure of spine and resection of vertebral segment(s) (including body and posterior elements); 3 or more segments
22899	Unlisted procedure, spine

Medical Evidence

The North American Spine Society (NASS) published two recommendations for cervical and lumbar fusion, establishing support for kyphectomy.²⁻³

Garg et al. (2011) performed a retrospective review of 23 pediatric patients with myelomeningocele who underwent kyphectomy and spinal fusion. The review assessed the efficacy of kyphectomy to repair an intact skin envelope to allow more comfort when sitting in a wheelchair. Complications of surgery for patients with myelomeningocele were analyzed, as well as whether patients requiring an unplanned re-operation experienced additional complications compared to patients with a single procedure. Overall, 17 patients achieved seating balance and a resolution of their skin problems; 7 patients required reoperations and operations to treat late infection, pseudarthrosis, implant-related sacral pressure sore, and future extension of proximal fusion after growth.⁵

Samagh et al. (2011) performed a retrospective review of kyphectomy surgical outcomes in patients with myelomeningocele or lumbar kyphosis. These include surgical results, complications, and short-term and mid-term outcomes. Before surgery, the mean extent of kyphosis among patients was 115.6 degrees (range, 77–176 degrees). The correction was 13.0 degrees (range, 0–32 degrees), and a reduction of 88.7% was achieved after surgery. Preoperatively, patients could not lie supine; postoperatively, all patients could lie in this position.⁶

De Marco et al. (2024) conducted a literature review on the records of 586 children treated for vertebral kyphosis related to myelomeningocele, where at least one vertebra was excised to gain some degree of correction of the deformity. The review found that different types of instrumentation were used over time, and none were superior to others. The best results in preserving correction after surgery and reducing rates of revision surgery were obtained with long construct and screws. However, complication rates remained high, skin problems being the most common complication. The use of low-profile instrumentation is critical for treating these patients.⁸

Karataş et al. (2024) surgically corrected and evaluated the kyphosis angle of 24 patients, aged between 4 and 9 years, with lumbar kyphosis associated

with myelomeningocele by applying kyphectomy and a sliding growing rod technique. Mean preoperative and early postoperative kyphosis angles were 129.8 degrees and 0.79 degrees, respectively. The kyphotic deformity correction rate was 99.1%. The annual height lengthening of patients was 0.74 cm/year and 0.77 cm/year between T1–T12 and T1–S1, respectively. The mean decrease in hemoglobin was significant (11.95 preoperatively to 10.2 after surgery). Complications included broken/loose screws (50%), debridement surgery (50%), vacuum-assisted closure therapy (37.5%), and implant removal (33.3%).⁹

References

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Clinical Guideline Revision History/Information

Original Date: October 6, 2023		
Review History		
Version 2	12/1/2023	
Version 3	9/20/2024	Updated language regarding conservative treatment.
Version 4	01/02/2025	<ul style="list-style-type: none"> • Annual review • Clinical approach updated • Indications updated <ul style="list-style-type: none"> ◦ Clinically significant deformity clarified by presentation ◦ Conservative management criteria updated, steroid injections removed ◦ Lumbar and cervical indications aligned ◦ Indications for lumbar spine deformity expanded with sitting imbalance and skin breakdown • Medical evidence updated • References updated