OVERVIEW:

This guideline covers the surgical indications for adult spinal deformity. The criteria for spine surgery for deformity are organized by the involved region of the spine. Whenever possible, spinal deformity in adults is treated non-operatively. Patients often experience significant pain relief from non-operative measures including:

- Pain medication such as non-steroidal anti-inflammatory drugs or mild narcotic medications
- Physical therapy aimed at increasing core muscle strength
- Postural training
- Ideal weight maintenance or appropriate weight loss
- Activity modification
- Braces can provide symptomatic relief
- Patients who fail initial conservative therapy may benefit from steroidal epidural injections, facet joint blocks).

All operative interventions must be based on a positive correlation with clinical findings, the natural history of the disease, the clinical course, and diagnostic tests or imaging results.

INDICATIONS:

All surgery requests to treat adult deformity will be reviewed on a case-by-case basis. The most common type of surgery in adults is a posterior spinal fusion with instrumentation. Occasionally anterior fusion is performed for severe curves. The following criteria must be met prior to reconstructive adult deformity surgery:

1. THORACIC DEFORMITY (MINIMAL / SECONDARY / FLEXIBLE LUMBAR INVOLVEMENT) IN ADULTS

- Evidence of worsening lung function as a direct result of spinal deformity (see deformity criteria below)
  - Decreasing Forced Vital Capacity to < 50% predicted; AND
  - pCO2 > 42 mmHg with higher levels at night (early morning measure); AND
  - Desaturation to < 90% overnight; AND
  - Without other potential causes of respiratory failure (e.g., moderate/severe COPD, sleep apnea syndrome, etc.);

OR
o Progressive loss of exercise tolerance (generally to half of normal for the patient but may be considered on case-by-case basis and should be assessed objectively by exercise study or 6 minute walk test depending on level of impairment)

OR

o Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) or lower extremity weakness (0-3/5 on the strength scale) or paralysis with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images—immediate surgical evaluation is indicated;

OR

When ALL of the following criteria are met:

- Patient has significant pain or symptoms that impairs daily activities for ≥6 months; AND
- Failure of symptom or pain improvement upon completion of at least 12 weeks of focused non-operative* therapy/rehabilitation and after a six months period of time; AND
- Imaging studies confirm spinal curvature demonstrates at least one of the following:
  - Spinal curvature > 50 degrees (scoliosis);
  - Spinal curvature > 100 degrees (kyphosis);
  - Severe kyphosis (chin-brow vertical angle greater than 35 degrees).

2. LUMBAR DEFORMITY (WITH OR WITHOUT SECONDARY THORACIC INVOLVEMENT) IN ADULTS:

All surgery requests to treat adult deformities will be reviewed on a case-by-case basis. The following clinical indications must be present:

- Progressive neurological deficit (motor deficit, bowel or bladder dysfunction) or lower extremity weakness (0-3/5 on the strength scale) or paralysis with corresponding evidence of spinal cord or nerve root compression on an MRI or CT scan images—immediate surgical evaluation is indicated;

OR

When ALL of the following criteria are met:

- Lumbar back pain, neurogenic claudication, and/or radicular leg pain without significant motor deficit (0-3/5) that impairs daily activities for at least 6 months; AND
- Failure of symptom or pain improvement upon completion of at least 12 weeks of focused non-operative therapy/rehabilitation* and after a six months period of time; AND
Imaging studies that correspond to clinical findings and show at least one of the following:
- Sagittal or coronal imbalance of at least 5 cm measured on long plate standing x-rays of the entire spine;
**OR**
- Documented progression of 10 degrees in one year in the coronal plane on x-ray (scoliosis);
**OR**
- A fixed scoliosis of at least 40 degrees.

*Non-Operative Care*
Non-operative measures may include a combination of any of the following measures:
- Pain medication such as non-steroidal anti-inflammatory drugs or mild narcotic medications
- Physical therapy aimed at increasing core muscle strength
- Postural training
- Ideal weight maintenance or appropriate weight loss
- Activity modification
- Braces can provide symptomatic relief
- Steroidal epidural injections or facet joint blocks

**Contraindications for Spine Surgery:**
- **Medical contraindications** to surgery, e.g., severe osteoporosis; infection of soft tissue adjacent to the spine, whether or not it has spread to the spine; severe cardiopulmonary disease; anemia; malnutrition and systemic infection.
- **Psychosocial risk factors.** It is imperative to rule out non-physiologic modifiers of pain presentation or non-operative conditions mimicking radiculopathy or instability (e.g., peripheral neuropathy, piriformis syndrome, myofascial pain, sympathetically mediated pain syndromes, sacroiliac dysfunction, psychological conditions, etc.) prior to consideration of elective surgical intervention.
- **Active Nicotine Use** prior to fusion surgery. The patient must refrain from nicotine use for at least four weeks prior to surgery and during the period of fusion healing.
- **Morbid Obesity.** Contraindication to surgery in cases where there is significant risk and concern for improper post-operative healing, post-operative complications related to morbid obesity, and/or an inability to participate in post-operative rehabilitation.
REFERENCES


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