Spine Deformity Educational Curriculum

Endorsed by
AANS-CNS Joint Section on Disorders of the Spine and Peripheral Nerves
Pediatric Orthopaedic Society of North America
Scoliosis Research Society

Definition: Spine treatment whose indication or result is a change in the translational, coronal or sagittal contour of the spine.

Educational curriculum: The Spinal Deformity Educational Curriculum is a suggested ideal format for educational planning. It is recognized that some educational programs/fellowships may not incorporate all aspects of the curriculum.

I. Suggested Topics for Didactic Presentation:
   - Clinical biomechanics of the spine
   - Pain management
   - Nutritional
   - Spinal radiology
   - Spine embryology, growth, development and genetics
   - Pediatric and adult reading list – (To be determined)

II. The fellowship curriculum for spine deformity should include exposure to and familiarity with the pathogenesis, treatment principles, and surgical decision making, but not necessarily a comprehensive surgical experience in the following Diagnoses:
   a. Scoliosis: idiopathic, neuromuscular (cerebral palsy, muscular dystrophies, myelodysplasia, etc), congenital, degenerative, syndromic (neurofibromatosis, osteogenesis imperfecta, mucopolysaccharidoses, Down, etc.), pathologic, traumatic, iatrogenic, post-infectious, metabolic, and other etiologies
   b. Sagittal plane deformity: Scheuermann’s, post-laminectomy, neuromuscular, degenerative, traumatic, pathologic, congenital, neoplastic, and other etiologies
   c. Spondylolisthesis

III. The fellowship curriculum for spine deformity should include exposure to and familiarity with the following non-operative spinal deformity evaluation and treatment methods:
   a. Orthotic and cast treatment options for spinal deformity
   b. Awareness of long term consequences of treatment and non-treatment options
   c. Knowledge of appropriate referral patterns for specialized care in ICU, nephrology, metabolic disorders, developmental pediatrics, pulmonology, genetics, and other specialties that relate to spinal deformity care.
   d. Knowledge of appropriate diagnostic evaluations for patients with spinal deformity

IV. The fellowship curriculum for spine deformity should include exposure to and/or familiarity with the surgical approaches listed below, performed either with an attending spinal deformity surgeon or access surgeon:
   a. Anterior, including extracavitary
      i. cervical including cervicothoracic junction
      ii. thoracic
      iii. lumbar
   b. Posterior
      i. midline including cervico-occipital
ii. transpedicular
iii. posterior lateral (TLIF, costotransversectomy)
iv. sacropelvic exposure
c. Techniques of bone graft harvesting
d. Techniques of thoracoplasty

V. The fellowship curriculum for spine deformity should include exposure to and/or familiarity with the following surgical intra-operative spinal deformity correction techniques, decision making and postoperative management:
   a. Instrumentation
      i.  spinal fixation with hook, screw and wire anchorage for the posterior occipital, cervical, thoracic, lumbar regions of the spine
      ii. sacral and iliac fixation
      iii. anterior fixation with plate and/or rod systems – cervical, thoracic and lumbar regions of the spine
      iv. anterior column structural support, intradiscal and corpectomy
      v.  Techniques appropriate for the immature, deformed spine (growth rods, VEPTR, stapling, etc.)
   b. Osteotomies
      i.  Smith-Peterson
      ii. Pedicle subtraction
      iii. Vertebral body resection
   c. Principles of and indication for neuromonitoring
      i.  SSEP
      ii. MEP
      iii. Evoked EMG