Deformity surgery


Age has been proposed as a well-established predictive factor for major postoperative morbidities in long-segment thoracolumbar spinal surgery. Complication rates in the elderly are relatively higher than in the younger population; therefore, careful patient selection as well as good clinical judgment about the best approach is mandatory before undertaking long-segment thoracolumbar spinal surgery in older patients. Acosta et al. conducted a retrospective study focused on the comorbidities of very elderly patients who underwent long-segment (5 or more levels) fixation for spinal deformity. They showed that patients 75 years and older undergoing major spinal correction surgery have an overall perioperative complication rate of 62%, with an older age augmenting the incidence of complications, and a long-term postoperative complication rate of 52%. Elderly hypertensive patients are 10 times more liable to incur a major postoperative complication.

There were 2 minor concerns about their study. First, the study focused on very elderly patients, who are more likely to have a higher incidence of osteoporosis. Bone quality is an important factor that influences the stability of posterior spinal implants. However, the authors did not discuss the preoperative evaluation of bone mineral density (BMD). Impairment of bone quality would lead to a high risk of screw pullout or spinal fractures at the adjacent level. In selecting long-segment spinal deformity surgery, BMD is a fundamental preoperative evaluation item for assessing the risk of instrumentation-related complications. Importantly, osteoporosis requires optimal medical management to prevent further collapse of vertebrae. Second, their study addressed radiological outcome. We would like to recall one important issue focused on clinical neurological outcomes. In fact, long-segment spinal fusion often leads to back pain, which stems from back muscle traction-related degeneration.

Despite these concerns, their study has provided a very important reference for the assessment of morbidity and mortality after long-segment spinal deformity surgery in patients 75 years and older. Spinal surgeons should take great precautions in the selection and care of very elderly patients undergoing long-segment spinal fusions. Additional large-scale, multicenter prospective studies will further illuminate more pearls of high-quality spinal care for patients.

Disclosure

The authors report no conflict of interest.

References


Response: We thank Dr. Hueng and colleagues for reviewing our article. One of our goals was to evaluate an important population group, those 75 years of age and older, and to study complication rates following long-segment instrumented spinal fusions. We hope that our study provides clinicians who are treating the very elderly a framework to aid in patient selection for surgical correction of deformity.

Bone health and quality and the impact of smoking, osteopenia, and osteoporosis on long-term outcomes for patients undergoing deformity correction are important considerations for the surgeon. It is known that poor bone health can lead to instrumentation failure, including pedicle screw pullout. Although we did not directly evaluate the effect of osteoporosis and osteopenia and the risk of perioperative complications, indirect assessment...
can be extrapolated. Osteoporosis is a known risk factor for the development of vertebral compression fractures.\textsuperscript{3} Vertebral compression fracture occurred in 2 patients (1 treated with vertebroplasty, and the other treated conservatively), but we did not consistently evaluate preoperative BMD in all patients. Proximal junctional kyphosis is a known condition following instrumented fusions; however, BMD was not a statistically significant factor for its development.\textsuperscript{2} More spinal surgeons are obtaining BMD as part of the preoperative assessment when considering an operation.

Radiographic and clinical outcomes following spinal surgery are becoming standards for determining the best methods for treatment. Prospective multicenter studies are needed for looking at radiographic and health-related quality of life outcomes for patients 75 years and older to optimize care. Despite the limitations inherent to our study because of its retrospective nature, we hope that all physicians treating spinal disorders will consider surgery as part of potential management and will not exclude it based on patient age.

\textbf{References}


Critical illness polyneuropathy/critical illness myopathy and acute motor-sensory axonal neuropathy

To The Editor: We read the case report by Cheng et al.\textsuperscript{1} with great interest (Cheng J, Kahn DE, Wang MY: The acute motor-sensory axonal neuropathy variant of Guillain-Barré syndrome after thoracic spine surgery. Case report. \textit{J Neurosurg Spine} \textbf{15}:605–609, December 2011). The authors described the case of an acute motor-sensory axonal neuropathy (AMSAN) variant of Guillain-Barré syndrome (GBS) after surgery. Although GBS has been reported to occur in postoperative settings, the commonly encountered types of neuromuscular dysfunction in the intensive care unit (ICU)—that is, critical illness polyneuropathy (CIP) and critical illness myopathy (CIM)—should be considered in the diagnosis, because CIP can develop as early as within 3 days after sepsis onset, as happened in the authors’ patient.\textsuperscript{10} Their report did not provide more detailed clinical data contributing to the diagnosis, such as information on 1) any history of infection before the operation; 2) the normal facial grimace as facial muscle unaffected; 3) the use of neuromuscular blocking agents, corticosteroids, aminoglycoside antibiotics, catecholamines, and parietal nutrition potentially related to CIP/CIM in different clinical processes; 4) the level of creatine kinase in serum; and 5) muscle biopsy results.\textsuperscript{6} In the ICU, there are 2 kinds of neuromuscular abnormalities. The first kind refers to the neuromuscular disease, such as GBS, as a reason for admission to the ICU. In the second, flaccid paralysis is acquired in the ICU without preexisting neuromuscular disorders like CIP/CIM. Although rare, GBS is sometimes difficult to differentiate from CIP/CIM.

Both CIP and CIM are frequent complications of critical illness, involving the motor and sensory axons of the peripheral nerve system and muscle.\textsuperscript{10} In the ICU, CIP and CIM present as flaccid and symmetric (including respiratory muscles) weakness and/or sensory loss.\textsuperscript{17} Studies have shown that CIP and/or CIM develop in approximately 70% of patients with sepsis or systemic inflammatory response syndrome,\textsuperscript{10} 60% with acute respiratory distress syndrome,\textsuperscript{2} and up to 100% of patients with multiple organ failure.\textsuperscript{12} Both CIP and CIM prolong weaning from mechanical ventilation and physical rehabilitation.\textsuperscript{11}

The Medical Research Council grading system (sum score) is used as an initial diagnostic physical examination of muscle force in awake patients with suspected CIP/CIM.\textsuperscript{4} Further technical investigations, including serum creatine kinase level, electromyography (EMG), and muscle biopsy, may provide more reliable information in making a diagnosis.\textsuperscript{8} Diagnosing CIP and CIM is occasionally difficult because of either the preexisting disorder or complications arising when the hospitalization causes limb and respiratory muscle weakness. When critically ill patients develop flaccid paralysis and EMG shows evidence of motor and sensory axonal polyneuropathy, CIP can be diagnosed if limb weakness or difficulty weaning patients from a ventilator after nonneuromuscular causes, such as heart and lung diseases, have been excluded.\textsuperscript{10} Guillain-Barré syndrome may sometimes occur under the same conditions, so it is important to identify the syndrome because of its response to specific immunomodulatory treatment. An axonal damage form of GBS may be more difficult to distinguish from CIP because of the similar EMG sign. Criteria for differentiation are specified in Table 1.\textsuperscript{1,6,7} Although clinical presentations and EMG studies do not provide supportive points for discriminating between CIP and GBS, CSF analysis

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