Editorial

Lateral mass screws

PAUL M. ARNOLD, M.D.

Department of Neurosurgery, University of Kansas Medical Center, Kansas City, Kansas

In the past 20 years, the placement of lateral mass screws has become an accepted method for stabilization of the cervical spine. Despite its off-label status, this procedure is the most widely used method for achieving posterior fixation and fusion for a wide variety of pathologies in this region. Numerous studies have extolled the safety, efficacy, and ease of usage of this technique.^{4–6}

While there is abundant literature describing the morphology of the adult subaxial cervical spine lateral mass,^{1,7} little is known about the properties of the pediatric lateral mass. Al-Shamy and colleagues² have performed a detailed study of the lateral mass anatomy of the pediatric subaxial cervical spine. These authors evaluated the CT scans of 70 patients ranging from 2 months to 16 years of age, and comprehensively calculated the linear and angular measurements, as well as the size, of 700 lateral masses, following the method of An et al.³ The data is presented in both graphic and tabular form, and at some points can appear overwhelming.

In the midst of this exhaustive information, several salient points emerge. Not surprisingly, older children have larger lateral masses than younger children, yet clinically significant sex differences are not seen. Sagittal diagonal, a measurement that mimics screw length, increases at each level as one moves caudally from C-3 to C-7, just as it does in adults. The authors also found that even at C-7, perhaps the most technically challenging level in the adult subaxial cervical spine, lateral mass screw placement was feasible.

The most important finding, and the one that helps the practicing spine surgeon the most, is that virtually every patient over the age of 4 years had appropriately sized lateral masses that could safely tolerate screw placement. While it is likely that each patient undergoing posterior fixation and possible lateral mass screw placement will be evaluated by a preoperative CT scan, it is comforting to know that, as a rule of thumb, patients age 4 and older

will tolerate lateral mass screw fixation. By providing this information, the authors have provided some very useful knowledge to those of us who often, or only rarely, perform posterior surgery on the pediatric cervical spine. (<http://thejns.org/doi/abs/10.3171/2012.8.SPINE12768>)

Disclosure

The author reports no conflict of interest.

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Response

AKASH J. PATEL, M.D., AND ANDREW JEA, M.D.

Division of Pediatric Neurosurgery, Texas Children's Hospital, Houston, Texas

We greatly appreciate Dr. Arnold's thoughtful comments. As Dr. Arnold mentions, lateral mass screw fixation

Editorial

for posterior cervical fusion is a standard of spine surgery, as it has been shown to be a safe and effective technique. We set out to determine the feasibility of lateral mass screw fixation in the subaxial spine of children by reviewing a set of normal CT scans across a spectrum of age groups.

We agree with Dr. Arnold that one of the important findings from this anatomical study is C-7 lateral mass screw fixation, while more technically challenging, represents a safer and less morbid alternative to other strategies in children, such as C-7 pedicle screw fixation or extension of the construct into the upper thoracic spine. Interestingly, as we reported previously for thoracic translaminar screws,¹ the age of 4 years appears to be an important practical cutoff, after which nearly every patient meets the minimum anatomical requirements for instrumentation.

In conclusion, we again thank Dr. Arnold for his analysis of our study and look forward to further work in this area.

Reference

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