Hindsight vision and admission after spinal growing implants

TO THE EDITOR: I read with great interest the article by Shaw et al.1 (Shaw KA, Fletcher ND, Devito DP, et al: Complications following lengthening of spinal growing implants: is postoperative admission necessary? J Neurosurg Pediatr 22:102–107, July 2018). The authors performed a retrospective study on 796 children undergoing growing spinal implants and concluded that postoperative admission status did not affect the rate of 30-day perioperative complications, readmission, or rate of unplanned operations following lengthening of growing spinal instrumentation. The authors should be congratulated for performing a well-designed study on an important topic (e.g., hospital admission) in pediatric patients.2,5 In addition, the current emphasis on the need to reduce healthcare costs makes the topic very relevant in perioperative medicine.3

Although the study of Shaw et al. was well conducted, there are questions regarding the study that need to be clarified by the authors. First, the authors did not account for the impact from the immediate postoperative complications on the decision to admit the patients.1 It is plausible that patients who were not doing well in the postanesthesia care unit were admitted. This fact significantly limits the disposition planning of these patients. Moreover, the authors did not account for specific factors that could lead to higher rates of admission (e.g., patients with chronic pain). Last, the authors should present 95% confidence intervals for the outcomes so that clinical practitioners can make more informed decisions. Although complications were similar between the groups, patients who were admitted and develop complications had better support and care than those who developed complications at home.

I would welcome comments by the authors, as this would further support the findings of this important clinical trial.

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4. Shaw KA, Fletcher ND, Devito DP, Murphy JS: Complications following lengthening of spinal growing implants: is postoperative admission necessary? J Neurosurg Pediatr 22:102–107, 2018

Disclosures
The author reports no conflict of interest.

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Response
We thank Dr. Kendall for his interest and comments regarding our recently published article investigating postoperative admission status and its influence on 30-day perioperative complications for children undergoing lengthening of growth-friendly spinal instrumentation. As Dr. Kendall is well aware, children requiring growing spinal instrumentation for spinal deformity are a unique patient population that requires special attention.1,2

Dr. Kendall brings forth an important point in his critique of our article, pertaining to the influence of post-anesthesia monitoring and the decision to admit children postoperatively. This is an important factor emphasized in the American Academy of Pediatrics guidelines for perioperative anesthesia management and the need for extended, inpatient postoperative monitoring for children who develop any complications in the perioperative period.3 Unfortunately, this point was unable to be accounted
for within the confines of the NSQIP-P (National Surgical Quality Improvement Program–Pediatric) database, which does not contain a variable within the defined, 120 data variables collected by the participating institutions on the reason for inpatient or outpatient admission. Given the high incidence of comorbidities in this at-risk patient population,1,2 it is quite plausible that several patients underwent unplanned postoperative admission from the postanesthesia care unit due to unforeseen complications. This point highlights the error with a dogmatic approach in the admission decision process for postsurgical patients, and the need for individualized patient treatment plans, especially with regard to postoperative admission.

Regarding the request for confidence intervals of clinical interpretation of the data, I would highlight Table 3 in our publication, summarizing the univariate and multivariate analysis of risk factors for postoperative admission. The analysis found that only preexisting ventilator dependence (which included use of continuous or bilevel positive airway pressure support) as the only statistical and clinical independent risk factor for postoperative admission, with an odds ratio of 4.2 (95% CI 1.44–12.29).

With the known deficiencies of the NSQIP-P database, further clinical research is needed to investigate the influence of patient factors on the need for postoperative admission after lengthening of growth-friendly spinal instrumentation.

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Ligamentum nuchae as a graft material for duraplasty in patients with Chiari malformation type I

TO THE EDITOR: We read with avid interest the paper by Cools et al.3 (Cools MJ, Quinsey CS, Elton SW: Chiari decompression outcomes using ligamentum nuchae harvest and duraplasty in pediatric patients with Chiari malformation type I. J Neurosurg Pediatr 22:47–51, July 2018). In their single-center, retrospective cohort study of 25 pediatric patients with Chiari malformation type I, the authors have not only presented their surgical outcomes following Chiari decompression but also eloquently described the technique of harvesting ligamentum nuchae (LN) for duraplasty, which is very commendable. From the results of their study, they infer that LN “provides a more robust autologous graft than the commonly used pericranial graft.” However, we disagree, in part, with their opinion.

Ligamentum nuchae could be more robust than pericranium, but this statement needs to be considered with caution and the understanding that this may not be true for all age groups. Pericranium in children tends to be thin and fragile. Its quality and thickness improve with maturity.1,2 In a recent literature review of studies comparing outcomes with two dural graft types during Chiari decompression surgery, Abla et al.1 concluded that the inherent difficulty in harvesting thin pediatric pericranium could have influenced the results of a pediatric study that was included in the review. Moreover, LN can undergo ossification in adults. The incidence of this is about 20%–30% in the Asian population, and it increases with age.5 Improvement in the quality of the pericranium with maturity and the loss of elasticity of the LN with aging may render the pericranium a better choice over LN as a graft material in adults.

Citing the literature review by Abla et al.,1 Cools et al. stated that there was a 10% reoperation rate “due to CSF-related complications” when pericranial grafts were used. However, a thorough analysis of this review and its included studies reveals that this was the rate of “revision hindbrain decompression” and that the actual rate of reoperation due to CSF-related complications would be lower. Also, in the present-day scenario, pericranium can be harvested in a simplified manner without extending the skin incision beyond the standard approach. Stevens et al.8 described how the use of a handheld retractor, retracting dorsally at the apex of the wound, could avoid injury to paired occipital arteries and occipital nerves and how a judicious subgaleal dissection using Metzenbaum scissors could yield a sufficiently sized pericranial graft without extending the skin incision.

Lastly, the statement “it is possible to use midline collagenous scar, in a repeat operation, as further graft material” appears to be controversial. Scar tissue may be detrimental as it can further shrink and cause cerebellar compression and obstruction of CSF flow within the posterior fossa.7

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