Significant caudal epidural catheter migration in pediatric patients despite cyanoacrylate adhesive fixation


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Introduction
• Caudally inserted epidural catheters can migrate after placement.
• Migration to the T1-4 thoracic levels may cause harm if cardiac accelerator fibers are anesthetized.
• A study of catheter migration in children described catheters without cyanoacrylate adhesive fixation.
• At CHOP, cyanoacrylate is used routinely to fix caudal epidural catheters, so we analyzed over two years of data to determine the extent of catheter migration in infants.

Methods
• Study group: children younger than 18 years old with caudal epidural catheters from 2012 to 2014.
• Data sources: anesthesia information management system and electronic health record (EHR).
• Three reviewers [TVN, ECW, WRE] analyzed radiologists’ EHR reports of catheter tip levels from prone and supine fluoroscopy in the operating room (in-OR) as well as post-operative x-rays.
• TVN reviewed the radiographic images if radiologists’ reports did not state a catheter tip location.

Results
• 116 patients received caudal epidural catheters and prone in-OR imaging.
• The patients’ ages ranged from 10-792 days (median 76, IQR 45 – 200).
• Nine patients (8%) had both prone and supine in-OR fluoroscopy images; only one patient had in-OR catheter migration, from the T9 to the T7 level.
• Of the 39 patients with both prone in-OR imaging and post-op x-rays, 21 (54%) had catheter tip migration of one or more vertebral levels (range: 3 segments cephalad to 2 segments caudad).
• In 8 of the 39 cases (21%), catheter migration resulted in a tip level at T4 or higher, and the catheters were repositioned as a result.

Conclusions
• Post-operative imaging after epidural catheter placement is important to confirm catheter tip location due to the risk of migration in spite of cyanoacrylate fixation.
• Failure to assess catheter migration can result in potentially dangerous catheter migration.

References
Strandness et al., Pediatr Anesth 2015; Simpao et al. Anesthesiology 2012