A case report of a retained and knotted caudal catheter in a neonate

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Case Report

- A 2-day-old, 32.5 weeks gestation, 1.97 kg with a tracheoesophageal fistula was scheduled for surgical repair, exploratory laparotomy, and colostomy placement.
- A 22 gauge caudal catheter was inserted to the T7-8 thoracic level (Arrow FlexTip Plus® caudal catheter). The catheter was inserted, blindly advanced with no resistance, and fixed at 11 centimeters.
- Child did not receive intravenous opioids during perioperative period until removal of catheter.
- The patient’s trachea was extubated on the 4th postoperative day and the caudal catheter was removed on the 5th postoperative day.
- On removal, the distal 1 centimeter could not be pulled out of the caudal space. The child was repositioned flexed in the lateral position and with repeated flexion and extension and firm pressure, the catheter was completely pulled out with the tip intact.
- A fully formed knot was noted just at the tip (figure). A Review of the postoperative radiograph demonstrated the looping of the catheter within the caudal space.

Recommendations

1. Lateral position with a flexed spine is considered ideal.
2. Changing position from flexion to extension.
3. Softening of the tissues around the caudal insertion site.
4. Injection of saline continuously while pulling out the catheter.
5. Flexometallic catheters can be made firm by reinserting a guide wire.
6. Making a small incision in the site of insertion.
7. Catheter can be left in-situ with neurosurgery evaluation and vigilant monitoring.
8. Prevention by use of ultrasound imaging during placement and/or radiography for confirmation.

Discussion

- Caudal epidural catheters can become kinked or knotted when threaded into the lumbar and thoracic segments.
- The combination of low birth weight, prematurity, extensive upper abdominal and thoracic surgery places the neonate at a definitive risk for prolonged ventilation.
- Regional anesthesia decreases the need for systemic opioids and inhalational anesthetic, potentially decreasing postoperative complications.
- According to Seefelder et al, 1/3rd of caudal-to-thoracic epidural catheters require intervention.
- The position of the catheter placement should be confirmed with the help of fluoroscopy, ultrasound, nerve stimulation or the injection of radio-opaque dye. However, some authors suggest that routine radiographic confirmation is not required.
- Based on our experience, we recommend the routine use of ultrasonography during placement of lumbar and thoracic catheters from the caudal site.

References