

2003 Spring A10

Complications using styletted epidural catheter placed by caudal approach

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The use of a stylet for placement of caudal catheters is controversial because of potential complications related to its added rigidity. We report three cases of newborns in which the inappropriate placement of a styletted caudal catheter resulted in potentially severe complications.

Case #1: A 1-day-old 33-week premature girl, weighing 2.4 Kg, underwent laparotomy for repair of jejunal atresia. After rapid sequence induction (thiopental 5mg/Kg + succinylcholine 2 mg/Kg) and intubation, anesthesia was maintained with desflurane in air/oxygen. A styletted 20g caudal catheter was then introduced through an 18g Crawford needle in the sacrococcygeal ligament. The catheter was previously measured against the patient's spine to determine the desired length to the T9 spinal level. A dose of 2.4ml of bupivacaine 0.25% + epinephrine 5 mcg/ml was administered via epidural catheter and the patient did not receive any narcotics or clonidine. At the end of the operation, the patient failed to awaken from anesthesia. Blood glucose, arterial blood gas analysis and electrolytes were normal. Radiographic confirmation showed the epidural catheter tip at the C7/T1 level. The catheter was withdrawn 5cm and a new radiograph showed the tip at the T10 level. The patient was successfully extubated 6 hours later. Neurologic and physical exams were normal.

Case #2: A 1-month-old term boy, weighing 5 Kg, underwent thoracotomy for resection of a congenital cystic adenomatoid malformation of the left lung. The patient underwent insertion of a styletted epidural catheter via caudal approach, which met slight resistance at 10cm. The catheter was secured at 10 cm and functioned well during the procedure with the infant comfortable upon emergence. Routine radiography with dye injection showed the catheter tip to be in a left paraspinous space in the lumbar region with contrast outlining an intervertebral foramen. The catheter was removed and the patient was able to move his legs in the immediate postoperative period.

Case #3: A 2-month-old term girl underwent general anesthesia and placement of a styletted caudal catheter via 18g angiocatheter in the sacrococcygeal ligament to estimated T10 level for a Kasai procedure. Aspiration test was negative. Upon administration of 4ml of 3% 2-chlorprocaine via the epidural catheter the patient experienced wide complex bradycardia resolving without intervention in 30 seconds. Radiograph after injection of contrast into the catheter revealed an epidurovenogram (Figure).

Discussion: Placement of a thoracic epidural catheter by the caudal approach can be safely accomplished and has a high rate of success¹. The use of a styletted catheter may increase the incidence of complications related to misdirection given the added rigidity of the catheter. The use of an unyielding catheter in these cases may have contributed to the complications described. Further investigation comparing the success and complication rate of using styletted versus non-styletted catheters is warranted.

¹Anesthesiology 1988;69:265-9.

