Tunneled caudal catheters for post-operative management of bladder exstrophy repair patients

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Introduction

Bladder exstrophy is an abnormally exposed bladder and urethra, in addition to deformities of the pelvic bone. Bladder exstrophy repair, which includes a first stage closure of the bladder, abdominal wall and pelvic osteotomies, usually occurs in the first days to months of a patient's life. The main goal following repair is to achieve urinary continence, and failure of the repair increases the potential for having later incontinence. Thus, prolonged post-op immobilization is necessary to promote healing and maintain integrity of the pelvic ring and abdominal suture lines, optimizing successful outcomes (1). Pain control is also important in the recovery period, in particular because it is difficult to assess and treat pain in neonates, who may be more vulnerable to the sedative and respiratory suppressant effects of many of the opioid medications that are commonly used. Local anesthetics via epidural infusions have been shown to be a safe and effective way of providing analgesia in this population (2). In addition, its effect on motor fibers limit lower extremity movement, which is beneficial to the recovery of these patients. Non-tunneled epidural catheters are typically removed after 72 hours due to infection risk (3,4). Catheters that are tunneled subcutaneously can remain in place for several weeks, minimize the risk of bacterial infection and accidental removal, which optimizes conditions for prolonged use (5). Therefore, we investigate the use of tunneled caudal catheters for post-op management of bladder exstrophy repair patients.

Methods

A retrospective chart review was performed on 32 patients undergoing bladder exstrophy repair at Johns Hopkins Hospital who were managed with tunneled caudal catheters between January 2010 and December 2015. Under general anesthesia, anesthesiologists inserted the caudal catheters percutaneously using aseptic technique, then tunneled subcutaneously 3-6 inches away from initial insertion site near the posterior superior iliac crest. Local anesthetic infusions as prepared by the hospital pharmacy included lidocaine 0.3% with or without additives (fentanyl 1mcg/ml and/or clonidine 1mcg/ml) or bupivacaine 0.1% with or without additives (fentanyl 2mcg/ml and/or clonidine 1mcg/ml) diluted in preservative-free 0.9% normal saline. In all neonates, which in this group included patients up to 81 days of age, lidocaine was used as the local anesthetic of choice due to the ability to measure serum levels to monitor for toxicity. Information concerning the tunneled catheter itself (duration of use, reason for removal, complications, medications infused) and pain control (pain scores, adjuncts in addition to epidural use, total opioid use) were included in the chart review.

Methods (cont.)

Subcutaneously 3-6 inches away from initial insertion site near the posterior superior iliac crest. Local anesthetic infusions as prepared by the hospital pharmacy included lidocaine 0.3% with or without additives (fentanyl 1mcg/ml and/or clonidine 1mcg/ml) or bupivacaine 0.1% with or without additives (fentanyl 2mcg/ml and/or clonidine 1mcg/ml) diluted in preservative-free 0.9% normal saline. In all neonates, which in this group included patients up to 81 days of age, lidocaine was used as the local anesthetic of choice due to the ability to measure serum levels to monitor for toxicity. Information concerning the tunneled catheter itself (duration of use, reason for removal, complications, medications infused) and pain control (pain scores, adjuncts in addition to epidural use, total opioid use) were included in the chart review.

Results

Between January 2010 and December 2015, 32 patients had tunneled caudal catheters placed for prolonged post-op management.

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Discussion

We explore the effectiveness and safety of tunneled caudal catheters for prolonged post-op management of bladder exstrophy repair patients in this retrospective review. Having a continuous infusion of epidural local anesthetic allowed prolonged immobilization during recovery to promote adequate healing. By having the catheters tunneled, they were able to remain in place for a prolonged period of time. Additional data regarding opiate use will provide more insight as to the efficacy of pain control.

References


![Image source: Aram et. al](Image source: Aram et. al)