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inserted into an in-line injection site of the Baxter intravenous tubing, and a simple twist of one-quarter revolution traps the tubing within the slots, preventing removal of the NLD by tugging. Designed only for use with secondary infusion tubing, insertion of the NLD alone without tubing results in retrograde flow through the NLD from the primary tubing. Attaching a three-way stopcock to the female luer lock fitting of the NLD infusion port prevents backflow through the NLD. My device promotes use of needleless syringes, obviating the need to recap contaminated needles.

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Barrier Flaps for Continuous Caudal Anesthesia in Pediatric Patients

To the Editor—Continuous infusions via a caudal catheter have been discouraged by some authors because of the risk of bacterial contamination in infants who have not acquired sphincter tone.1 We suggest the following technique to address these concerns.

Our method of application of the caudal barrier flap is as follows. After the caudal catheter is placed, the exposed portion of the catheter is secured by Steri Strips near the exit site. A transparent dressing is placed such that it extends approximately 5 mm below the catheter's exit site (fig. 1A).

Next, a waterproof, transparent drape with adhesive on a single edge is cut to form the barrier flap. The width of the flap should extend from greater trochanter to greater trochanter. The length of the drape is 12–18 inches. The barrier flap is secured with liquid adhesive. The flap is applied just below the distal end of the catheter dressing (fig. 1B). Care is taken to place the flap without wrinkles or air pockets to ensure an occlusive seal. The gluteal skin and fold may require gentle stretching to accomplish smooth application. Once the adhesive is dry, the barrier flap is turned upward against the back (fig. 1C). The diaper is placed, and the free end of the flap is folded onto the outside of the diaper (fig. 1D). The process usually takes less than 10 min.

Caudal barrier flaps of various designs are used by some anesthesiologists who employ continuous caudal anesthesia in infants and children who have not developed urinary or fecal control. The flora of the perianal skin and deep soft tissues cannot be irradiated entirely. Aboueleish et al. reported that spontaneous cleansing of the caudal region did not decrease the incidence of positive skin cultures in adults.2 The introduction of skin flora into the neuroaxis has resulted in epidural infections.4 The incidence of epidural abscess in adults is 1.2 per 10,000 hospital admissions per year.5 The pediatric incidence of infection from continuous caudal anesthesia has not been cited.

Though the efficacy of such a drape remains to be proved, it is clear that gross contamination of the caudal catheter dressing and entry site are reduced. We advocate the use of the caudal barrier flap in all pediatric patients receiving continuous caudal infusions, with

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Fig. 1. (A) The caudal catheter dressing in place. (B) The caudal barrier flap is applied just distal to catheter dressing. (C) The barrier flap is outstretched and pulled upward. (D) The free edge of the flap rests on the outside of the diaper.

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the understanding that the risk-benefit ratio of continuous caudal infusions and the proposed added protection of the caudal barrier flap merit further investigation.

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Succinylcholine and Duchenne Muscular Dystrophy

To the Editor—A letter to the editor describes intracardiac arrest following succinylcholine in patients with Duchenne muscular dystrophy (DMD). I know of two other cases of cardiac arrest following succinylcholine; one of the patients survived. The patient who did not survive had evidence of a muscle biopsy for DMD.

The letter suggests glucose and insulin for the immediate treatment of hyperkalemia. However, I think that, in a patient in whom cardiac arrest occurred, the ischemia plus glucose might result in more damage to the central nervous system. It therefore, I suggest that, in a patient with unstable circulation who is severely hypotensive, the initial pharmacologic treatment should be epinephrine, because it is well known that epinephrine is first-line treatment for hyperkalemia and has beneficial effects on circulation. Calcium and bicarbonate are also indicated for the immediate therapy of hyperkalemia. After the circulation has stabilized, the administration of glucose and insulin should be considered.

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It has been my practice to give a nondepolarizing muscle relaxant before succinylcholine in all children aged 1 yr and older. It is known that pretreatment in children prevents an increase in creatine phosphokinase and fasiculations and reduces myalgia. Though potassium levels were not measured in this study of normal infants and children, such measurements may reduce hyperkalemia, which follows in patients with unsuspected DMD.

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