



FIGURE Coiled line used for plexus block and epidural infusions.

Thirty millilitre syringes are used for single-shot injections and for the initial injection when a continuous infusion is used (for continuous plexus nerve block analgesia). Unfortunately, the labelled syringe used for continuous infusion is not a dedicated one (30 mL is too small: too frequent changes are needed).

We use dedicated coiled lines as well (Figure, Vygon laboratories, Ecouen, France). These lines are used on plexus nerve block lines and epidural lines in order to avoid the accidental iv infusion of local anesthetics.

In any event, even with these precautions, we agree that: "the quite remarkable capacity for a human to circumvent almost any safeguards against medical error" will persist.

Jean-Christophe Favier MD
David Plancade MD
Pascal Boulland MD
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Reference

- 1 Favier JC. Avoiding the accidental iv injection of local anaesthetics (author reply). *Can J Anesth* 2003; 50: 1077–8.

Are non-depolarizing neuromuscular blocking agents innocuous for the neonates?

To the Editor:

I read with interest the article¹ written by Dr. Littleford and was glad to see she did not make the statement commonly found in most textbooks that the administration of a neuromuscular relaxant does not affect

Apgar or neurobehavioural scores. Partial residual curarization of the neonate can occur when clinical doses of a non-depolarizing neuromuscular blocking agent is used during a Cesarean section despite umbilical vein concentrations lower than the known neonatal EC₅₀ for that specific agent.² In one randomized double-blind study, at 15 min of life, the proportion of neonates with an abnormal neurobehavioural adaptive capacity score was higher in the group whose mothers received an ED₉₀ dose of atracurium (14/25) than in the group whose mothers received an ED₉₅ dose of d-tubocurarine (6/21; $P < 0.05$).² The difference was seen in the active tone category (mode score 7 vs 9; $P = 0.02$) and was statistically significant for active contraction of the neck extensors (mode score 1 vs 2; $P = 0.01$).²

Since the umbilical vein to maternal vein (UV/MV) ratio of non-depolarizing neuromuscular blocking agents varies from 7 to 26% and fetal concentrations will increase with higher injected doses and with longer injection-to-delivery interval for drugs with a high molecular weight, when total avoidance of these drugs before clamping of the umbilical cord is not feasible, using the lowest possible dose of an agent with a low UV/MV ratio and short duration of action appears to be the safest choice.³

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References

- 1 Littleford J. Effects on the fetus and newborn of maternal analgesia and anesthesia: a review. *Can J Anesth* 2004; 51: 586–609.
- 2 Perreault C, Guay J, Gaudreault P, Cyrenne L, Varin F. Residual curarization in the neonate after caesarean section. *Can J Anaesth* 1991; 38: 587–91.
- 3 Guay J, Grenier Y, Varin F. Clinical pharmacokinetics of neuromuscular relaxants in pregnancy. *Clin Pharmacokinet* 1998; 34: 483–96.

REPLY

The cautionary note articulated in Dr. Guay's letter to the Editor¹ has relevance clinically, although one of the assessment tools used to reach the conclusion has been shown to lack validity and reliability.² The Neurologic and Adaptive Capacity Score (NACS) should no longer be used to assess the effect of intrapartum maternal medication on the newborn.

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