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Ambulatory epidural analgesia in obstetrics: a proposal for rural Canada

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Extradural or intrathecal administration of dilute local anesthetics and narcotics has become the standard of care in obstetric anesthesia.[1] The efficacy of pain relief is excellent and the frequency of serious complications low.[2-4] Widespread maternal and paternal satisfaction have accompanied the introduction of this type of service. Reviews of large series of patients, from numerous cultures and populations, have demonstrated that, when offered the service, approximately 30% to 50% of patients request epidural analgesia in labour.[5-8]

Is such a service appropriate in a rural setting? A number of possible impediments can be listed. There is a lack of specialist obstetric and anesthetic staff. The obstetric abilities of rural nursing staff vary. Anesthesia services in rural Canada are provided by family practitioners, who usually work in their offices, away from the hospital. Onerous on-call schedules in the emergency department reduce the attraction of additional off-hour responsibilities in obstetrics. Many of rural Canada's anesthetists are not trained in epidural techniques or their skills are out of date.

Out of these concerns came the requisite principles of a rural epidural program:

- The required skills must be simple, easily and quickly acquired, and accessible through continuing medical education programs, preferably with some financial compensation for time away from practice.
- The procedures must be safe, requiring only basic monitoring skills with which any nurse would feel comfortable. Serious complications must be rare, and nuisance complications must be recognized easily and resolved.
- Time constraints on the general practice (GP) anesthetist and staff should not be onerous. In particular, the procedures must be safe enough that the anesthetist initiating the epidural

is free to leave the hospital. The analgesic technique must be sufficiently long-acting to minimize the need for "topping-up." Alternatively, if the safety margin of the epidural procedures is high, topping-up might be done by medical colleagues already in the hospital who are responsible for delivery.

The acquisition and maintenance of spinal and epidural skills should not pose significant problems. Virtually all of the postgraduate 12-month GP anesthesia programs in Canada include a significant training period in obstetric anesthesia. For those trained earlier or elsewhere, the departments of anesthesia, to their great credit, are almost universally accessible, either formally or informally, for continuing medical education. For rural GP anesthetists with an aptitude for procedures, these skills usually can be acquired in 2 to 4 weeks. Refresher opportunities usually require 1 week or less. Some provinces, such as Alberta, provide financial compensation for time away from practice for rural physicians acquiring these skills.

The safety issues of epidural analgesia have changed considerably over the past decade. Initially, high concentrations of local anesthetics delivered by bolus top-ups provided dense motor and sensory block. The risks of inadvertent spinal or vascular injection, while rare, were life-threatening and necessitated considerable caution and on-site anesthetic management. It was generally accepted that a physician would remain in the hospital after initiating an epidural anesthetic. The worry of life-threatening complications and the onerous demands on anesthetic staff restricted the introduction of epidural services in rural Canada.

Significant changes in concentrations and doses of local anesthetics, the addition of short-acting narcotics and modifications in delivery systems have changed epidural services dramatically and created an opportunity for the initiation of safe and provider-friendly rural programs. Bupivacaine hydrochloride remains the local anesthetic of choice, but concentrations rarely exceed 0.125% and are often as low as 0.05%. This agent may be combined with low concentrations (2 µg/mL) of fentanyl citrate; in such cases, the two drugs act synergistically in both effect and duration. Continuous infusion of low concentrations of bupivacaine and fentanyl has eliminated much of the need for bolus injections into the epidural space and, accordingly, most of the risk of life-threatening complications. Dense motor and sensory blocks are avoided. Equally helpful is the very low frequency of less serious complications, such as hypotension. Monitoring is important, but the associated nursing skills are basic. Appropriate protocols are required and must be applied rigorously. The most important intervention on the part of the nursing staff is to simply turn off the epidural infusion. The safety features of the new continuous infusion devices have been recognized by the Canadian Anesthetists' Society in their guidelines[9] (see sidebar).

Once freed from the requirement to remain in the hospital and relieved of the necessity to provide regular top-ups, many GP anesthetists are prepared to look more favourably on requests for epidural services.

The most recent innovation in epidural delivery systems is the adoption of combined spinal

epidural techniques. A persistent and consistent complaint about epidural analgesia is confinement to bed. Women perceive and dislike the loss of control of the labour and delivery process associated with motor and sensory block. Even incomplete paralysis is often frightening. Although there are no good data to support the suggestion, many investigators have suspected that loss of ambulation adversely affects outcome. Some programs have provided ambulatory epidural analgesia by using narcotics either alone or in combination with ultra-low-dose local anesthetics.[10] However, analgesia is sometimes imperfect, onset is quite slow and if top-ups are not done promptly the ensuing "catch-up" is difficult and frustrating for both anesthetist and patient. Issues of slow onset and catch-up can be managed most effectively with larger volumes, but the associated motor block will inevitably impede ambulation.

Better results have been obtained with a combined spinal epidural technique (see sidebar), initially developed and published in the United Kingdom[11] and now used extensively in a number of large obstetric anesthetic practices in Canada, such as the British Columbia Women's Hospital and Health Centre, Vancouver, and the Grace Maternity Hospital, Halifax. An initial dose of fentanyl alone (37.5 µg) or in combination with bupivacaine (25 µg plus 2.5 mg) is given intrathecally with a 25- or 27-gauge Whitacre or Quincke needle. Immediately after, the epidural catheter is sited in the usual fashion. Subsequent top-ups and continuous infusions are given through the epidural catheter. Onset is extremely rapid, within 1 to 5 minutes. Within 30 minutes, most patients are able to walk about and void, while retaining excellent analgesia. Of course, a nurse should be with the mother when she is walking and should monitor the mother's muscle power. The most commonly reported side-effect was pruritus (in 17.3% of patients) (Table 1). Transient hypotension occurred in 8.0% of cases. Postdural puncture headache was reported in 2.3% of cases, which compares favourably with conventional epidural analgesia techniques. Respiratory depression has not been reported.

Table 1. Combined spinal epidural techniques: complications and side effects in 300 patients*

Complication	Number (%)
Failed subarachnoid block	32 (10.7)
Pain in dural puncture	48 (16.0)
20% fall in blood pressure	24 (8.0)
Ephedrine	55 (18.3)
Pruritus	52 (17.3)
Naloxone given	10 (3.3)
Post dural puncture headache	7 (2.3)
Blood patch	6 (2.0)
Postpartum urinary retention	2 (0.7)

The impact of this procedure on rural obstetric anesthetic practices is significant. Rapidity of onset is provider-friendly. Low doses of local anesthetics given to ambulating patients have

improved the safety margins for patients and reduced the anxiety level for nursing personnel. There continues to be a possibility of subarachnoid or intravenous bolus injections through a displaced catheter. However, top-up doses, always equal to or less than 10 mg bupivacaine, are not great enough to provide a high spinal block or systemic toxicity.[11] With such enormous safety margins, there is an opportunity for nonanesthetist family practitioners who deliver babies (and perhaps nurses as well) to undergo training so that they can manage a previously sited epidural in the patients under their care.

Safety will continue to be the benchmark of success. Appropriate training, both in tertiary-care centres and as part of continuing medical education programs within individual hospitals, is mandatory. Some thought must be given to maintenance of competency issues.

Why bother with ambulatory epidural analgesia? Slowly, as a profession, we are changing our attitude that relief of obstetric pain is "elective." In no other area of medicine is it acceptable for a patient to be under a physician's care and left to endure severe pain that is amenable to safe and effective intervention. Some women and their physicians will prefer other methods of coping with the pain. However, a woman's choice to deliver in rural Canada should not preclude a full choice of pain control options.

Rural Canada is not poorly served with anesthetic skills in general. Upgrading to spinal epidural skills is technically easy, accessible and affordable. New protocols, such as the ones suggested in this paper, are extremely safe and provider-friendly. The professional satisfaction of providing state-of-the-art services, accompanied by the tremendous maternal and paternal satisfaction associated with the service, should encourage many rural obstetric centres to provide spinal epidural analgesia in labour.

References

1. Smedstad KG: Pain relief in labour. J Soc Gynaecol Obstet Can 1992; 14: 26-32
2. Ong BY, Cohen MM, Cumming M et al: Obstetrical anesthesia at Winnipeg Women's Hospital 1975-83: anaesthetic techniques and complications. Can J Anaesth 1987; 34: 294-299
3. Bromage PR: Neurologic complications of regional anesthesia for obstetrics. In Schneider SM, Levison G (eds): Anesthesia for Obstetrics, 2nd ed, Williams and Wilkins, Baltimore, 1987: 316-324
4. Ong BY, Cohen MM, Esmail A et al: Paresthesias and motor dysfunction after labor and delivery. Anesth Analg 1987; 66: 18-22
5. Bailey PW, Howard FA: Epidural analgesia and forceps. Anesthesia 1983; 38: 282-285
6. Niv D, Ber A, Rudick V et al: Mode of vaginal delivery and epidural analgesia. Isr J Med Sci 1988; 24: 80-83
7. Carli F, Creagh-Barry P, Gordon H et al: Does epidural analgesia influence the mode of delivery in primiparae managed actively? Int J Obstet Anaesth 1993; 2: 15-20

8. Iglesias S, Burn R, Saunders LD: Reducing the cesarean section rate in a rural community hospital. Can Med Assoc J 1991; 145: 1459-1464
9. Recommendations regarding epidural analgesia. Can Anaesth Soc News 1991; 7 (2)
10. Breen TW, Shapiro T, Glass B et al: Epidural anesthesia for labor in an ambulatory patient. Anesth Analg 1993; 77: 919-924
11. Collis RE, Baxandall ML, Srikantharajeh JD et al: Combined spinal epidural (CSE) analgesia: technique, management, and outcome of 300 mothers. Int J Obstet Anesth 1994; 3: 75-81

A recent issue of the Journal of the Society of Obstetricians and Gynaecologists of Canada featured the favourable impact of a rural epidural program on obstetric outcomes.

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