

Obstetrics in a small isolated community: the cesarean section dilemma

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This is a retrospective review of the obstetrical experience of all pregnant women who presented for prenatal care in the small isolated community of Bella Coola, BC, over a 4-year period. There was a cesarean section rate of 17.8%; this compares favourably to the provincial average. However, 28% of these women delivered elsewhere. Almost half of these were due to lack of cesarean section coverage at Bella Coola Hospital at the time of delivery. The issues surrounding the provision of cesarean sections in small communities are discussed.

Étude rétrospective de l'expérience obstétricale de toutes les femmes enceintes s'étant présentées pour recevoir des soins prénatals dans la petite collectivité isolée de Bella Coola (C.-B.), sur une période de quatre ans. Le taux de césarienne s'est établi à 17,8 %, ce qui se compare favorablement à la moyenne provinciale. Cependant, 28 % de ces femmes ont accouché ailleurs. Dans près de la moitié de ces cas, la situation est attribuable au fait que l'hôpital de Bella Coola ne faisait pas de césariennes au moment de leur accouchement. On examine les divers aspects de la question des césariennes dans les petites collectivités.

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Delivery of obstetrical services in small isolated communities is becoming more of an issue, particularly as these communities lose the ability to provide cesarean sections (C sections). There is some evidence that obstetrical outcome is better when provided in the patient's local community, even in the absence of C section coverage. However, many of us who practise rural obstetrics are intuitively uncomfortable with this situation. At Bella Coola Hospital in Bella Coola, BC, we are experiencing increasing difficulty in maintaining our ability to provide

C section coverage, and there is a corresponding increase in the number of women who deliver outside the community. We are attending fewer deliveries and performing fewer C sections. Is this safe and appropriate? We reviewed the obstetrical experience in our community and compared it to the experiences of others.

Bella Coola is a community of approximately 2500 people, with another 1000 in the catchment area. We are 450 km from the nearest hospital and any obstetrical specialist. Transfer entails an 8-hour trip over a difficult highway, or air transport. Because of our location in the coastal mountains, air travel is not always possible. Bella Coola Hospital has 10 acute-care beds and an operating room staffed by 3 general practitioners with anesthesia and C section experience. When 1 or more of our physicians is away or our operating room nurses are not available, we are unable to provide C sections.

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Methods

A retrospective review of outcomes was carried out on all patients who delivered at Bella Coola Hospital. A review of the outcome for patients who presented to the clinic for prenatal care was also done. Specifically we documented the C section rate, complications, and other operative deliveries or interventions.

The charts of all women who delivered at Bella Coola Hospital between Aug. 1, 1995, and July 31, 1999, were reviewed for parity, gestation at delivery, mode of delivery, induction, epidural use, complications of delivery and neonatal morbidity/mortality. Clinic charts of all prenatal patients with due dates between Aug. 1, 1995, and July 31, 1999, were also reviewed. These records presented the greatest challenge; outcomes of deliveries that occurred elsewhere had to be determined, and the charts were sometimes incomplete. One of us (S.S.) tracked down records from other hospitals and interviewed patients for whom information was incomplete.

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Results

[Table 1](#) summarizes the experience at Bella Coola Hospital during the study period. Of the 118 deliveries completed, there were 11 C sections and 11 forceps or vacuum extractor assisted deliveries.

[Table 2](#) summarizes outcomes of the 51 patients who were pregnant during the study period but delivered elsewhere. Six had simply moved from the area before their due date. Of the remaining 45, 24 left because of the lack of C section coverage. Of these 24, 15 had no obstetrical problems otherwise. Nine patients chose to deliver elsewhere for personal reasons unrelated to the availability of C section (e.g., family support elsewhere).

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Discussion

Black and Fyfe's study¹ on obstetrics in Northern Ontario showed that hospitals providing maternity care without C section capability delivered 57% of newborns; hospitals performing fewer than 5 C sections per year delivered 80% of newborns from their area. At Bella Coola Hospital we delivered 72% of our newborns, placing us in between the Ontario hospital percentages. During our study period there was a considerable amount of time in which C section coverage was not available; this likely accounts for our intermediate position. Of the 51 women who delivered elsewhere, 54% did so specifically because there was no C section coverage. If we had had continuous C section coverage, we could have delivered 87% of the women in this community. This compares with the 80% in Black and Fyfe's study.

C section rates vary considerably from hospital to hospital and from area to area. Our nearest referral centre, Cariboo Memorial Hospital in Williams Lake, BC, had a C section rate of 29% (Apr. 1, 1998–Mar. 31, 1999) (Laurie Lord, Medical Records Department, Cariboo Memorial Hospital: personal communication, 2000). Hospitals in Black and Fyfe's study averaged 15.9%. In New South Wales, the C section rate for rural hospitals is 10% and for urban hospitals it is 16%.² The 1999 rate in British Columbia was 22.2%. (BC Vital Statistics Agency, prepublication statistics). Our rate of deliveries completed here is 9.2%. It is difficult to interpret whether the C section rate bears any relationship to quality of care or, indeed, to isolate the factors that contribute to the difference in C section rates.

Of interest, of women who delivered elsewhere 33% had C sections. It can be argued that there are a variety of factors contributing to that high rate, however, Nesbitt and colleagues,³ looking at hospitals in Washington State, demonstrated that the number of birth complications is strongly associated with the proportion of deliveries occurring outside the community. The high C section rate for women delivering out of our community brings our C section rate by residence (all women living in Bella Coola) to 17.8%, which still compares favourably to the provincial average.

Our numbers for neonatal morbidity and mortality are too small for analysis. The prematurity rate seems particularly low, and we wonder if that is real or a deficiency in the accuracy of our

retrospective review. It would be interesting to be part of a prospective group study that looks at neonatal outcome. Klein discusses the possible reasons for the apparent anomaly that overall outcome is better when women deliver in their own community even when no C section service is available (Dr. Michael Klein, Head, Division of Maternity and Newborn Care, University of British Columbia, Vancouver; personal communication, 2000). He suggests that for "a particular case, hospitals with cesarean section would be better than without cesarean section ... at the population level it could be that other protective factors are operating at the community level." He makes the point "that when a COMMUNITY loses its maternity care capability — even if they did not have cesarean section on site before, the overall results based on the community — not the individual — show an increase of prematurity and maternal and infant morbidity when compared to demographically comparable communities with maternity care. The rural settings without cesarean on site ... are likely doing something that is protective." Nesbitt and colleagues³ support similar hypotheses based on their data, which shows better outcomes in low-outflow compared with high-outflow communities.

We are often unable to provide C section coverage. We also face this question: Is it safe to provide C section service when we average only 3 a year? Forty percent of the 576 hospitals in Canada that provide obstetrical services perform fewer than 20 C sections per year.⁴ Rosenblatt and coworkers,⁵ looking at outcomes in rural New Zealand, suggest there is no volume threshold below which obstetric care becomes unsafe and that low-risk mothers fare better in a low technology environment. At what threshold does it become unsafe to be performing C sections? The SOGC⁶ documents evidence that family practitioners who have acquired competence in C section can maintain their skills with relatively few (5 to 22) cases, and emphasizes that the quality of the initial training may be the most important factor.

Because of our geographic isolation and problems with transport, it remains desirable to have the capability of providing obstetrical care in this community and, if we are to do so, it may be safer to have the availability of C section. Numbers alone do not seem to preclude safe delivery of care, either for routine obstetrics or C section. Not surprisingly, our numbers are too small to make comments regarding perinatal morbidity and surgical/obstetrical complications. However, the data suggest that despite isolation and staffing difficulties, we are providing outcomes that compare favourably. We are encouraged by support from the literature to maintain obstetrical services, with the expectation that our outcomes will continue to be as good or better than those that would occur should we cease to provide obstetrical services. We must ensure that those providing services are adequately trained and regularly upgrade their training. In British Columbia and some other provinces practising physicians can do further funded training as an R111; the program also allows for shorter training periods. This sort of option needs to be encouraged and supported.

Competing interests: None declared.

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