

The influence of patient preferences and physician practices on cesarean delivery

O. A. Olatunbosun, A. Ravichander, R. W. Turnell, L. Edouard

*Department of Obstetrics, Gynecology & Reproductive Sciences, College of Medicine, University of Saskatchewan, Saskatoon
Saskatchewan (Canada)*

Summary

Purpose of Investigations: A wide range of variation exists between the cesarean delivery rates of individual obstetricians in our health district, despite an overall cesarean delivery rate below the national average. This study tested the hypothesis that physician and patient determinants influenced the decision to perform a cesarean delivery by investigating its preventability at a tertiary care medical center.

Materials and Methods: A retrospective analysis of the medical records of 290 unselected patients who had a term primary cesarean delivery during a twelve-month period was conducted. Patient characteristics, indications for, and preventability of cesarean delivery were determined for each patient.

Results: Overall, 66 (23%) of the 290 term cesarean deliveries were deemed preventable: 41 (62%) of the 66 cases were deemed preventable by patients and the other 25 (38%) by obstetricians. The preventable cesarean section rate was significantly higher for local residents as compared to referrals (27% vs. 15%; $p = 0.001$), the two main indications accounting for preventability being dystocia (53%) and breech presentation (23%).

Conclusion: The preferences of patients and practices of obstetricians influence recourse to cesarean delivery. Addressing the practices for the clinical management of breech and dystocia by obstetricians and the preferences of patients for their choice of mode of delivery will facilitate the appropriate utilization of cesarean delivery.

Key words: Cesarean delivery; Patient preferences; Physician practices.

Introduction

Cesarean delivery has implications for clinical care, patient satisfaction, and utilization of health care resources. In the context of a clinical audit and total quality improvement, cesarean delivery exemplifies a surgical procedure with marked variations in utilization rates both between countries and within a country as shown by Canada and its provinces [1-3]. Even a low utilization rate may be associated with preventable factors which are amenable to corrective actions through interventions. The cesarean delivery rate has remained stable in Canada for the past five years at around 19% [3], a higher rate for births occurring in the city of Saskatoon being partly attributed to referrals of high-risk individuals from neighboring districts to the tertiary medical center.

Differences in cesarean delivery rates either over time or between populations do not always reflect case mix in view of the importance of preferences that were formerly thought to be those of obstetricians alone. Lately, there have been increasing reports of the influence of patients on the decisions of health care providers, particularly with regard to surgical procedures [4-6]. We aimed to elucidate the circumstances surrounding the performance of cesarean delivery by examining the medical records at our institution.

Material and Methods

Using the city-wide computerized record system of the health district, a list of all cesarean deliveries performed during a one-year period was obtained and the case notes were retrieved. We abstracted data on primary cesarean deliveries done after 37 weeks. Of the 789 patients who had cesarean delivery during the one-year period, 67% were residents of the district whereas the other 33% had been transferred from neighboring health districts. Four hundred and ninety-nine were excluded due to either a repeat cesarean delivery or a gestational age of less than 37 weeks, leaving a total population of 290 (37%) patients for the study. Patient characteristics, indications for, and preventability of cesarean delivery were determined by reviewers who were blind to the identity of the obstetricians. Patients were assessed for the preventability of cesarean delivery, and data extracted on the indications for cesarean delivery, maternal and physician factors, and obstetric variables for those who had preventable cesarean delivery, besides maternal age, reasons for referral, and the residence of the patients. The clinical circumstances were reviewed by two staff obstetricians so as to determine the level of preventability of the procedure through assignment of one of the following categories: definitely preventable, probably preventable, equivocal decision probably not preventable, and definitely not preventable. The entire clinical records and electronic fetal monitoring tracings were available to the two staff physicians judging the preventable nature of the cesarean delivery. Only those classified as definitely preventable were included in the "preventable" category for the purpose of this study. We also examined whether obstetricians contributed to preventable cesarean deliveries, and made allowances for factors shared by patients and obstetricians by classifying these as undetermined.

Only the three leading indications for cesarean delivery (dystocia, breech, and nonreassuring fetal status) were taken because others are most often a subgroup of these three. Active labor was defined as regular painful contractions, occurring at least once in five minutes, lasting at least 40 seconds, accompanied by either spontaneous rupture of the membranes, or full cervical effacement and dilatation of at least two centimeters. Active management included early amniotomy, two-hourly vaginal assessments, and early use of oxytocin for slow progress in labor. Prolonged labor was defined as more than 12 hours duration. The present study used a more conservative definition of slow labor by setting a threshold for preventable cesarean delivery for dystocia, for only those progressing at 0.5 cm/hour and less without oxytocin usage.

Preventable cesarean delivery for breech was defined as those cases of frank breech where there was no documentation of prior discussion on external cephalic version or vaginal breech delivery.

We used the term nonreassuring fetal status associated with whatever findings elicited the description, rather than fetal distress, which is a non-specific and imprecise diagnosis sometimes associated with surgical delivery of a normal newborn. Normal fetal heart rate variability on electronic fetal heart rate monitoring tracings was deemed to represent normal central nervous system integrity, including adequate oxygenation. Tracings in the final hour before delivery were categorized as normal or nonreassuring. After delivery, Apgar scores at 5 minutes below 7.0, arterial cord blood pH less than 7.25, and admission to the neonatal intensive care unit were used as measures of fetal intolerance of labor, and possibly non-preventability of cesarean delivery.

Preventable cesarean delivery was attributed to physician factors in cases where physician practice patterns deviated from current guidelines of the Society of Obstetricians and Gynecologists of Canada for managing dystocia, fetal distress and breech presentation [7, 8]. Those attributed to maternal choice included instances where the patient refused consent to active management of slow labor, indicated operative vaginal delivery, or a refusal to attempt vaginal delivery of a supposedly large fetus, external cephalic version or a trial of vaginal delivery of frank breech, or chose cesarean delivery as the preferred method.

Data were entered into a computer file for analysis, categorical variables being compared by the chi-square test, continuous variables by the t-test. Differences were deemed significant at the 5% level.

Results

The mean age of the study subjects was 26 years (range 17-40) and the median parity was one (range 0-5). The racial mix of this study population was similar to that of the obstetric patients at our institution: approximately 87% Caucasian, with the remainder predominantly aboriginal. Case notes were available for all of the 290 cesarean deliveries to the reviewers. There was minimal inter-observer variation in the judgment of the two reviewers regarding preventability of cesarean delivery.

Overall, 66 (23%) of the 290 term cesarean deliveries were deemed preventable. The preventability of cesarean delivery was significantly associated with area of residence (Table 1), being much less for procedures performed on referrals from other districts compared to local residents (15% vs. 27%; $p = 0.001$).

Table 1. — Preventability of cesarean deliveries according to place of residence.

Place of residence	Preventable	Non-preventable	ALL (n=290)
Local district	52 (27)	142 (73)	194
Other	14 (15)	82 (85)	96
All	66 (23)	224 (77)	290
Statistical significance	$p < 0.001$ NS		

All numbers in parentheses are row percentages; NS = Not significant

This geographic variation by region with regard to preventability of cesarean delivery persisted after analyzing indications for cesarean section. The main indications for cesarean delivery in the cases deemed to have been preventable (Table 2) were dystocia (52%), breech (23%), and nonreassuring fetal status (12%). These indications were similar to those for primary cesarean sections at our center (data not shown). Forty-one (62%) of the 66 cases were deemed preventable by patients and the other 25 (38%) by obstetricians (Table 3).

Table 2. — Indications associated with preventable cesarean deliveries according to place of residence.

Indications	Place of residence			Statistical significance
	Local	Other	All	
Dystocia	28 (54)	6 (43)	34 (52)	NS
Breech	12 (23)	3 (21)	15 (23)	$p < 0.001$
Nonreassuring fetal status	5 (10)	3 (21)	8 (12)	$p < 0.001$
Others	7 (13)	2 (14)	9 (14)	$p < 0.001$
All	52	14	66	

All numbers in parentheses are column percentages; NS = Not significant.

Table 3. — The influence of patient and physician factors on the preventability of cesarean delivery according to indications.

Indication	Patient	Physician	All
Dystocia	14 (41)	20 (59)	34
Breech	14 (93)	1 (7)	15
Nonreassuring fetal status	6 (75)	2 (25)	8
Others	7 (78)	2 (22)	9
All	41 (62)	25 (38)	66

All numbers in parentheses are row percentages, and all comparisons were not statistically significant.

Discussion

Whereas the concept that nonclinical factors impact the rate of cesarean delivery is not a new one [9], few studies have investigated the role of patient choice and physician practice patterns on primary cesarean deliveries because previous studies focused on repeat cesarean deliveries. Our study confirms the report of Quinlivan *et al.* [5], regarding the contribution of nonclinical factors to the high frequency of primary cesarean delivery, which was published after the initiation of our study. Both studies have found that patient preferences influenced the decision to perform cesarean delivery. Findings regarding primary cesarean delivery are useful because of their potential to help motivate a decrease in cesarean rates.

Our finding of increased preventability of cesarean delivery for local residents could be due to various factors. The likely reason seems to be that, with their longer term relationship with their obstetricians, local residents are more familiar with them and have more influence on the decision-making process and consequent higher risk of cesarean delivery. The corollary may suggest that physicians are likely to be more objective with patients transferred to their care leading to a more rigorous application of guidelines regarding the management of clinical situations such as dystocia, nonreassuring fetal status, and breech presentation. In this context, it remains to be evaluated whether the current trend toward a single obstetrician for in-house coverage of the delivery suite will reduce the rate of cesarean delivery. An alternate explanation for the association of the preventability of cesarean delivery with area of residence might be sociocultural, whereby communication between physician and patient is such that the patients do not wish to influence professional decisions. More interdisciplinary research is needed in this area and we hope our findings will lead to those studies.

Cesarean delivery for the diagnosis of nonreassuring fetal status appears to vary depending on nonclinical factors. Our observation of 12% of cesarean deliveries for this indication raises the possibility that the interpretation of fetal monitor tracing is influenced by physician and patient anxiety or how they are affected by the interpretation of fetal heart tracings. Despite an aggressive physician and patient education on the management of slow labor [10], benefits of external cephalic version and indications for vaginal breech delivery, unnecessary recourse to cesarean delivery persists, especially because operative vaginal delivery is perceived as detrimental to both fetus and mother.

The categorization of cases according to level of preventability involves one's judgmental decisions. The retrospective design of the study offers more information to the investigators than the clinician faced with a difficult scenario in an emergency. In view of these limitations, the review of cases was done by two experienced clinicians practicing in the same city who were aware of local conditions for prevailing practice. Additional information on physician characteristics, such as age or time since training might have been helpful. The finding that 23% of the cesarean sections were avoidable does not mean that all these sections should not have been performed.

Despite the strengths of this study, there are limitations. By using a retrospective approach rather than primary data collection, we may have missed other important information that was not recorded in the hospital and pre-

natal records. There was also a possibility that a preventable cesarean delivery attributed to a patient may actually have originated from the physician who influenced the patient's decision-making, and documented this as entirely the patient's own decision. Even with the limitations of a retrospective study, important items regarding optimum quality of care were uncovered by our study which if rectified, have the potential to greatly improve the obstetric service in general much beyond cesarean section, and more toward deployment of personnel, use of laboratory services and liaison with referring hospitals.

Current efforts at reducing cesarean section rates will succeed only by addressing both patient and physician factors. Reducing cesarean delivery rates to less than 15% has been a difficult process that goes beyond education and dissemination of guidelines, but is attainable by changing patient and physician behavior. With appropriate clinical leadership, the sharing [11] between obstetrician colleagues of data on their cesarean section rates, as provided by this study, has much potential for improving the utilization of the surgical procedure.

References

- [1] Poma P. A.: "Effect of departmental policies on cesarean delivery rates: a community hospital experience". *Obstet. Gynecol.*, 1998, 91, 1013.
- [2] Nair C.: "Trends in cesarean section deliveries in Canada". *Health. Rep.*, 1991, 3, 203.
- [3] Helewa M.E.: "Cesarean section in Canada: what constitutes an appropriate rate?". *J. Soc. Obstet. Gynecol. Can.*, 1995, 17, 237.
- [4] Al-Mufti R., McCarthy A., Fisk N. M.: "Survey of obstetricians' personal preference and discretionary practice". *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 1997, 73, 1.
- [5] Quinlivan J. A., Petersen R. W., Nichols C.N.: "Patient preference the leading indication for elective Caesarean section in public patients-results of a 2-year prospective audit in a teaching hospital". *Aust. N.Z.J. Obstet. Gynaecol.*, 1999, 39, 207.
- [6] Castro A.: "Commentary: increase in cesarean sections may reflect medical control not women's choice". *B.M.J.*, 1999, 319, 1401.
- [7] "The Canadian consensus on the management of breech at term". *J. Soc. Obstet. Gynecol. Can.*, 1996, 18, 233.
- [8] "The Canadian consensus on the management of breech at term". *J. Soc. Obstet. Gynecol. Can.*, 1995, 17, 985.
- [9] Menticoglou S. M.: "Differences among obstetricians in caesarean section rates". *Aust. N.Z.J. Obstet Gynecol.*, 1997, 37, 387.
- [10] Macara L. M., Murphy K. W.: "The contribution of dystocia to the cesarean section rate". *Am. J. Obstet. Gynecol.*, 1994, 171, 71.
- [11] Main EK: Reducing cesarean bith rates with data-driven quality improvement activities. *Pediatrics*. 1999;103(1 Suppl E): 374.

Address reprint requests to:

O. A. OLATUNBOSUN, M.D.

Department of Obstetrics, Gynecology
& Reproductive Sciences

College of Medicine, University of Saskatchewan
Saskatoon, Saskatchewan S7N 0W8 (Canada)