A Comparison of Family Physicians' and Obstetricians' Intrapartum Management of Low-Risk Pregnancies

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Background. We hypothesized that family physicians' style of intrapartum management was less interventional than the management style of obstetricians, and that this would not adversely affect maternal or neonatal outcomes.

Methods. A retrospective, matched-pair study design was used to compare low-risk women cared for by community family physicians with those cared for by obstetricians at a small teaching hospital. The subjects were matched on the basis of age and parity. We compared the rates of intervention between family physicians and obstetricians.

Results. We studied 351 matched pairs of women. The demographic characteristics of patients were similar as were the rates for most labor and delivery procedures. Family physicians had lower rates for induction, external and internal fetal monitoring, narcotic analgesia use, and postpartum oxytocin use. Women cared for by family physicians spent less time in the hospital, both during labor and postpartum.

Conclusion. This study supports the hypothesis that at our center family physicians intervene less than obstetricians in intrapartum management. Comparisons with similar studies conducted at other academic centers illustrate differences in styles of practice between institutions, not just between specialties.

Key words. Family practice; obstetrics; labor; pregnancy; physician's practice patterns; pregnancy outcome.
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There is evidence that family physicians and obstetricians have a different approach to the management of labor and delivery of women with low obstetrical risk.[1,2] This difference has raised questions about the quality and safety of general practice obstetrics,[3,4] which are unfounded.

A number of studies comparing intrapartum management by family physicians and obstetricians[5–9] have demonstrated that family physicians intervene less than obstetricians during labor without adversely affecting maternal or fetal outcome. However, there are methodologic concerns about group comparability, small sample size, and outcome measurement in these studies.[10]

The purpose of this study was to examine the rates of intervention during labor and delivery in low-risk pregnant women cared for by family physicians and obstetricians. We wanted to determine whether family physicians intervene less than obstetricians without adversely affecting common maternal or neonatal outcomes.

Methods

Subjects were women who had given birth to babies over a 1-year period at Kingston General Hospital (KGH), a 466-bed teaching hospital where low-risk intrapartum obstetrics is practiced by both family physicians and obstetricians, all of whom have Queen's University appointments. In addition to anesthesia and epidural analgesia services, 24-hour obstetrician coverage and consultant services are readily available to family physicians.

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There are traditional labor rooms, delivery areas, and a birthing room, which is used as a labor, delivery, and recovery room. At the time of the study, the birthing room had certain prerequisite criteria for its use and was available on a "first-come, first-served" basis. Scalp blood gas sampling is available and requires a consultation with an obstetrician. The hospital is a tertiary care center with a regional referral neonatal intensive care unit (NICU).

During the 12 months of the study, 2170 women gave birth at KGH, of which 462 (21.3%) were admitted by family physicians, and 1708 (78.7%) were admitted by obstetricians for their intrapartum care. There were 9 obstetricians and 19 family physicians practicing intrapartum obstetrics.

A retrospective, matched-pair study design was used to compare the two groups of women. The Ontario Antenatal Record was used as a guide for determining risk status, and only those women who satisfied the risk-status criteria on the basis of their admitting history and physical examination results were admitted to the study. These criteria were: low predictable risk, with no history of perinatal mortality or of a low-birthweight infant, no significant medical disease, no pregnancy complications now or in the past, and adequate fetal growth.

The delivery record book, which records general demographic and delivery information, aided in the initial phase of determining risk status. The obviously higher risk women, such as those of less than 36 weeks' gestation, were excluded before the charts were examined. All remaining charts of family physicians' patients were examined by a family physician, who was blind to the purpose and objectives of the study, to further exclude those patients who did not fit the inclusion criteria. Each remaining patient of a family physician was then matched on the basis of age (<20, 20 to 24, 25 to 29, 30 to 34, 35 years or older) and parity (primipara, multipara) to the next eligible patient of an obstetrician. The data were extracted from the charts by one researcher (K.V.).

To avoid the problem of transfer bias in the family physician group, the outcome was attributed to the family physician regardless of any transfer occurring during labor and delivery.

After removing women delivered by the family physician who did not fit the criteria for "low risk," the final sample size of 351 matched pairs was large enough to give a greater than 70% probability of detecting a 5% difference for intervention rates of 10%, with an alpha level of .05. The matched-pair analyses were completed using the Statistical Analysis System[11] and the Epistat microcomputer software package.[12] In view of the multiple comparisons, *P* values <.01 were considered significant.

Table 1. Age and Parity of Study Sample

Age, y	Primiparas, % (n = 160)	Multiparas, % (n = 191)
<20	13.1	1.1
20–24	28.8	12.0
25–29	38.8	42.4
30–34	18.8	31.4
≥35	0.6	13.1

Results

Of the 462 women admitted by family physicians, 351 (76%) fit the criteria for low risk at the time of admission. These were matched as previously described to 351 of the 1708 women admitted to the hospital by obstetricians during the same period.

The age and parity of the women in the study sample are shown in Table 1. There were 160 primiparous pairs, and 191 multiparous pairs.

The demographic characteristics of the women are outlined in Table 2. The mean age for both groups was 27.3 years. At admission, there were no significant differences between the groups in gravidity, gestational age, or diastolic blood pressure. The percentage of patients who were receiving health insurance premium assistance (which we used as an indicator of socioeconomic status) was similar in both groups. The family physicians' patients were admitted to the birthing room more often than the obstetricians' patients.

The rates of labor and delivery procedures are

Table 2. Characteristics of the Low-Risk Pairs of Women Admitted by a Family Physician or Obstetrician

Characteristic	Group: Family Physician (n = 351)	Group: Obstetrician (n = 351)	*P* Value
Mean maternal age, y	27.3	27.3	NS
Mean parity	0.8	0.8	NS
Mean gravidity	2.09	2.11	NS
Mean gestational age, wk	40.0	39.9	NS
Mean diastolic blood pressure on admission, mm Hg	79.3	79.5	NS
Patients receiving premium assistance, %	12.3	15.1	NS
Admitted to birthing room, %	30.5	11.4	<.001*

**Paired t test.*
NS denotes not significant.

Table 3. Labor and Delivery Procedures and Outcomes for Patients Managed by Family Physicians and Obstetricians

	Patients Managed by Family Physicians, % (n = 351)	Patients Managed by Obstetricians, % (n = 351)	*P* Value
Procedures			
Induction	9.4	16.2	.009
Augmentation	12.0	16.0	NS
Artificial rupture of membranes	43.3	53.0	.01
External monitor	74.4	91.1	.001
Scalp electrode	25.6	38.0	.001
Internal uterine pressure catheter	7.7	10.0	NS
Narcotic analgesic	41.6	52.3	.001
Epidural	24.0	30.8	NS
Forceps	9.1	10.8	NS
Episiotomy	51.3	57.8	NS
Outcomes			
Length of second stage			
>60 min	22.5	23.6	NS
<60 min	8.8	12.0	NS
Spontaneous vaginal delivery	87.0	82.6	NS
Cesarean section	4.6	7.9	NS

NS denotes not significant.

shown in Table 3. There were no differences in the rates of enema, intravenous line, or Foley catheter use (not shown). The rates of induction of labor, use of external monitor and internal scalp electrode, administration of narcotic analgesics, and the use of postpartum oxytocin were all significantly lower among family physicians' patients. Artificial rupture of the membranes and use of epidural analgesia by the family practice group had a lower rate, although this was not statistically significant. No significant differences were found between the two groups in the following variables: use of augmentation, internal uterine pressure monitoring, rate of cesarean section, use of forceps, and rate of episiotomy.

The labor and delivery outcomes for the two groups are also given in Table 3. There were no differences between the two groups in the length of second stage, cesarean section rates, or spontaneous vaginal deliveries.

Maternal outcomes are displayed in Table 4. There were no differences in perineal tears between the two groups. For the family practice patients, there was a significantly shorter time from admission to delivery as well as a shorter total stay in the hospital. These women also had a significantly higher rate of enrollment in the Early Obstetrical Discharge Program, which provided home visits by nurses for those women who left the hospital within 72 hours of delivery. The maternal outcome measures that did not differ significantly between the two groups include: intact perineums, postpartum fever, postpartum hemorrhage, urinary tract infection and other postpartum infections, and breast feeding at the time of discharge.

The newborn outcomes are also listed in Table 4. There were no statistically significant differences found between groups.

Discussion

Our study employed a matched-pair design examining only low-risk pregnancies to determine differences in intrapartum obstetrical interventions. The matched-pair design provides a means of improving the power of a study when small numbers are available.

In an editorial on the methodology required for studying intrapartum obstetrics, Morgan[13] raises the issue of generalizability of results taken from an academic setting. Our study, although indeed from an academic setting, offers a method that small nonacademic centers can use to evaluate their own styles of intrapartum management. Even with a small patient population, the matched-pair design is capable of detecting clinically significant differences.

Table 4. Outcome Measures for Mothers and Infants Delivered by Family Physicians and Obstetricians

	Patients Managed by Family Physicians (n = 351)	Patients Managed by Obstetricians (n = 351)	*P* Value
Maternal outcomes			
Length of stay, d	3.7	4.2	.001
Early discharge program, %	9.4	0.6	.001
Perineal tear, %	34.5	23.9	NS
Intact perineum, %	19.1	24.5	NS
Postpartum hemorrhage, %	2.3	6.3	NS
Postpartum fever, %	16.0	14.8	NS
Urinary tract infection, %	4.0	3.7	NS
Other postpartum infection, %	1.4	1.1	NS
Breast-feeding at time of discharge, %	78.4	71.5	NS
Infant outcomes			
Birthweight			
Mean, g	3463	3506	NS
<2500 g, %	2.0	1.1	NS
>4000 g, %	13.4	15.7	NS
Apgar <6 at 5 min, %	<1	1.0	NS
Underwent intubation, %	1.1	2.3	NS
Transferred to NICU, %	11.9	17.7	NS

NS denotes not significant; NICU, neonatal intensive care unit.

The results of the study confirm those of previous research comparing labor and delivery management by family physicians and obstetricians. The two groups had similar rates for most labor and delivery procedures. The significantly lower rates of specific interventions among family physicians' patients have been documented in previous research.[7,8,14,15] No adverse outcomes for either the mother or the newborn were found as a result of this style of care, although the sample size was not large enough to detect differences in uncommon outcomes such as stillbirths.

In this study the two groups of patients all had low obstetrical risk and were matched for parity and age. No differences were found in the matching characteristics, which might have influenced the outcomes. The similarities between the patients of family physicians and those of obstetricians suggest that the two groups were comparable, and that significant differences in the rates of labor and delivery intervention are a result of the styles of obstetrical management.

The family physicians' approach to management of low-risk delivery had some important economic implications. As well as having fewer procedures done, women whose babies were delivered by family physicians spent significantly less time in the hospital both before and after delivery.

The selection of a physician to provide obstetrical care may be affected by the woman's own views on labor and delivery. Motivation regarding natural childbirth and medical intervention may also determine the type of physician chosen. This motivation may differ between the two groups and, although matching was done for age and parity to make the two groups more homogeneous, unknown important differences may still exist. This selection bias may explain the greater use of the birthing room and the lower use of artificial rupture of membranes, external monitors, and scalp electrodes by the family physicians for patients in this study.

Labor was induced significantly more often by obstetricians than by family physicians, even though both groups of patients were at low obstetrical risk. Women who were of more than 42 weeks' gestation and women with diagnosed hypertension and other risk factors were excluded from the study. Of the obstetricians' patients whose labor was induced, 39% of the inductions were performed because the women were "postdate" (their scheduled delivery date had passed), compared with 18% of family physicians' patients whose labor was induced.

In both groups, in many cases the indication for induction was not stated. Family physicians may have a greater tendency to wait until true postdates (after 42 weeks), whereas obstetricians appear to electively induce earlier. Clear criteria for induction were not apparent in either group. Selection bias may also play a role here, in that those women who would choose to delay an induction as long as possible might choose to see family physicians.

A study in which patients are randomly assigned to a family physician or obstetrician would be the ideal way to study the quality of obstetrical care.[10] A study of this type would eliminate physician selection bias; but this will not occur in North America, where women have traditionally had, and continue to want, the freedom to choose their own accoucheur.

A comparison of this study with similar studies by Krikke and Bell[14] and Reid et al[15] highlights both common trends and differences. The induction rate of primiparous women in Kingston who are cared for by family physicians is substantially higher than for similar women in the Toronto or Edmonton studies, yet lower than for the obstetric group in Kingston. In Kingston it is not mandatory to consult an obstetrician for an elective induction, which is in contrast to the other two centers, and this may play a role in the Kingston induction finding. It has also been shown that the family practice group at any center may follow the practice of the obstetricians at that center.[16] All three centers showed a significantly lower rate of induction of multiparous women by family physicians than by obstetricians.

Narcotics use was uncommon and not reported in the Toronto study, which contrasts with the percentage of women receiving these medications in both the Krikke report and this study. Conversely, the Edmonton group did not have epidural analgesia available, whereas the majority of women in the Toronto study received it. Our rate for epidural analgesia was much lower than in the Toronto study for both family practice and obstetric groups. Consequently, our spontaneous vaginal delivery rate was higher among both family physicians' patients and obstetricians' patients than in Toronto. This supports the hypothesis that family physicians are influenced by the obstetrical practices of their particular hospital more than by the guidelines or practices developed in the area of family practice obstetrics.[16] Nevertheless, family physicians as a group provide intrapartum care that demonstrates less intervention in the process of birth.

The Toronto study showed a more successful rate of breast-feeding at discharge than did our study, which is perhaps a reflection of the higher socioeconomic status of their patients.[17,18]

Conclusions

The results of the study confirm the hypothesis that the style of obstetrical management by family physicians is characterized by less intervention during labor. This style of management does not adversely affect maternal and newborn outcomes. Uncommon outcomes such as stillbirth cannot be commented on, given the limits of the sample size.

A future study might examine the degree of importance that the presence of the attending physician at the bedside has in influencing both the number of interventions performed and the woman's pain tolerance. For example, do family physicians spend more or less time with the laboring woman during her labor than do obstetricians? What influence does physician time-in-attendance have on decisions about intrapartum interventions?

The similarities and differences between the styles of practice of physicians at this and two other teaching centers illustrate the ability of this type of study method to be used in comparing centers. The tendency of the family physician to follow the style of management practiced by the obstetricians at his or her center is also demonstrated.

It is hoped that the methodology used as well as the results of this study will encourage physicians who practice at small centers to consider studying their own low-risk obstetric patients, to ascertain their own rates of intervention in comparison with small and large teaching centers. It will only be with the accumulation of data from similar studies done in community nonteaching centers that we will come to know the intrapartum management of low-risk pregnancies across Canada and the United States.

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