

# Vaginal Birth After Cesarean: A 5-Year Experience In A Family Practice Residency Program

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**Background:** The national health objective for the year 2000 is to have an overall Cesarean section rate of 15 percent, a primary Cesarean section rate of 12 percent, and a vaginal birth after Cesarean (VBAC) rate of 35 percent. The current national statistics for the most recent year available, 1991, are 23.5 percent, 17 percent, and 24.2 percent, respectively. This study evaluates a VBAC program at a community-hospital-based family practice residency program.

**Methods:** This study was a retrospective chart review of 996 family practice service deliveries from 1988 to 1992.

**Results:** Of the 98 patients who had a previous Cesarean section, 87 patients (89 percent) were eligible for a trial of labor. Fifty-six patients (64 percent) accepted a trial of labor and 31 patients (36 percent) refused. The overall Cesarean section rate was 15 percent, the primary Cesarean section rate was 11 percent, the VBAC rate was 44 percent, and the successful VBAC rate was 77 percent.

**Conclusion:** We report a successful VBAC program at a community-hospital-based family practice residency program. (J Am Board Fam Pract 1995; 8:357-60.)

Vaginal birth after Cesarean section (VBAC) has been partially implemented nationally in an attempt to thwart the rising Cesarean section rate. Recent statistics reveal that the Cesarean section rate has dropped from a peak of 24.7 percent in 1988 to 23.5 percent in 1991. The national VBAC rate has risen steadily from less than 5 percent in 1980 to 24.2 percent in 1991.<sup>1</sup>

Most VBAC literature consists of reports of studies performed at major university centers.<sup>2</sup> The consistently successful data from these institutions are well known. Less familiar is the experience at community hospitals, particularly the experience of a family practice residency obstetric service. Only one such study in a family practice setting could be located documenting a VBAC rate of 12.3 percent.<sup>3</sup> Our study was undertaken to review a 5-year experience of vaginal birth after Cesarean section in a community-hospital-based family practice residency program.

## Methods

Shadyside Hospital is a 474-bed community hospital located in central Pittsburgh. During the

study period of 1988 to 1992, the family practice residency program contributed 996 of the 2822 deliveries, or 35 percent. Our study was a retrospective analysis in which all residency-associated deliveries were evaluated and the results tabulated. Demographic criteria included were race, age, marital status, and insurance type. The study population consisted of patients who had had two or fewer previous Cesarean sections. Patients with the following criteria were not offered the opportunity to deliver vaginally: previous classical Cesarean section, previous low vertical Cesarean section, breech presentation, twin gestation with nonvertex twin A, active genital herpes infection, and more than two previous Cesarean sections.

The 21 family practice residents at Shadyside Hospital are required to provide longitudinal obstetric care, including delivery, for 20 to 25 patients throughout their 3-year program. The residents divide themselves into groups of 3 so that one member of the group is available for labor and delivery call. Prenatal care is rotated among group members so that the patients are familiar with each member. Residents with a stronger interest in obstetrics are encouraged to care for as many additional patients as their time and interest permit.

The obstetric faculty consists of 1 physician certified both in obstetrics and family practice who serves as the director of the family practice residency obstetrics-gynecology program and 3 additional

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part-time obstetricians. The director oversees the residents as they provide antepartum and intrapartum care. The concept of VBAC is introduced early in prenatal care and promoted repeatedly at each subsequent visit, particularly at the required first and third trimester visits with the director of the program. Eligible patients are educated regarding the risks and benefits of VBAC during these first and third trimester visits. Verification of a low transverse scar from a previous Cesarean section is obtained in all candidates. Those patients who refuse a trial of labor are scheduled for an elective Cesarean section at term or earlier if in labor.

VBAC candidates had electronic fetal monitoring. Oxytocin and epidural analgesia were instituted for usual obstetric indications, but intrauterine pressure catheters were not routinely used. Complications and Apgar scores were recorded. Trained personnel were available to administer anesthesia 24 hours a day.

### Results

The study population consisted of 996 pregnant women, whose ages ranged from 12 to 45 years. Sixty-seven percent of the patients were African American, 62 percent were married, 77 percent were receiving medical assistance, and 56 percent had a high-school education or less.

Of the 996 women, 98 patients had undergone previous Cesarean sections, 4 of whom had more than two previous Cesarean sections. The major reasons for the original Cesarean sections were cephalopelvic disproportion (CPD), 49 percent; fetal distress, 23 percent; breech presentation, 11 percent; active genital herpes infection, 7 percent; and twins, 4 percent (Table 1).

Eleven patients were not eligible for a trial of labor for the following reasons: previous classic Cesarean section, 4 patients (36 percent); more than two previous Cesarean sections, 4 patients (36 percent); breech presentation, 2 patients (18 percent); and active genital herpes infection, 1 patient (9 percent). The number of patients excluded for classic Cesarean section was greater than the number of patients in the original category, because patients who had classic Cesarean sections in later pregnancies were also excluded.

Eighty-seven patients had no exclusion criteria and were therefore candidates for VBAC. Fifty-six patients (64 percent) accepted a trial of labor,

**Table 1. Reason for Original Cesarean Section 1988–1992.**

Reason	Total Cesarean Sections	Percent of Total
CPD	48	49
Fetal distress	23	23
Breech presentation	11	11
Genital herpes infection	7	7
Twins	4	4
Placental abruption	2	2
Classic	1	1
Gastroschisis	1	1
Placenta previa	1	1
	98	

CPD — cephalopelvic disproportion.

and 31 patients (36 percent) refused. Of those patients undergoing a trial of labor, 43 patients (77 percent) were delivered vaginally.

Thirteen of the 56 patients (23 percent) failed the trial of labor. Eleven patients (85 percent) failed because of cephalopelvic disproportion. One patient (8 percent) developed hypotension, and one patient (8 percent) developed fetal distress. The patient who became hypotensive did so following epidural anesthesia. At laparotomy no uterine rupture or dehiscence was found. Nine of the 11 (82 percent) patients who failed VBAC because of cephalopelvic disproportion originally required Cesarean section for the same reason.

Reformulating the data using definitions standardized by the National Center for Health Statistics (Table 2) shows the following (Table 3): overall Cesarean rate 15 percent, primary Cesarean rate 11 percent, repeat Cesarean rate 56 percent, VBAC rate 44 percent, attempted VBAC rate 56 percent, and successful VBAC rate 77 percent.

The successful VBAC rate for nonrecurring conditions (breech position or fetal distress, for example) ranged from 88 to 100 percent, whereas the successful VBAC rate for the recurring condition of cephalopelvic disproportion was 54 percent. Thirty-three percent of those patients giving birth vaginally following an original Cesarean section for cephalopelvic disproportion had infants that weighed an average of 353 g more.

The demographics of the two patient groups—those who accepted a trial of labor and those who

**Table 2. Definitions for Defining Cesarean Section Rates and Rates for Vaginal Birth after Cesarean Section (VBAC).**

Rate	Numerator	Denominator
Cesarean section rate	Total number of Cesarean section deliveries	Total number of deliveries
Primary Cesarean section rate	Number of primary (non-repeat) Cesarean section deliveries	Number of deliveries to women who have never had a Cesarean section
Repeat Cesarean section rate	Number of repeat Cesarean section deliveries	Number of deliveries to women with previous Cesarean section
VBAC rate (= 100 - repeat Cesarean section rate)	Number of vaginal deliveries after Cesarean section	Number of deliveries to women with previous Cesarean section
Attempted VBAC rate	Number of patients with attempted VBAC	Number of patients with previous Cesarean section
Successful VBAC rate	Number of patients with successful VBAC	Number of attempted VBACs

refused, were assessed. The variables compared were age, race, marital status, education, and insurance type; there were no statistical differences noted. There was a trend, however, toward refusal of VBAC and young age, single marital status, a high-school education or less, and receiving medical assistance.

Twenty patients had had two previous Cesarean sections. Of the 16 patients who were offered a trial of labor, only 2 patients accepted. Both patients had successful vaginal births.

Apgar scores for the failed VBAC group, the successful VBAC group, and the refusal of VBAC group were all comparable.

Oxytocin was used 38 percent of the time in trial-of-labor patients. Success and failure rates were similar in each group,  $P=0.806$ , indicating that the dysfunctional labor pattern had been overcome by the use of oxytocin. No problems were noted from oxytocin use.

Epidural anesthesia was used in 4 patients, 2 of whom gave birth vaginally. Oxytocin and epidural anesthesia were used in 1 of the patients who failed the trial of labor.

**Discussion**

It is well established in the medical literature that VBAC is a safe and highly successful intervention. In fact, the promotion of VBAC is an integral part of the national health objective for the year 2000: a Cesarean section rate of 15 percent, a primary

Cesarean section rate of 12 percent, and a VBAC rate of 35 percent.<sup>1</sup>

Data from Blue Cross of Western Pennsylvania (communication from Clifford R. Waldman, MD, and Dorothy Holt, 27 September 1993, Blue Cross of Western Pennsylvania) on Blue Cross patients show a decline in the overall Cesarean rate from 25 percent in 1990 to 23 percent in 1992, a decline in the primary Cesarean rate from 18 percent in 1990 to 16 percent in 1992, and a rise in the VBAC rate from 19 percent in 1990 to 25 percent in 1992. Shadyside Hospital is one of the community hospitals in western Pennsylvania that is contributing favorably to this trend.

A recent review by Pridjian<sup>2</sup> indicates that a trial of labor after a Cesarean section for a non-recurrent indication has a success rate of 88 percent. A trial of labor for a recurrent indication has a 60 to 70 percent chance of success. The studies cited in this review consisted of reports from major university centers throughout the country. Women whose Cesarean sections were performed for a recurrent indication were less likely to succeed in their VBAC attempts than were women whose Cesarean section was performed for a non-recurrent indication. We report a successful VBAC rate of 54 percent for the recurring condition of cephalopelvic disproportion. Past reviews have reported VBAC rates of 33 percent<sup>4</sup> to 66 percent<sup>5</sup> when the previous Cesarean section was performed for a recurrent indication.

A recent prospective study<sup>6</sup> enrolled 131 eligible patients with a previous Cesarean section

**Table 3. Vaginal Birth after Cesarean Section (VBAC), Results from 1988-1992.**

Rates	Percent	Ratio
Cesarean section	15	152/995
Primary Cesarean section	11	97/898
Repeat Cesarean section	56	55/98
VBAC	44	43/98
Attempted VBAC	57	56/98
Successful VBAC	77	43/56

for cephalopelvic disproportion or failure to progress. Eighty-nine patients (68 percent) gave birth vaginally. When the delivered infant weighed 200 g more than the previous infant, VBAC was successful 13 percent of the time. Our experience is that VBAC was successful 33 percent of the time when the second infant's weight exceeded that of the first infant. Rosen and Dickinson<sup>7</sup> cited four additional studies reporting larger birth weights in infants born to women with cephalopelvic disproportion during a previous delivery. The VBAC rates ranged from 31 to 67 percent. Thus, a previous Cesarean section for cephalopelvic disproportion or for failure to progress still warrants a trial of labor even if the second infant's estimated weight exceeds that of the first infant.

Twenty patients in our study had had two Cesarean sections. Two patients underwent a trial of labor and both were successful. Because of the small number of our patients accepting VBAC, no conclusion can be drawn; however, the medical literature<sup>8,9</sup> does support VBAC after two Cesarean sections and its likely success.

Thirty-one of our eligible patients refused VBAC despite intensive counseling. Goldman, et al.<sup>10</sup> undertook a case-control study at a Quebec hospital in which they performed a multiple stepwise regression analysis for factors positively associated with VBAC. The following variables were associated with a higher VBAC rate: the physician's Cesarean rate was less than 40 percent, a patient with a "high" degree of schooling (criteria not clearly indicated), and the physician's age was less than 54 years. Our obstetric faculty met the first and third parameters. The educational issues could be addressed further, reading-level-appropriate handouts and videos could be developed, and peer support groups of women who had undergone VBAC, successful and unsuccessful, could be implemented.

Much misinformation is present in the community. Forty percent of VBAC candidates refused trial of labor at a Queens, New York, hospital.<sup>11</sup> The reasons cited were a painful memory of the previous labor, concerns regarding fetal well-being, and the possibility of future genital dysfunction. We did not elicit specific reasons for

VBAC refusal in our study. Collection of this information would help to develop specific educational materials and approaches. If we had convinced these 31 patients to undergo VBAC and assuming a 77 percent success rate, our statistics could have been a VBAC rate of 68 percent, a repeat Cesarean section rate of 32 percent, and an overall Cesarean section rate of 13 percent. These are worthwhile goals for our next 5-year report.

### Conclusion

Presented here are results from a retrospective review of VBAC deliveries in a community hospital setting within a family practice residency program. VBAC is safe, successful, economical,<sup>1</sup> and appropriate to this setting.

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