

# Maternal Birthing Positions and Perineal Injury

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*A study to evaluate the relationship between maternal birthing position and perineal outcome was undertaken on 335 patients in a rural family physician's practice whose babies were delivered vaginally between December 1980 and December 1988. The most common birthing position used by the women was the semi-sitting position in the birthing bed (44%, n = 146). Ninety-four women (28%) gave birth from the conventional lithotomy position, 80 (24%) used the birthing chair, and less than 5% used a side-lying position.*

*Almost 30% of the women gave birth with intact perineum; the incidence of episiotomy was 44%. The use of a particular position for delivery varied with parity, and multiparous women used the semi-sitting position in the birthing bed more frequently than did primiparous women. There was no statistically significant relationship between birthing position and perineal outcome for primiparous women. A statistically significant relationship between delivery position and perineal outcome was found for multiparous women. Multiparous women using the birthing bed were more likely to have less perineal trauma than women giving birth on the delivery table. J FAM*

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Traditionally, physicians and patients in the United States have accepted perineal injury, including episiotomy, as a standard outcome of vaginal delivery. The procedure to widen the perineum or the opening to the birth canal surgically during labor and delivery, technically described as a perineotomy but commonly called an episiotomy, has become a routine procedure. Increasingly, however, the public as well as practitioners are questioning the high incidence of perineal injury and the routine use of episiotomy.

The incidence of perineal injury, including episiotomy, in the United States is well documented. A standard American obstetric text<sup>1</sup> that recommends "an episiotomy be performed in every vaginal birth" also reports that "except for cutting the umbilical cord, episiotomy is the most common operation in obstetrics." In a comprehensive review of the literature, Banta and Thacker<sup>2</sup> estimated that 62.5% of all vaginal deliveries in the United States included episiotomy and that as many as 80% to 90% of all primigravidas received episiotomies. These findings were recently confirmed in a study of university

hospital patients,<sup>3</sup> which found that in the mid-1980s, 82% of all women delivering vaginally received episiotomies.

Concerns about safety, prevention of infection, and pain relief have guided physician delivery techniques, including the use of episiotomy. Episiotomy is believed to benefit both the mother and baby by shortening the second stage of labor, lessening trauma to the baby, reducing the likelihood of a third-degree tear, reducing the likelihood of long-term pelvic relaxation, and reducing the likelihood of postpartum hemorrhage.<sup>4,5</sup> Current literature provides few data to support the reasons given for its routine use, however.<sup>2</sup> In fact, it has been estimated that episiotomy is needed in no more than one in every five spontaneous occiput anterior vaginal births.<sup>6</sup>

In part because of the high rates of episiotomy and perineal lacerations associated with delivery in the conventional dorsal lithotomy position, alternative birthing positions are now being used. In particular, the birthing bed and birthing chair are used to provide the mother alternatives to the delivery table for the second stage of labor and delivery. These alternative delivery methods are believed to lessen the incidence of perineal trauma.

A number of recent studies have examined factors associated with maternal perineal outcome including age, parity, length of second stage, analgesia use, and infant weight.<sup>3-5,7,8</sup> Recent studies have also focused on various delivery methods associated with maternal birthing posi-

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tions as alternatives to the conventional delivery table and the lithotomy position.<sup>9-12</sup> A few studies have assessed the role of maternal birthing position as a factor in perineal outcome.<sup>8,10,11,13</sup> Some of the studies that looked at the association between maternal birthing position (excluding the semi-sitting position in a birthing chair) and perineal outcome focused on nurse midwifery clients or home birth clients. The results of these studies are not conclusive and may not be generalizable to other women. Studies comparing the outcome of primiparous women who give birth in the birthing chair with those who give birth on the delivery table have not produced conclusive results, either. One study reported fewer episiotomies in primigravidas using the chair<sup>10</sup>; another found a higher incidence of episiotomies and lacerations for the primiparas giving birth in the birthing chair than those giving birth on the delivery table.<sup>11</sup>

There are no reports of the incidence of perineal injury related to delivery methods and associated maternal birthing positions in an unselected population giving birth at a community hospital. The purpose of the study reported here was to examine the association between maternal birthing position in the second stage of labor and perineal outcome in the population of a family physician's practice.

## METHODS

This study was a retrospective descriptive analysis of the perineal outcome of 335 patients in a rural group family physicians' practice who gave birth vaginally between December 1980 and December 1988.

As part of their prenatal care, women were invited to attend childbirth education classes provided by the childbirth educator, physicians in the group practice, and the hospital. During the classes the physicians and the childbirth educator discussed birthing positions and perineal injury and showed a film illustrating different birthing positions. Couples were told that it was the policy of the physicians not to perform routine episiotomies. Where an episiotomy was indicated, the physician would make the decision at the final moments of birth. As part of the childbirth education classes, couples also toured the maternity unit at the 75-bed community hospital and saw the labor room, the birthing room equipped with a Borg-Warner birthing bed and a Century birthing chair, and an obstetric suite equipped with a Champagne tilt obstetric table.

At the time of delivery, each woman selected the method and birthing position she would use. In some instances the woman's choice of delivery table, birthing bed, or birthing chair was not available, and she had to use

an alternative method and the related birthing position. In cases of complications requiring forceps delivery, fetal distress, or nonprogression in the maternal position selected by the mother, the nurse or physician recommended an alternative method and maternal position for delivery.

Data were collected from labor and delivery summaries completed by the obstetric nurses and birth reports completed by the physicians. These reports included data on maternal birthing position, perineal outcome, complications during delivery (shoulder dystocia, breech position, and so on) and reasons for episiotomy, if performed.

Perineal outcome was recorded as one of four mutually exclusive outcomes: intact perineum, second-degree laceration needing repair, episiotomy, and third-degree perineal injury and episiotomy extension. Parity was treated as a dichotomous nominal variable, and analyses were conducted on primiparous and multiparous women. Maternal position was treated as a nominal variable. The maternal birthing positions were defined according to the following methods of delivery:

*Delivery table:* Lithotomy or dorsal recumbent position in which the woman's head and neck were slightly elevated and her legs were positioned in stirrups.

*Birthing bed:* Semi-sitting or Fowler's position; a few women assumed a lateral or side-lying position while using the birthing bed.

*Birthing chair:* Sitting position in the birthing chair for the second stage of labor and delivery.

Data were analyzed by primiparous or multiparous status, birthing position, and perineal outcome. Chi-square tests of independence were used to examine the association among factors, and a *P* value < .05 was considered statistically significant. In cases where cells had fewer than five counts, appropriate cells were combined.

## RESULTS

### Description of Sample

The women studied were patients in a rural family physician group practice located in a northwestern Wisconsin community of 9600. The practice includes three family physicians and a childbirth educator. The patients were generally healthy and their mean age was 24.5 years. During the study 466 babies were born to patients in this practice. This study examined the outcomes of the 335 patients (71.9%) who gave birth vaginally during the study in the 75-bed medical center. Excluded from this analysis were women whose babies were delivered by cesarean section (*n* = 102, 21.9%) and those who gave birth in other facilities, including at home (*n* = 29, 6.2%). There were no fetal deaths during the study. Of the 335 women who gave



TABLE 1. FREQUENCY OF MATERNAL BIRTHING POSITIONS (N = 335)

Delivery Method and Maternal Position	Primigravida No.(%)	Multigravida No.(%)	Total No.(%)
Birthing bed			
Semi-sit	40(35.4)	106(47.8)	146(43.6)
Lateral	9(8.0)	6(2.7)	15(4.5)
Birthing chair			
Sitting	30(26.5)	50(22.5)	80(23.9)
Delivery table			
Lithotomy	34(30.0)	60(27.0)	94(28.1)
Total	113(100.0)	222(100.0)	335(100.0)

$\chi^2 = 8.009, df = 3, P > .05.$

birth vaginally, 113 were primiparas and 222 were multiparas. A majority (66%) of the women whose babies were delivered vaginally attended a series of childbirth education classes as part of their prenatal care.

**Maternal Birthing Positions**

The most common birthing position used by the women in this study was the semi-sitting or Fowler position in the birthing bed (43.6%, n = 146). Ninety-four women (28%) gave birth on the delivery table from the lithotomy or recumbent position with legs in stirrups. Eighty women (23.9%) used the birthing chair and gave birth while in a sitting position. The lateral or side-lying position on the birthing bed was assumed by 15 women (4.5%). The use of a particular position for delivery varied with parity ( $\chi^2 = 8.009, df = 3, P < .05$ ). Multiparous women used the semi-sitting position in the birthing bed proportionately more frequently than did the primiparous women. Primiparous women were more likely to use the lateral, sitting, or lithotomy positions on the bed, chair, and table, respectively (Table 1).

**Perineal Outcome**

Almost 30% (n = 99) of the women in this study gave birth with an intact perineum. The incidence of episiotomy for the sample of women was 44% (n = 148). Slightly less than 17% (n = 56) of the 335 women had second-degree lacerations that needed repair, and 32 women (9.5%) experienced third-degree perineal injuries.

A chi-square test of independence was performed to determine whether a relationship existed between maternal position and perineal outcome. These data indicate that there is a relationship between maternal position and perineal outcome ( $\chi^2 = 31.93, df = 6, P < .05$ ). Women giving birth in the birthing bed were more likely to have an intact perineum and less likely to have an episiotomy. Conversely, women being delivered in the lithotomy position on the delivery table were more likely to have an episiotomy or third-degree perineal injury (Table 2).

These data show a statistically significant relationship between parity and outcome ( $\chi^2 = 43.34, df = 3, P < .05$ ) and confirm similar results of other studies. As a result of this finding, the relationship between position and perineal outcome was reevaluated while controlling for parity.

TABLE 2. MATERNAL BIRTHING POSITIONS AND PERINEAL OUTCOME (N = 335)

Perineal Outcome	Birthing Bed No.(%)	Birthing Chair No.(%)	Delivery Table No.(%)	Total No.(%)
Intact perineum	63(39.1)	23(28.7)	13(13.8)	99(29.6)
Second-degree laceration needing repair	34(21.1)	11(13.8)	11(11.7)	56(16.7)
Episiotomy	56(34.8)	36(45.0)	56(59.6)	148(44.2)
Third-degree perineal injury	8(5.0)	10(12.5)	14(14.9)	32(9.5)
Total	161(100.0)	80(100.0)	94(100.0)	335(100.0)

$\chi^2 = 31.93, df = 6, P < .05.$   
*Semi-sit and side-lying positions (birthing bed) combined for chi-square analysis.*



TABLE 3. MATERNAL BIRTHING POSITION AND PERINEAL OUTCOME FOR MULTIPAROUS WOMEN (N = 222)

Perineal Outcome	Birthing Bed No.(%)	Birthing Chair No.(%)	Delivery Table No.(%)	Total No.(%)
Intact perineum	53(47.3)	20(40.0)	9(15.0)	82(36.9)
Second-degree laceration needing repair	28(25.0)	10(20.0)	10(16.7)	48(21.6)
Episiotomy	27(24.1)	19(38.0)	34(56.7)	80(36.0)
Third-degree perineal injury	4(3.6)	1(2.0)	7(11.7)	12(5.4)
Total	112(100.0)	50(100.0)	60(100.0)	222(100.0)

$\chi^2 = 30.231$ ,  $df = 6$ ,  $P < .05$ .  
Semi-sit and side-lying positions (birthing bed) combined for chi-square analysis.

There was no statistically significant relationship between birthing position and perineal outcome for primiparous women. The incidence of episiotomy for the 113 primipara women was 68 (60%). Seventeen primiparous women (15%) gave birth with intact perineum, and 8 (7%) experienced second-degree lacerations needing repair. Twenty women (17.7%) experienced third-degree perineal injuries, an outcome that was more common when an episiotomy was performed.

In contrast, a chi-square test of independence for multiparous women yielded significant results when examining maternal birthing position and perineal outcome ( $\chi^2 = 30.2$ ,  $df = 6$ ,  $P < .05$ ). Use of the birthing bed is associated with intact perineum, whereas use of the delivery table is associated with increased numbers of episiotomies and third-degree perineal injuries (Table 3).

## DISCUSSION

The association between maternal birthing position and perineal outcome in an unselected rural population served by a group practice of family physicians was studied. Almost three fourths of the women in the study opted to use one of four alternatives to the conventional dorsal lithotomy position for delivery. The most common birthing position used by women in this study was the semi-sitting position in a birthing bed (44%).

Perineal trauma was a common outcome of the birth experience for these women. Episiotomy was the most common type of perineal injury, even for patients of physicians who did not routinely perform the procedure. Almost 30% of the women gave birth with an intact perineum (36.9% for multiparous women, 15% for primiparous women), yet the overall episiotomy rate was 44% (36% for multiparous women; 60% for primiparous women). These episiotomy rates are higher than those reported for nurse midwifery clients<sup>8</sup> yet considerably lower than

the rates of 60% to 80% commonly found in the United States.<sup>2</sup>

Parity had an important effect on perineal outcome. For multiparous women there is a strong association between delivery position and perineal outcome, a finding that contrasts with results of a study by Roberts and Kriz.<sup>13</sup> Multiparous women using the birthing bed have had fewer perineal injuries than women giving birth in the conventional lithotomy position on the delivery table. More research is needed to document this relationship with other women.

This study evaluated only two factors associated with perineal outcome—maternal birthing position and parity. There are other factors related to perineal outcome that should be examined in an unselected population that gives birth in community hospitals. Additional research is also needed to identify the important factors in a woman's choice of delivery method and position.

Much work remains to be done with regard to better understanding the relationship between maternal birthing position and perineal outcome. The study reported here provides part of the foundation on which to build knowledge of these issues in an unselected rural population. As this research continues, physicians must continue their efforts to reduce perineal injury, including episiotomy, regardless of maternal birthing position.

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