Research Summaries for Normal Birth

Amy M. Romano, MSN, CNM

ABSTRACT

In this column, the author summarizes four research studies relevant to normal birth. The studies summarized include a systematic review of trials evaluating the benefits versus harms of routine artificial rupture of the membranes; a study of the effect of continuous female labor support by a minimally trained family member or friend on attachment and early parenting; a systematic review examining the relationship between cesarean surgery and postpartum urinary incontinence; and a randomized controlled trial of warm perineal compresses during the second stage of labor.

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UPDATED COCHRANE REVIEW FINDS ARTIFICIALLY RUPTURING MEMBRANES FAILS TO SPEED LABOR PROGRESS, MAY BE HARMFUL

- Smyth, R., Alldred, S., & Markham, C. (2007). Amniotomy for shortening spontaneous labour. *Cochrane Database of Systematic Reviews*, 3(4), CD006167.

Summary

In this systematic review, researchers evaluated the effects of amniotomy (artificial rupture of the membranes) on labor progress and other outcomes in spontaneous labors. Following the usual methodology of Cochrane systematic reviews, the reviewers systematically searched the literature, identified all randomized, controlled trials that compared amniotomy with preservation of membranes until

spontaneous rupture, and applied predetermined criteria to decide which studies to include. When possible, the reviewers pooled the data from multiple trials to increase the statistical power to detect differences across groups.

Fourteen trials involving 4,893 women were included. No statistically significant differences were found in length of the first stage of labor in nulliparous women (those giving birth for the first time) or multiparous women (those having given birth previously). Pooled data analysis revealed a statistically significant 6-minute difference in the mean length of the second stage of labor in nulliparous women favoring amniotomy, a finding that has no clinical significance (based on data from six trials involving 496 women). No difference was found in second-stage duration among multiparous women (three trials, 386 women). Women in the amniotomy group were less likely to be diagnosed with dysfunctional labor (two trials, 1,005 women),

but not less likely to have a cesarean section. In fact, women who had amniotomies were 26% more likely to give birth by cesarean surgery, although this finding fell just short of achieving statistical significance (four trials, 4,370 women). No differences were found in the need for artificial oxytocin to speed up labor, the need for pharmacological pain relief, or other maternal or neonatal outcomes. However, even after pooling data from multiple trials, the studies were not large enough to detect differences in rare adverse outcomes such as umbilical cord prolapse, severe morbidity, or mortality.

The reviewers comment on several methodological weaknesses of the body of scientific literature on amniotomy, including a high degree of crossover between treatment groups. In eight of the nine trials that reported on crossover, more than 30% of women randomly allocated to the “conserve membranes” group ultimately had amniotomies. This problem is common in obstetric research and acts to decrease differences between groups. Had there been less crossover, it is possible that the findings would have demonstrated a statistically significant difference in labor length favoring amniotomy. It is likely, though, that the excess rate of cesarean surgeries in the amniotomy group would also have reached significance. The reviewers also note that the available literature offers too little data to determine whether the timing of membrane rupture or other contextual or clinical factors moderate the effect of amniotomy on labor progress. Based on research to date, the reviewers recommend against routine amniotomy and advise that women be told what the evidence reveals.

Significance for Normal Birth

Without amniotomy, more than two thirds of women reach full dilation before spontaneous membrane rupture. Intact membranes offer several advantages: The bag of waters provides a protective cushion around the baby, preventing compression of the baby and its umbilical cord and preventing entry of infective organisms. The forewaters, a pocket of fluid between the mother’s cervix and the baby’s presenting part, may also allow the baby to rotate more freely, potentially allowing easier correction of an occiput posterior (or “OP”) baby. Nevertheless, nearly 60% of laboring women in the *Listening to Mothers II* survey underwent artificial rupture of the membranes in labor (Declercq, Sakala, Corry, & Applebaum, 2006). The most common rationale for amniotomy is

that it will speed up labor, which, in turn, will reduce cesareans for poor progress and fetal distress arising from overly long labors. This, as research shows, it fails to do.

The failure to find a significant difference in labor duration with amniotomy may be an artifact of methodological weaknesses in the included trials. Nevertheless, shorter labor only benefits mothers and babies if it prevents poor outcomes or reduces the need for cesarean surgery or other potentially harmful or uncomfortable interventions, and routine amniotomy provides none of these clinically important advantages. On the contrary, the findings of the systematic review raise the strong possibility that amniotomy increases the use of cesarean surgery. The Cochrane reviewers recommend further research to explore the relationship between amniotomy and clinically meaningful outcomes, as well as women’s satisfaction. In the meantime, women must be made aware that amniotomy offers no important benefits and may do harm.

CONTINUOUS LABOR SUPPORT FROM A TRAINED FAMILY MEMBER SHOWS PROFOUND EFFECT ON ATTACHMENT AND EARLY PARENTING IN UNDERSERVED MOTHERS

- Campbell, D., Scott, K. D., Klaus, M. K., & Falk, M. (2007). Female relatives or friends trained as labor doulas: Outcomes at 6 to 8 weeks postpartum. *Birth* (34)3, 220–227.

Summary

This is a secondary analysis of a randomized controlled trial in which researchers evaluate the effect of continuous support from a minimally trained female friend or family member on the outcomes of laboring women. The investigators theorized that providing a brief doula training program to the friend or family member would enhance the effect of the continuous support. The trial thus compared the outcomes of women whose labor support companions had undergone such training with those of similar women whose labor companions had not had any special training. Those assigned to

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the doula care group identified one female friend or relative to provide continuous labor support and, together with her chosen companion, attended a 4-hour training course taught by a DONA-certified doula. Topics included an overview of childbirth; how to assess labor progress; coping strategies and comfort measures for labor; and supportive techniques such as praise, reassurance, and anticipatory guidance. All participants in both groups were low-risk, low-income women giving birth for the first time at a tertiary-care hospital in New Jersey.

The original trial found beneficial effects of the doula training on obstetric outcomes and was summarized in a previously published “Research Summaries for Normal Birth” column (see Romano, 2007, pp. 39–40). In this secondary analysis, researchers conducted telephone interviews with the participants 6 to 8 weeks after birth to evaluate the effect of doula training and subsequent labor support on maternal perceptions of the infant, self, and support from others. Of the 598 women recruited for the original trial, 494 completed the postpartum interviews.

Compared with women who were accompanied by companions who had not undergone doula training, women allocated to the doula group were more likely to describe labor as “very easy,” to report that labor was “much better” than they imagined, that they coped with labor “very easily,” and that their birth experience was “very good.” They were also more likely to describe their baby as “very easy” and to believe that their baby cried less often than other babies. They were more likely to pick up their baby when the infant cried and to report that they were able to sense their baby’s needs “very well.” Regarding their own postpartum experience, they were more likely to say that the transition to motherhood had been “very easy” and to report that they had received support from others in the previous week. Women assigned to the doula group also scored more favorably on measures of self-worth, including sense of self as a woman, sense of their body’s physical strength, and ability to be a good mother. Finally,

women in the doula care group were more likely to be satisfied with the medical center where they gave birth.

Significance for Normal Birth

A large and growing body of literature provides evidence of the beneficial effects of continuous support by a trained or experienced woman on labor and birth outcomes. This study adds considerable weight to the smaller body of literature on postpartum and parenting outcomes. The breadth and magnitude of the differences across groups suggests that good labor support can change the woman’s perception of herself and her infant, an effect that can translate into more confident and effective parenting and enhanced attachment. The fact that these outcomes were observed in a population of underserved, publicly insured women gives this trial considerable public health significance.

This study’s results suggest that beneficial effects arose, at least in part, from the training itself, a finding that is relevant to childbirth educators. The training exposed both women and their chosen female companions to messages about the normalcy and transformative significance of labor and birth and provided them an opportunity to practice comfort measures and other skills. Childbirth educators may consider offering classes that expectant women can take with a female relative or friend, with the intention for the female companion to provide continuous support in labor.

SYSTEMATIC REVIEW FINDS CESAREAN SECTION DOES NOT PREVENT SEVERE URINARY INCONTINENCE

- Press, J. Z., Klein, M. C., Kaczorowski, J., Liston, R. M., & von Dadelszen, P. (2007). Does cesarean section reduce postpartum urinary incontinence? A systematic review. *Birth*, 34(3), 228–237.

Summary

In this systematic review, researchers explored the relationship between mode of birth and postpartum urinary incontinence (UI). Reviewers identified all published studies that reported the frequency of postpartum UI symptoms by mode of birth and included studies that provided follow-up for at least 3 months postpartum. Data were pooled for meta-analysis, and the researchers calculated the number of cesarean surgeries that would need to be performed

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to prevent one case of UI (“number needed to prevent”). Each analysis was performed twice: first with data from cohort studies (studies that begin with the birth and follow participants forward in time to see who develops UI) and again with data from cross-sectional studies (studies that begin with women who have UI and evaluate what risk factors they have in common such as birth route). Separate analyses were performed for each type of incontinence (stress, urge, mixed, or unspecified) as well as for the occurrence of severe symptoms, defined as symptoms that occurred without strenuous activity or that required wearing a pad. Last, the reviewers separately analyzed whether parity (prior births or not) or timing of cesarean section (before or during labor) modified the effect of mode of birth on incontinence.

The findings revealed that 10–15 cesarean surgeries would need to be performed to prevent one case of any degree of stress UI. However, 110 cesareans would have to be performed to prevent a single case of *severe* stress UI, and cesarean section offered no protection against severe stress UI persisting beyond 1 year. Regarding urge incontinence, cesarean surgery again offered some protection against experiencing *any* symptoms, but it had no effect on *severe* symptoms or symptoms lasting beyond 1 year. Interestingly, the investigators did not find a consistent protective effect of *elective* cesarean surgery. In fact, although data were limited, in general there was weak or no association with incontinence when elective cesarean sections were compared with births occurring vaginally or by cesarean section in labor. Pooled analysis of three studies reported that eight medically elective cesarean surgeries were needed to prevent one case of stress UI of any degree.

The authors note that the results of their review remain essentially unchanged even after excluding instrumental births from the vaginal birth groups. However, they also caution that the included studies provide little information about their management of vaginal birth; thus, it is impossible to know for certain if modifiable labor management practices such as episiotomy, direct pushing, or epidural use contributed to postpartum incontinence in the study participants. The reviewers conclude that “the urinary incontinence benefits after cesarean section that we report are relatively small, and these differences are likely subject to considerable narrowing through attention to improving the management of vaginal birth” (p. 235).

Significance for Normal Birth

One of the benefits claimed for cesarean surgery in general and planned cesarean surgery in particular is that it prevents pelvic floor dysfunction after birth. This review provides evidence that these benefits are limited and that cesarean section does nothing to prevent urinary incontinence severe enough to affect quality of life. Every cesarean surgery carries with it risks for the mother, the baby, and future infants. Those who claim that these potential harms are counterbalanced by significant benefits to the pelvic floor mislead both clinicians and the public.

Although this review provides the best evidence to date about the association between mode of birth and UI, not one study compares *physiologically managed* vaginal birth with cesarean surgery. Previous research has demonstrated that common or routine conventional management practices are associated with more pelvic floor problems in the weeks and months after birth. These include episiotomy, directed pushing, instrumental vaginal birth, and birth in the lithotomy or other supine positions. Continuous electronic fetal monitoring and epidural analgesia also increase risk because they increase the likelihood of instrumental vaginal birth and episiotomy. Concern for the pelvic floor should begin, therefore, with promoting care practices that support normal birth, not cesarean surgery.

Read about the evidence for the six care practices that support normal birth at www.lamaze.org.

WARM PERINEAL COMPRESSES DURING SECOND STAGE ASSOCIATED WITH LESS PAIN AND FEWER SEVERE TEARS

- Dahlen, H. G., Homer, C. S. E., Cooke, M., Upton, A. M., Nunn, R., & Brodrick, B. (2007). Perineal outcomes and maternal comfort related to the application of perineal warm packs in the second stage of labor: A randomized controlled trial. *Birth*, 34(4), 282–290.

Summary

In this randomized controlled trial, Australian researchers evaluated the effects of a warm perineal compress during second stage on the perineal outcomes of nulliparous women. Seven hundred seventeen women planning to give birth vaginally at two hospitals were randomly allocated to have warm compresses (360) or to the control group (357). In the warm compress group, the attending midwife saturated a sterile perineal pad with tap

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water heated to 38° to 44°C (100° to 111°F) and held the pad against the woman's perineum continuously from when it began to be distended by the baby's head until birth. The compresses were reheated as needed throughout second stage. No information was provided about the perineal management in the control group except that warm compresses were not used. All births were attended by midwives, nonsupine positions were common in both groups, epidural use was infrequent, and the standard practice was to let the epidural wear off in second stage. Researchers evaluated the frequency of lacerations requiring sutures, depth of laceration, and the women's reports of pain during the birth and at 1 and 2 days postpartum. Researchers also followed up at 1 and 3 months to assess the frequency of ongoing problems such as incontinence, persistent pain, and sexual problems as well as breastfeeding status. For the primary trial outcome—need for sutures—an independent midwife who was blind to the assignment of the study participant determined whether suturing was necessary, and the researchers made statistical adjustments to control for duration of second stage, analgesia, position for birth, mode of birth, and infant birth weight.

Use of a warm pack failed to decrease the likelihood of a laceration requiring sutures, which occurred in about 80% of women in both groups. However, women in the standard care group were more than twice as likely to have an anal tear (8.7% vs. 4.2%) and also were much more likely to report that pain while giving birth was either “bad pain” (31% vs. 25%) or “the worst pain in my life” (51% vs. 34%). Women in the warm compress group also reported significantly less perineal pain on Day 1 and Day 2 postpartum. In addition, the warm compress group was less likely to report urinary incontinence at 3 months postpartum (9.7% vs. 22.4%). No other differences were found in outcomes at 1 or 3 months postpartum.

Significance for Normal Birth

Vaginal birth without analgesia or anesthesia contributes to optimal health outcomes for mothers and babies. However, vaginal and perineal stretching that occurs as the baby is born can be extremely

painful, and genital tract trauma is common, especially in nulliparous women. When this trauma extends into the anal sphincter, the woman is at risk for long-term morbidity, including urinary and anal incontinence of gas or, less commonly, stool, and ongoing pain. Strategies to alleviate pain in second stage and after birth and to reduce the likelihood and severity of lacerations are needed.

This trial provides evidence that a warm compress in labor may decrease the likelihood of anal sphincter tears and significantly reduce pain both at the time of birth and in the postpartum period. However, rates of sutured trauma and severe trauma were high in both arms of this trial, even considering that the analysis was limited to nulliparous women and included many women of Asian origin, both of which increase the likelihood of trauma. The researchers did provide data on the use of episiotomy and instrumental vaginal birth, which are both modifiable factors that increase genital tract trauma and associated long-term sequelae. In both cases, the rates were considerably lower than those reported in the *Listening to Mothers II* survey (Declercq et al., 2006). However, it is possible that other aspects of second-stage management or other factors that researchers did not measure may have contributed to excess genital tract trauma. An earlier study revealed that uncoached pushing and birthing the baby's head between, rather than with, contractions reduce the need for and severity of sutured trauma (Albers, Sedler, Bedrick, Teaf, & Peralta, 2006). Taken together, these studies suggest that physiologic management of second stage with nonpharmacologic pain management during crowning of the fetal head are acceptable to women and optimize perineal outcomes.

REFERENCES

- Albers, L. A., Sedler, K. D., Bedrick, E. J., Teaf, D., & Peralta, P. (2006). Factors related to genital tract trauma in normal spontaneous vaginal births. *Birth*, 33(2), 94–100.
- Declercq, E., Sakala, C., Corry, M. P., & Applebaum, S. (2006). *Listening to mothers II: Report of the second national U.S. survey of women's childbearing experiences*. New York: Childbirth Connection.
- Romano, A. M. (2007). Research summaries for normal birth. *Journal of Perinatal Education*, 16(1), 37–40.

AMY ROMANO is a midwife, author, and advocate for mother-friendly maternity care. She has provided research and advocacy support to the Lamaze Institute for Normal Birth since 2004 and now works as a home- and hospital-based midwife in Connecticut.