Research Summaries for Normal Birth

Amy M. Romano, MSN, CNM

ABSTRACT

In this column, the author summarizes four research studies that further support the benefits of normal birth. The topics of the studies include the optimality of midwifery care for pregnant women at moderate risk; obstetric care practices associated with anal sphincter tears in vaginal births; the effect of acupuncture treatment on women with prelabor rupture of membranes at term; and women's ability to adapt to early labor.

Journal of Perinatal Education, 16(2), 47–50, doi: 10.1624/105812407X191506

Keywords: midwifery care, anal sphincter tears, acupuncture, early labor, normal birth, childbirth education

PILOT STUDY SUGGESTS MIDWIFERY CARE IS OPTIMAL FOR MODERATE-RISK WOMEN

- Cragin, L., & Kennedy, H. P. (2006). Linking obstetric and midwifery practice with optimal outcomes. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 35(6), 779–785.

Summary

This prospective cohort study compared the pregnancy, birth, and postpartum care practices and outcomes experienced by 196 women receiving nurse midwifery care with those of 179 women receiving physician care in the same hospital-based faculty practice. Women were at moderate risk, defined as having three or more medical or psychosocial risk factors for poor perinatal outcome. Each woman was assigned an “Optimality Index” score, calculated from 40 variables measuring optimal health

status, care practices, and outcomes. A companion “Perinatal Background Index” (PBI) score that captured demographic and health history was also assigned. Together, the two scores provide a valid measure of the process and outcomes of care within the context of the clinical situation of the individual woman. Data from women transferred from midwifery to physician care during labor were analyzed with their original group.

Women in the midwife group had significantly higher optimality scores than women in the physician group (79% vs. 70%, $p < .001$). Although some of this difference was attributable to differences in baseline medical risks (as measured by significant differences in PBI score), statistical analysis revealed that the provider type (i.e., midwife or physician) was twice as predictive of optimality scores. The cesarean-section rate was 13% among women in the midwife group versus 34% in the physician group, a difference that also was not explained by health status alone. (The rates were 5.6% and 15.6%,

Sign up to receive e-mail alerts of research summaries for normal birth by clicking on the Lamaze Institute for Normal Birth link at Lamaze International's Web site (www.lamaze.org).

respectively, after excluding women with preexisting chronic medical conditions.) In various statistical analyses, only type of provider accurately predicted cesarean rates in the two groups.

Compared to women in the physician group, women in the midwife group were more likely to drink or eat (95% vs. 80%); maintain mobility in labor (68% vs. 28%); and use nonpharmacologic methods of pain relief (88% vs. 51%). Epidural use was lower in the midwife group than in the physician group (31% vs. 51%), as was use of any pharmacologic pain-relief methods (64% vs. 82%).

Significance for Normal Birth

Traditional measures of maternity care outcomes have focused on morbidity and mortality indicators. This approach has several drawbacks. In the United States, morbidity and mortality are fortunately rare; thus, studies assessing these outcomes must be large in order to demonstrate significant differences. Furthermore, these “negative” indicators are poor measures of the effectiveness of care that is intended to promote “positive” outcomes, such as health and wellness, in populations experiencing a physiologically normal process. The Optimality Index-US has emerged as an important new tool for measuring maternity care to capture both the process and outcomes of different styles of practice.

In this and other studies, midwifery care has been associated with high optimality, demonstrating appropriate use of interventions and good outcomes given the individual women’s clinical situations. Midwives are often assumed to care for only low-risk women, but many midwives also care for women at moderate or high risk. This study finds that midwifery may be optimal for a moderate-risk population by promoting good outcomes with less reliance on technological and surgical intervention and greater attention to the care practices that support normal birth.

ANAL SPHINCTER TEARS HIGHLY ASSOCIATED WITH OBSTETRIC MANAGEMENT PRACTICES IN VAGINAL BIRTH

- Fitzgerald, M. P., Weber, A. M., Howden, N., Cundiff, G. W., & Brown, M. B. (2007). Risk factors for anal sphincter tear during vaginal delivery. *Obstetrics & Gynecology*, 109(1), 29–34.

Summary

In this retrospective cohort study, researchers sought to identify modifiable risk factors for anal sphincter (third- or fourth-degree perineal) tears during vaginal birth. The researchers compared 407 primiparous women who gave birth vaginally and sustained anal sphincter tears with 390 women who gave birth vaginally without sustaining identifiable damage to the anal sphincter. The researchers measured the effect of six modifiable factors (forceps, vacuum, episiotomy, prolonged second-stage labor, fetal occiput posterior position during crowning, and epidural) on anal sphincter damage. They then developed statistical models to evaluate the effects of different combinations of factors.

After adjusting for maternal age, race, and gestational age, all six modifiable factors were significantly associated with anal sphincter tears: forceps (odds ratio [OR] 13.6, confidence interval [CI] = 7.9–23.2); vacuum (OR 6.3, CI = 4.0–10.1); episiotomy (OR 5.3, CI = 3.8–7.6); second stage longer than 2 hours (OR 5.6, CI = 3.6–8.6); occiput posterior position (OR 7.0, CI = 3.8–12.6); and epidural (OR 3.2, CI = 1.6–6.2). Combining modifiable factors yielded very high odds ratios for anal sphincter damage. For instance, having a forceps-assisted birth resulted in 13.6 times the likelihood of anal sphincter tear, and an episiotomy was associated with 5.3 times the risk; however, women who experienced both an episiotomy and a forceps-assisted birth had 25.3 times the risk of anal sphincter tear (CI = 10.2–62.6). The highest risk for anal sphincter tear was found among women who experienced an epidural, forceps, and episiotomy (OR 41.0, CI = 13.5–124.4). The only combination that did not appreciably increase risk was vacuum extraction with a baby in the occiput posterior position.

Significance for Normal Birth

Third- and fourth-degree anal tears are highly associated with pain and incontinence in the postpartum period and contribute to long-term pelvic floor dysfunction. Unfortunately, this argument has fueled the debate about the rights of women to choose medically unnecessary cesarean surgeries rather than prompting examination of the obstetric management practices that contribute to excess risk of anal sphincter damage in vaginal births. This study provides evidence of a strong link between modifiable obstetric practices such as episiotomy, epidural use, and instrumental vaginal birth and anal sphincter

Learn more about the Optimality Index-US from the American College of Nurse-Midwives (www.acnm.org/about.cfm?id=255).

tears. This study also reinforces that, when instrumental vaginal birth becomes necessary, episiotomy should be avoided and vacuum extraction is less likely to injure the anal sphincter than forceps birth.

Although some instances will always occur when these interventions are necessary for fetal or maternal well-being, their overuse contributes to excess maternal morbidity with long-term consequences. Care practices such as avoiding routine interventions, promoting comfort in labor through mobility and nonpharmacologic techniques, and encouraging physiologic, spontaneous pushing in nonsupine positions (none of which were assessed in this study) minimize the risk of severe lacerations both directly in the case of spontaneous nonsupine pushing and indirectly, by reducing the need for epidural, promoting optimal positioning of the fetus, and reducing forceps and vacuum use.

ACUPUNCTURE AFTER “PROM” AT TERM SHORTENS LABOR AND REDUCES USE OF OXYTOCIN

- Gaudernack, L. C., Forbord, S., & Hole, E. (2006). Acupuncture administered after spontaneous rupture of membranes at term significantly reduces the length of birth and use of oxytocin. A randomized controlled trial. *Acta Obstetrica et Gynecologica*, 85(11), 1348–1353.

Summary

The aim of this Norwegian clinical trial was to determine whether acupuncture treatment affected the course of labor or need for artificial induction or augmentation in women with prelabor rupture of membranes (PROM) at term. Women who had confirmed PROM and were carrying singleton babies in the head-down position were randomized to receive acupuncture ($n = 48$) or no acupuncture ($n = 52$). Midwives provided a 20-minute acupuncture treatment that stimulated nine different points. Pharmacologic induction was initiated in both groups if labor had not started by 24 hours after membrane rupture.

The active phase of labor was significantly shorter in the acupuncture group (4.4 hours vs. 6.1 hours, $p = .027$), a relationship that became even stronger after controlling for parity, epidural use, and infant birth weight. When the analysis was limited to women who underwent induction, active phase of

labor was twice as long in women who did not receive acupuncture compared with those who did. Acupuncture was also associated with less use of oxytocin for augmentation of labor. There were nonsignificant differences in instrumental vaginal birth, rate of induction, and time from rupture of membrane to birth, which all favored acupuncture. There were no adverse fetal, neonatal, or maternal effects of acupuncture treatment.

Significance for Normal Birth

Although the majority of women will go into labor on their own after membranes rupture at term, many providers encourage pharmacologic induction out of concern about infection. Minimal evidence suggests that a policy of routine induction for PROM prevents infection, and several studies report an increase in cesarean rates with induction for PROM versus expectant management. Furthermore, pharmacologic induction always requires other interventions such as intravenous lines, electronic fetal monitoring, and restrictions on mobility in labor, transforming a normal birth into a medicalized one and introducing potentially unnecessary risks. Low-risk techniques to encourage labor to start may be beneficial in preventing complications of both prolonged membrane rupture and aggressive induction protocols.

This small but well-designed study suggests that acupuncture treatment influences labor initiation and progress in women with PROM. A larger trial may be able to confirm an effect on mode of birth, rates of induction, and likelihood of infection. However, in the meantime, the fact that acupuncture has not been shown to be harmful to birthing women or their newborns suggests that it is an optimal first-line approach when the option of encouraging labor to start is desirable.

GAP BETWEEN EXPECTATIONS AND EXPERIENCE MAY AFFECT WOMEN'S ABILITY TO ADAPT TO EARLY LABOR

- Beebe, K. R., & Humphreys, J. (2006). Expectations, perceptions, and management of labor in

Low-risk techniques to encourage labor to start may be beneficial in preventing complications of both prolonged membrane rupture and aggressive induction protocols.

Advising women to stay home until active labor is well established may contribute to anxiety and confusion if they are not equipped with appropriate information, support, and anticipatory guidance.

nulliparas prior to hospitalization. *Journal of Midwifery and Women's Health*, 51(5), 347–353.

Summary

In this ethnographic analysis of women's experiences in early labor, researchers interviewed 23 women who had recently given birth for the first time about their labor experiences and management strategies used prior to hospitalization. Qualitative data from the 60- to 90-minute semistructured interviews were analyzed to identify central and supporting themes of the women's responses. Participants were primarily Caucasian and well educated, and all of them were partnered and had attended childbirth preparation classes.

"Confronting the relative incongruence between expectations and actual experiences" (p. 348) emerged as the central theme. The women tended to have defined expectations of the performance aspects (i.e., what to do) in early labor but were more uncertain about what labor would feel like. This disconnect meant that women had to readjust and reappraise their expectations as early labor set in. They tended to overlook or downplay symptoms of labor onset or to attribute them to other causes such as bladder infection, gastrointestinal upset, or "overdoing it." Women used a combination of learned strategies, suggestions from others, and intuition to manage the physical and emotional demands of labor, using techniques that were often at odds with their original plans for early labor. The strategies used were varied and tended to address many different needs, including promoting comfort, preparing for hospitalization, and garnering support and reassurance. Husbands, family members, friends, and doulas played important roles in supporting the women as they made decisions about their labors and managed the sensations they were experiencing. However, when more than one person provided early labor support, unanticipated conflicts among the support companions and the need to negotiate and collaborate were frequently reported. The women

reported ambivalence and uncertainty about the need for and timing of hospitalization, and several of the participants reported anxiety about the possibility of going in too soon and being sent home.

The authors conclude that "reappraisal and modifications of expectations and planned activities are additional tasks in the early labor experience for first-time mothers" (p. 352). They also caution that

the notion that early labor is a light-hearted precursor to the 'real' work of active labor and delivery negates the complexities of the mind-body recognition of and adaptation to the birthing process. The fact that this crucial undertaking begins outside of the hospital setting should not minimize its significance within the continuum of childbirth. (p. 352).

Significance for Normal Birth

For women who choose hospital birth, mounting evidence suggests that their likelihood of achieving vaginal birth is strongly influenced by how long they stay home. However, simply advising women to stay home until active labor is well established may contribute to anxiety and confusion if they are not equipped with appropriate information, support, and anticipatory guidance. This small study suggests that women spend energy and time in early labor sorting out their expectations, devising new plans, managing mixed emotions, and second-guessing decisions. Providing women with strategies to anticipate and deal with gaps between expectations and experiences may help them adapt better to early labor and have confidence in their management strategies. Reassessing how childbirth educators teach women to self-diagnose labor—or introducing models that include home visitation or outpatient early-labor assessment and support, as proposed by the study authors—may help women who choose hospital birth to optimize the timing of hospitalization to achieve normal births.

AMY ROMANO is a certified nurse-midwife and author. She is also the Perinatal Research and Advocacy Coordinator for the Lamaze Institute for Normal Birth (www.lamaze.org).