ARE ROUTINE INTERVENTIONS NECESSARY IN NORMAL BIRTH?

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SUMMARY

Routine interventions during labor and birth, such as perineal shaving and enemas before vaginal delivery, continuous intrapartum electronic fetal monitoring (EFM), and episiotomy are prevalent in Taiwan, but they may not always be necessary. Numerous studies investigating these interventions have failed to find absolute benefits for women with uncomplicated and low-risk pregnancies. No evidence-based benefits support routine perineal shaving or enemas during labor for reducing the risk of perineal wound infection or neonatal infection. The use of EFM is associated with an increased rate of operative interventions (vacuum, forceps, cesarean delivery) but does not result in a significant decrease in the incidence of perinatal death or cerebral palsy. Routine episiotomy does not have demonstrable advantages over restrictive episiotomy in the frequency or severity of perineal damage or pelvic relaxation. [Taiwanese J Obstet Gynecol 2006;45(4):302–306]

Key Words: electronic fetal monitoring, enema, episiotomy, perineal shaving

Introduction

Over the last 30 years, management of childbirth has undergone significant changes. One trend is toward more natural childbirth, emphasizing the human emotional aspects of labor and delivery and seeing the mother as an active participant in the birth process rather than a baby-producing machine [1]. While maintaining a priority on the health of the mother and baby, this approach aims to reduce unnecessary medical intervention in uncomplicated, low-risk deliveries, preserve and respect the rights of mothers to make choices in the process, and reduce the cost of maternity care.

As part of this trend toward minimizing interventions, routine procedures originally introduced because they were thought to protect the mother and infant have been reexamined. These include perineal shaving and enemas before vaginal delivery, continuous intrapartum electronic fetal monitoring (EFM), and episiotomy. We reviewed studies that investigated the value of these procedures in normal birth. A normal birth was defined as spontaneous delivery in a woman considered to be at low risk of complications prior to and throughout labor and delivery of an infant born in the vertex position between 37 and 42 completed weeks of pregnancy [2].

Perineal Shaving

Perineal shaving during labor is very common. It has been presumed to decrease the risk of infection and to facilitate perineal suturing [3,4]. However, no evidence-based data support these concepts. Women often consider the procedure to be embarrassing and painful, and they may also suffer discomfort and itching when the pubic hair regrows. Another suggested disadvantage is the potential for increased risk to the health care provider or to the woman of HIV and hepatitis infections through cuts or abrasions induced by shaving [2]. A Cochrane review in 2001 of two trials that included 539 women found no difference between shaving and not shaving in the incidence of maternal
fever (odds ratio, OR, 1.26; 95% confidence interval, CI, 0.75–2.12) [5]. In one of the trials, women who had not been shaved had a lower incidence of perineal colonization with Gram-negative bacteria (OR, 0.43; 95% CI, 0.20–0.92). The investigators concluded that there is insufficient evidence to recommend routine perineal shaving for women in labor. A randomized controlled trial in 2005 compared maternal and neonatal outcomes in 231 women who underwent perineal shaving with outcomes in 227 women in whom the perineal hair was merely cut [6]. No statistically significant differences were noted between the two groups for perineal wound infection and dehiscence, neonatal infection, or puerperal infection. In conclusion, no obvious benefits have been demonstrated for routine perineal shaving during labor.

Enema

The decision as to whether or not to administer an enema during labor is usually made by the health professional who will deliver the baby. Enemas are widely given because they are believed to reduce the risk of puerperal and neonatal infections. Other hypothetical advantages include stimulation of uterine contractions and facilitation of descent of the fetal head because of an empty bowel [2]. However, no experimental evidence supports these hypotheses, and the procedure usually generates maternal discomfort, increases the workload of health workers attending to the woman during labor, and increases the cost of care. Romney et al studied 274 pregnant women admitted for delivery of singleton infants; 149 were given an enema and 125 were not [7]. They found no significant difference between the two groups in the degree of fecal contamination during the first and second stages of labor or the duration of labor. Rutgers investigated the effects of soap enemas on the progress of labor in 160 women in Africa [8]. Forty women received an enema and 120 did not; it was found that there was no significant difference in the rate of cervical dilatation (2.19 cm/hour in the non-enema group and 2.00 cm/hour in the enema group, p = 0.58). The conclusion was that there was no benefit from routine enemas in labor.

A Cochrane review in 2000 of two randomized trials that included 665 women in whom enemas were administered in the first stage of labor found no difference in the incidence of infection in the mothers or neonates [9]. Tzeng et al randomly gave enemas to 264 women and withheld them in 270 [10]. They compared the neonatal infection rate, time to appearance of the fetal head, time to first bowel movement after delivery, and rate of episiotomy dehiscence between the two groups, and found no significant differences in any of the outcome measures [10]. These results were essentially identical in another randomized trial of 372 women [11]. There is no evidence to support the routine use of enemas during labor.

Continuous Intrapartum EFM

Before EFM became available in 1968, assessment of the fetal heartbeat in utero was performed by intermittent auscultation using a monaural stethoscope or a simple hand-held ultrasound Doppler detector [12]. The American College of Obstetricians and Gynecologists suggested that auscultation be performed for 60 seconds soon after a uterine contraction, every 15 minutes in the first stage, and every 5 minutes in the second stage of labor [13]. However, this recommendation was based on consensus rather than experimental data. EFM has the advantage of continuous tracking of the fetal heartbeat, including the ability to evaluate the fetal response to uterine contractions so that fetal distress can be detected immediately. EFM can be accomplished either externally using the ultrasound Doppler principle or by an internal bipolar spiral electrode attached to the fetal scalp. While the latter yields more precise monitoring, the scalp electrode can only be placed after the membranes have ruptured. Early large retrospective studies suggested that EFM was associated with lower neonatal mortality and better neurologic outcomes than was intermittent monitoring [14,15]. However, prospective controlled studies have failed to find improved perinatal outcomes. In fact, EFM is associated with a small but significant increase in the incidence of cesarean delivery [16].

Vintzileos et al carried out a meta-analysis of nine randomized trials that included a total of 18,561 pregnant women (9,398 with EFM and 9,163 with intermittent auscultation). The women who were monitored electronically had a significantly higher cesarean delivery rate (OR, 1.53; 95% CI, 1.17–2.01), a higher cesarean rate for fetal distress (OR, 2.55; 95% CI, 1.81–3.53), increased use of forceps or vacuum delivery (OR, 1.23; 95% CI, 1.02–1.49), and increased use of forceps or vacuum for fetal distress (OR, 2.50; 95% CI, 1.97–3.18) [17]. EFM did not reduce overall perinatal mortality (OR, 0.87; 95% CI, 0.57–1.33). It was associated with a decrease in perinatal mortality due to fetal hypoxia (OR, 0.41; 95% CI, 0.17–0.98), but the absolute number of deaths due to fetal hypoxia was small (7 out of 9,398 in the EFM group and 17 out of 9,163 in the
intermittent auscultation group), making a firm conclusion questionable [18].

A Cochrane review of nine trials in 2001 included 18,561 pregnant women and 18,695 infants. Routine EFM was associated with a significant decrease in the incidence of neonatal seizures (relative risk, RR, 0.51; 95% CI, 0.32–0.82) but an increase in cesarean deliveries (RR, 1.41; 95% CI, 1.23–1.61) and operative vaginal deliveries (RR, 1.20; 95% CI, 1.11–1.30) [19]. No significant differences were observed in 1-minute Apgar scores below four or seven, the rate of neonatal intensive care unit admission, perinatal deaths, or cerebral palsy. In this review, the only significant benefit from continuous intrapartum EFM was, thus, the reduction of neonatal seizures. However, long-term neurologic outcome did not differ between EFM and intermittent monitoring by auscultation.

The National Institutes of Health Consensus Development Conference of 1979 recommended that EFM should be strongly considered in high-risk pregnancies (premature, postmature or babies with restricted intrauterine growth; women with medical complications of pregnancy; presence of meconium in the amniotic fluid; abnormal fetal heart rate detected by auscultation). Periodic auscultation was considered to be an acceptable alternative in women at low risk for fetal distress [20]. This recommendation was still supported by the World Health Organization in 1996 [2]. In 1989, the American College of Obstetricians and Gynecologists recommended either EFM or intermittent auscultation as alternatives in low-risk pregnancies [21]. Interestingly, in 2005, the College’s Practice Bulletin noted that EFM is associated with an increased rate of operative interventions (vacuum, forceps, cesarean delivery) without reducing the incidence of cerebral palsy [18]. The Royal College of Obstetricians and Gynaecologists in 2001 recommended continuous intrapartum EFM in high-risk pregnancies where there is an increased risk of perinatal death, cerebral palsy, or neonatal encephalopathy, as well as when oxytocin is used for induction or augmentation of labor [22].

EFM has good sensitivity but poor specificity for detecting fetal distress, having a high false-positive rate in predicting adverse neonatal outcomes. Other tests for intrapartum fetal surveillance (such as fetal scalp blood sampling, fetal pulse oximetry, fetal electrocardiogram waveform analysis, and measurement of the fetal blood lactate level) are available, each with its own strengths and shortcomings [23–25]. Fetal scalp blood sampling and measurement of lactate levels yield only intermittent information about the fetal condition, and it requires ruptured membranes. Electrocardiogram waveform analysis, while a continuous monitoring method, also requires ruptured membranes. Fetal pulse oximetry provides a continuous assessment of fetal oxygen saturation and can be used through intact membranes [26]. However, EFM of the heart rate remains the primary method of intrapartum fetal assessment, with intermittent auscultation used in some centers for low-risk patients [27].

### Episiotomy

Before the 20th century, most births were carried out at home by midwives, and perineal wounds were frequently not sutured. The first mention of an incision in the perineum to facilitate a difficult delivery was attributed to a midwife in Dublin in 1742 [28]. In 1799, Michaelis first described the midline perineal incision, while Dubois recommended the mediolateral episiotomy in 1847 [29]. In America, episiotomy is usually performed in the midline, whereas, the mediolateral incision is more commonly performed in Europe. Midline (or median) episiotomy is less painful, easier to repair, has less blood loss, and less postpartum dyspareunia, while mediolateral episiotomy is associated with low risk of extension to the anal sphincter (third-degree laceration) or rectal mucosa (fourth-degree laceration) [30,31]. In the last two decades of the 20th century in the United States, episiotomy was performed in 30–65% of vaginal births, with a higher incidence of 50–90% in primiparous vaginal deliveries [29,30,32,33]. The incidence, however, consistently declined over that 20-year period [30,33].

There is no reliable evidence for maternal benefits from routine episiotomy. Thacker and Banta reviewed the literature from 1860 to 1980, noting that episiotomy decreased the incidence of anterior perineal laceration; there was, however, no associated reduction in late outcomes, including pelvic relaxation, urinary stress incontinence, or anal incontinence [29]. Episiotomy had no significant effect on the incidence of fetal asphyxia, cerebral hemorrhage, cerebral palsy, or mental retardation. The incidence of spontaneous third-degree lacerations in women without an episiotomy ranged from 0% to 6.4%, compared with 0–23.9% in women with an episiotomy, particularly those with midline incision. They concluded that there is no clear evidence to support the routine use of episiotomy. A subsequent review by Woolley in 1995 showed similar results. While episiotomy may prevent anterior perineal laceration, it is not associated with a decrease in perineal damage, pelvic floor relaxation, or either intracranial hemorrhage or intrapartum asphyxia in the newborn [32]. In fact, episiotomy increased the
amount of maternal blood loss, the average depth of posterior perineal injury, the risk of anal sphincter damage and improper perineal wound healing, and puerperal pain. Midline episiotomy was associated with a higher rate of perineal tear and mediolateral episiotomy with postpartum pain and dyspareunia.

Bansal et al retrospectively reviewed the data from 17,483 consecutive spontaneous deliveries between 1976 and 1994 and compared the yearly rates of episiotomy and lacerations [34]. The episiotomy rate fell significantly from 86.8% to 10.4% ($p = 0.0001$), while the incidence of third- or fourth-degree perineal lacerations also dropped significantly, from 9.0% to 4.2% ($p = 0.0001$), with a corresponding increase in the incidence of intact perine (10.3% to 26.5%, $p = 0.0001$). Fewer episiotomies therefore resulted in reduced perineal trauma, the only exception being in primiparous women with macrosomic infants. Labrecque et al carried out a retrospective cohort study of 6,522 primiparous women between 1985 and 1993 [35]. Median episiotomy was performed in 4,390 (67.3%), of whom 1,002 (15.4%) had severe lacerations. The frequency of severe perineal lacerations was 20.6% with episiotomy and 4.5% without episiotomy (RR, 4.58; 95% CI, 3.74–5.62). In a literature review, Myers-Helfgott and Helfgott confirmed the increased risk of third-degree and fourth-degree lacerations associated with median episiotomy [36]. Repair under those circumstances was more difficult, and the outcome in terms of pelvic floor relaxation, blood loss, immediate postpartum pain, and dyspareunia were not any better in women who underwent episiotomy. There were also no significant benefits for the neonates in terms of the length of the second stage of labor, Apgar scores, or the incidence of perinatal asphyxia.

Angioli et al retrospectively studied 50,210 women who delivered between 1989 and 1995; they found that episiotomy, especially midline, was an independent risk factor for severe lacerations, as were nulliparity, older maternal age, heavier birth weight, and assisted vaginal delivery [37]. They advised against midline episiotomy, particularly in older mothers and especially in the presence of a large fetus. A Cochrane review of six randomized trials in 2000 that involved 4,850 women concluded that episiotomy (either midline or mediolateral) used only for specific indications was better than routine episiotomy, decreasing the incidence of posterior perineal trauma (RR, 0.88; 95% CI, 0.84–0.92), sutures needed (RR, 0.74; 95% CI, 0.71–0.77), and healing complications (RR, 0.69; 95% CI, 0.56–0.85). While anterior perineal trauma was more common with restrictive episiotomy (RR, 1.79; 95% CI, 1.55–2.07), there was no difference in severe vaginal or perineal trauma (RR, 1.11; 95% CI, 0.83–1.50), dyspareunia (RR, 1.02; 95% CI, 0.90–1.16), or urinary incontinence (RR, 0.98; 95% CI, 0.79–1.20) [38].

Hartmann et al reviewed 26 randomized controlled trials of episiotomy that assessed outcome in the first 3 postpartum months or long-term [39]. They identified fair to good evidence that immediate outcomes (such as severity of perineal laceration, pain, and pain medication use) and long-term sequelae (including fecal and urinary incontinence, pelvic floor function, and sexual function) were no better with routine episiotomy. There was no evidence to suggest that episiotomy reduced the incidence of sexual dysfunction. Episiotomy was associated with a higher incidence of dyspareunia in the months after pregnancy. The accumulated evidence is inadequate to decide between midline or mediolateral episiotomy. However, the American College of Obstetricians and Gynecologists 2006 Practice Bulletin recommended restricted rather than routine episiotomy and concluded that a median incision is associated with higher rates of anal sphincter and rectal injury than a mediolateral episiotomy [40].

Conclusion

The interventions during labor and birth reviewed here were initially proposed because, in theory, they appeared to benefit both mother and child; in fact, some retrospective epidemiologic evidence would seem to support this. However, as is often the case in medicine, well-planned prospective trials have not confirmed the hypothetical benefits. Available data are insufficient to recommend routine perineal shaving, enemas, continuous intrapartum EFM, and episiotomy during childbirth in low-risk, uncomplicated deliveries. It seems unlikely that the benefits of these routine interventions are great enough to outweigh the inconvenience or adverse effects. The challenge is to change the longstanding habits of using routine procedures that are not supported by good evidence. Management of labor and delivery should be individualized for each woman and infant.

References


11. Cuervo LG, Bernal MD, Mendoza N. Effects of high volume saline enema vs. no enemas during labour—the NMA Randomised Controlled Trial [ISRCTN 43153145]. BMC Pregnancy Childbirth 2006;6:8.


