



Fighting VBAC-Lash: Critiquing Current Research

By Lisa Houchins

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White Papers

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by Jill MacCorkle

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The July 5, 2001, issue of the New England Journal of Medicine contained a study by Mona Lydon-Rochelle et al.¹ and an accompanying editorial by Michael F. Greene, MD,² which together generated much media attention and discussion of the risks of vaginal birth after cesarean (VBAC). Although the study actually contains little new or groundbreaking information and relies on questionable data collection, news media—and even some physicians—are claiming that it indicates a greater risk for uterine rupture than previous research has shown. Headlines across the nation have suggested that research now supports repeat cesarean section over VBAC, and a growing number of physicians have opined that cesarean section is as safe or safer than vaginal birth.

But take a closer look: what physicians are inadvertently admitting is that their overuse of medical intervention in childbirth has succeeded in making the average vaginal birth as risky as major surgery. A careful critique exposes the limitations of both the study and the current medical model of childbirth, raising the question of whether that model still holds any credibility for pregnant women.



Study Results

The study used Washington State birth certificate data in combination with hospital discharge data from the years 1987 to 1996 to examine the incidence of uterine rupture in four groups of women: those who had an elective repeat cesarean section (ERCS) without labor (n=6,980), those who attempted VBAC with spontaneous onset of labor (n=10,789), those who had labor induced by non-prostaglandin methods (n=1,960), and those whose labor induction included prostaglandins (n=366). The uterine rupture rate for women having a scheduled elective repeat cesarean was 0.16 percent, or 11/6,980. For women with spontaneous onset of labor (SOOL), the rate was 0.54 percent (56/10,789); with non-prostaglandin induction, the rate was 0.77 percent (15/1,960); and for women with induction which involved prostaglandins, the rate was 2.45 percent (9/366).

None of these rates is significantly different from those found in previous studies. In fact, the rate of rupture among women having a trial of labor was lower than many recent studies have suggested. The rate for all women attempting VBAC was 0.6 percent, which falls on the low end of the 0.2 to 1.5 percent range cited by the American College of Obstetricians and Gynecologists (ACOG) in a review of the literature for their VBAC practice guidelines.³ Rates of 0.5 to 1.0 percent have been used in the past as evidence for the relative safety of VBAC; those who are using those same rates now to suggest that VBAC is too risky are engaging in an egregious display of statistical sleight of hand for the purpose of limiting women's access to VBAC. The motivations behind this movement are discussed in the conclusions of this article.

It is certainly not newsworthy to find that elective repeat cesarean does not completely protect a woman from the risk of rupture. It is the prior cesarean, not VBAC, that exposes mother and baby to the risk of uterine rupture. A prior cesarean scar also predisposes the mother and baby to other obstetrical complications that are rarely seen in women with intact uteri. Physicians know well that cesareans cast a long shadow over the rest of a woman's reproductive life, one that can affect both her and her unborn children's health and safety. Yet the cesarean rate reached 22.9 percent in 2000, an 11 percent increase over the previous four years and the highest rate reported since 1989.⁴ Clearly, physicians are not doing enough to reduce the number of unnecessary cesareans (conservatively estimated at 50 percent of all cesareans, or approximately 500,000 per year).⁵ Therefore, they must bear the responsibility for the complications that their often cavalier use of surgical intervention continues to cause; proposing further surgery as a solution will only compound the problem.



The most notable finding of the New England Journal of Medicine study—and one that has barely made a ripple in the news media—is the dramatic increase in risk of rupture seen with induction of labor that includes the use of prostaglandins. Although previous studies have linked powerful synthetic

hormones used to induce labor with an increased risk of rupture, this study attempted to isolate the use of prostaglandins as a distinctly separate risk factor and expressed it in terms of relative risk with respect to elective repeat cesarean. The rate of rupture among women induced with prostaglandins was 15 times higher than that of women who did not labor at all. When compared to the risk of rupture for women who entered labor spontaneously, the rupture rate with prostaglandin induction was nearly five times higher. This should give caregivers and expectant women pause before they consider induction of labor after a previous surgical delivery, which is alarmingly common today.

Uterine rupture is a serious, life-threatening complication for both mother and baby. As Michael F. Greene observed in his editorial, Lydon-Rochelle et al. found that when uterine rupture occurred the odds of the baby dying were 5.5 percent. The odds of a baby dying in the absence of uterine rupture were 0.5 percent. Greene states that this is a tenfold increase in the risk of fetal death, which although statistically valid is a gross misrepresentation. Of the 91 total ruptures recorded in the study, there were five fetal deaths. (The authors did not indicate in which of the study groups these deaths were found because the sample was too small to draw any valid conclusions.) Those five deaths represent a 5.5 percent fetal mortality rate in the subset of women who had a uterine rupture (n=91). Note that the data did not allow the researchers to conclude that the ruptures necessarily caused the deaths, merely that they were associated with rupture. In the non-uterine rupture group (n=20,004) there were 100 fetal deaths, for a fetal mortality rate of 0.5 percent. Although that can be expressed as a tenfold increase in the death rate for uterine rupture versus non-uterine rupture, to do so is to compare apples to oranges. The real question for a woman contemplating VBAC is, "What are the odds that my baby might die if I attempt VBAC?" When looked at from this perspective, the risk of fetal death among the 13,115 women attempting VBAC was 0.038 percent (5/13,115). Thus the risk of a baby dying in association with VBAC was 12 times lower than the risk of a baby dying from non-rupture-related causes. No amount of medical intervention can reduce the fetal mortality rate to zero; death will always be a part of birth. Using the very rare risk of fetal death to convince more women to undergo unnecessary surgery still cannot guarantee the parents a live baby.

Limitations and Shortcomings of the Study



As is often the case, this study raises many more questions than it answers. Due to the limitations of the data-gathering methods, the researchers were unable to determine the incidence and possible effects of other obstetric interventions within the study groups. It is reasonable to assume that a significant number of women who entered labor spontaneously had their labors augmented with Pitocin (oxytocin), yet this potentially confounding data point could not be examined. At least one study has found an increase in rupture risk among women who received oxytocin augmentation.⁶

Although the difference did not approach statistical significance, the authors of that study recommend proceeding with caution when augmenting a VBAC labor. To date, no study of significant size has isolated the rupture risk for women who enter labor spontaneously and labor progressively without oxytocin or other obstetric intervention. This is a serious failure on the part of researchers to determine the "true" risk of rupture after previous cesarean and is perhaps the question Lydon-Rochelle et al. should have considered.

Another limitation in the study methodology involves the codes used to determine the incidence of uterine rupture. According to the authors, "Uterine rupture was considered to have occurred if ICD-9-CM diagnosis code 665.0 or 665.1 was recorded on the hospital-discharge form." The reliability of this method is suspect in light of other findings about the use of ICD-9-CM codes. DeJoy et al. cautioned against the use of data dependent on ICD-9-CM codes for estimating uterine rupture after their review of five years of data in Massachusetts found that "approximately 50 percent of the ICD-9-CM codes that were assigned represent cases of any degree of uterine rupture or preoperative dehiscence of uterine wounds."⁷ A dehiscence, or partial separation or thinning of the uterine scar, does not carry the same risk to mother or baby as the much rarer complete rupture.

The possible inclusion of dehiscences in the rupture rates could have seriously impacted the findings of this study. The authors state that because the hospital discharge data demonstrated significant levels of negative sequelae for women coded under the two ICD-9-CM codes, it could be reliably assumed that the coded ruptures were not benign. While this may be a somewhat effective means of controlling for miscoded diagnoses, it may also be the case that the serious complications were caused by emergency cesarean or other operative events, rather than rupture. There is no way to determine this without a chart review, which is sorely lacking; reviewing the small number of charts (91) purported to involve uterine rupture would have answered the question of whether the data are reliable.

The Massachusetts statewide examination of the validity and reliability of ICD-9-CM codes, published in the March 31, 2000, Morbidity and Mortality Weekly Report, concluded that the results of that investigation "indicate that ICD-9-CM codes related to uterine rupture, designed before increased concern about uterine rupture, lack adequate specificity for uterine rupture surveillance and have not been applied consistently over time."⁸ Again, comparison with hospital records found that only 50.7 percent of cases of uterine rupture coded under ICD-9-CM 665.0 and 665.1 were confirmed as actual ruptures. Additionally, the Massachusetts study included the use of a code not used by the Washington State researchers—674.1, "disruption of cesarean wound," including "dehiscence or disruption of uterine wound." Yet 28.6 percent of the 674.1 coded cases were determined to actually



be true uterine ruptures. Assuming a similar incidence of error in the Washington State data, Lydon-Rochelle et al. would have missed a large number of ruptures incorrectly coded under 674.1, which they did not include in their study. This would mean that uterine rupture was potentially underreported in their findings. Although the findings of the Massachusetts study cannot be automatically assumed to apply to Washington State data, its conclusions certainly must be considered in determining whether to allow these findings to influence clinical practice or specific recommendations about VBAC. The Massachusetts study also notes that the codes 665.0 ("rupture of uterus before onset of labor") and 665.1 ("rupture of uterus during labor," including "rupture of uterus not otherwise specified") are contained within the larger three-digit category of code 665, "other obstetrical trauma," that also includes "damage from instruments." In addition, the ICD-9-CM index directs coders to use 665.1 for "laceration of the uterus, obstetrical trauma not elsewhere classifiable (NEC)," a frequent incidental complication that occurs during delivery of the fetus through the uterine incision. Thus, a percentage of the cases coded with 665.1 might have represented not incidences of uterine rupture during labor but accidental overextension of the uterine incision during cesarean section or other damage resulting from the surgery itself.

One other limitation of this study warrants discussion. The sole birth setting examined by the researchers was that of the hospital environment. Data on homebirths after cesarean were not included in this study; in fact, homebirth after cesarean has not been included in any of the literature on VBAC to date. Yet the recommendation to attempt VBAC only in a hospital setting is pervasive in the obstetric community, as evidenced in the ACOG VBAC practice bulletin.⁹ One of the Washington study's authors, Thomas Easterling, was quoted as saying, "Those who try labor should do it in a hospital that can quickly perform a C-section, should it become necessary."¹⁰ He offers no factual basis for this suggestion. The ACOG recommendation is admittedly based not on scientific evidence but on "consensus and expert opinion"—the consensus of physicians whose livelihoods depend on women coming to hospitals to give birth. It is not surprising that most obstetricians do not recommend homebirth. The vast majority have no experience with homebirth, nor are they educated about its benefits.

Greene's editorial refers to a meta-analysis of risks associated with VBAC versus ERCS, claiming, "These risk estimates reflect broad experience in a wide range of clinical-practice settings." He fails to mention that that range is not so wide as to include home and other out-of-hospital settings. Compared to a home or birth center birth, hospital birth results in more morbidity and mortality for women and babies at all levels of risk.¹¹⁻²⁵ It is insupportable to assume without investigation that the same would not be true for VBAC. The recommendation to be in a hospital cannot be considered valid without a comparison to the risks and benefits of homebirth after cesarean. Given that some of the catastrophic rupture outcomes reported in the medical literature²⁶ and popular press²⁷ have involved caregivers' ignoring impending signs of rupture and dismissal of mothers' feelings of pain or instincts that "something wasn't right," it is not apparent from the existing evidence that laboring in a hospital necessarily decreases the risk of rupture or guarantees positive neonatal outcome in the event of rupture. Indeed, Lydon-Rochelle et al. demonstrate that laboring in a hospital dramatically increases rupture risk when induction agents are used, an occurrence rarely found at homebirths.



Thus the study is far from a definitive statement on uterine rupture risk. Further research will likely confirm what has been consistently reported for more than two decades: vaginal birth after cesarean in the absence of gross medical intervention is a very safe proposition.

Risks of Elective Repeat Cesarean Section

Another major shortcoming of the Washington State study is the absence of a complete assessment and discussion of the risks of elective repeat cesarean section. The most disturbing claim being made in conjunction with the study is that elective repeat cesarean has been proven to be safest for the baby. This outrageous statement, which has been mistakenly reported by the news media as a factual conclusion of the study itself, is actually the opinion of Michael F. Greene, author of the New England Journal of Medicine editorial noted above. He states, "After a thorough discussion of the risks and benefits of attempting a vaginal delivery after cesarean section, a patient might ask, 'But doctor, what is the safest thing for my baby?' Given the findings of Lydon-Rochelle et al., my unequivocal answer is: elective repeated cesarean section."

But no discussion of the risks and benefits of vaginal delivery after cesarean section can be considered "thorough" without adequate discussion of the risks and benefits of elective repeat cesarean section, including both short- and long-term morbidity and mortality for mother and baby. This information is frequently omitted or minimized when physicians discuss VBAC with their patients, denying women a portion of the knowledge needed to make a truly informed decision.

Leaving aside the patriarchal tone Greene uses to characterize his hypothetical patient, whom he apparently perceives as abdicating to the physician her responsibility to weigh the risks and make her own decision, his opinion about the safety of elective repeat cesarean section is unfounded and irresponsible. It certainly is not a valid conclusion to be drawn on the basis of the results of Lydon-Rochelle et al. Similarly, the statement by Peter Schwartz, chairman of ACOG, that "The safest thing for the baby is for the mother to have a C-section, and that's inarguable,"²⁸ shows an alarming disrespect for the true risks of cesarean section.



Much of the evidence on the risks of cesarean section includes emergency cesarean, which generally has much higher rates of complication. However, elective cesarean section is still major surgery and undeserving of the benign reputation many ascribe to it. Repeat elective cesarean section has a further set of risks related to the complications associated with prior cesarean scars.

Risks to the Baby

"Neonatal respiratory distress syndrome (RDS) is an important complication of elective repeat cesarean section."²⁹ Respiratory distress syndrome is seen in 0.2 to 1.7 percent of term babies born by elective cesarean;^{30,31,32} incidences are higher among neonates of less than 37 weeks gestation. RDS is a serious, life-threatening condition for the baby, often necessitating time in the NICU (an average of 11.2 days) and possible mechanical ventilation and drug therapy.³³ When combined with rates of transient tachypnoea of the newborn, a self-limiting condition that is nevertheless worrying to parents and also may result in NICU time, Morrison et al. found that the risk was 3.55 percent among babies born at estimated gestational age of 37 weeks or later.³⁴ This was a threefold increase over cesarean during labor and a sevenfold increase over vaginal birth. Hales et al. found a 12.4 percent incidence of respiratory morbidity in term neonates delivered by elective cesarean section.³⁵ In another study, Levine et al. found a similar 0.37 percent risk of persistent pulmonary hypertension (PPH) in neonates delivered by elective cesarean section, a fivefold increase over those born vaginally.³⁶

Even higher incidences of RDS are found among preterm neonates. Iatrogenic (physician-caused) prematurity is a known risk of elective cesarean section, usually related to failure to conform to protocols for determining gestational age prior to delivery or errors in estimating weeks of gestation even with the use of clinical data.³⁷ Although most studies have examined risks for very premature infants, there are also significant risks for babies born from 32 to 36 weeks. One recent study demonstrated that rates of infant death (from birth to one year) are increased threefold in the US (four and one-half fold for Canada) for babies born between 34 and 36 weeks gestation, and sixfold in the US and 15-fold in Canada for babies born between 32 and 36 weeks gestation. Substantial increases were noted for deaths due to asphyxia, infection, sudden infant death syndrome, and external causes.³⁸

Less serious but still disturbing, the baby delivered by cesarean section is at increased risk of being cut by the surgeon during delivery. The incidence of surgical wound is 2 percent overall, and as high as 6 percent for breeches.³⁹ Researchers believe these risks to be underreported.



Risks to the Mother

Almost no one will argue that mothers still face higher risks from elective cesarean as compared to vaginal birth, although the overuse of medical interventions such as forceps, vacuum extraction, and episiotomy may soon close the gap. Infections are the most common maternal complication after cesarean section and account for substantial postnatal morbidity and prolonged hospital stay.^{40,41}

Other risks include massive hemorrhage in 7.3 percent of cesareans,⁴² transfusions in 6.4 percent,⁴³ ureter injury in 0.03 to 0.1 percent,⁴⁴ injury to bowels in 0.05 percent,⁴⁵ and incisional endometriosis in 0.1 to 1.0 percent.^{46,47} This list is by no means exhaustive.

In a 2000 study reported in the *Journal of the American Medical Association*, Lydon-Rochelle et al. noted that women undergoing cesarean section had twice the risk of women who had given birth vaginally of being rehospitalized for reasons such as uterine infection (2.0 relative risk), gallbladder disease (1.5 RR), urinary tract infections (1.5 RR), surgical wound complications (30.0RR), cardiopulmonary conditions (2.4 RR), thromboembolic conditions (2.5 RR), and appendicitis (1.8 RR).⁴⁸ They noted in their discussion that rehospitalization has a negative social and financial effect on the family, yet another risk of cesarean section. Several studies were unanimous in finding that women who delivered by cesarean were less satisfied with their experience than were women who gave birth vaginally.⁴⁹⁻⁵² Elective cesarean section also increases a woman's risk of hysterectomy in both the current and future pregnancies^{53, 54} and more than doubles her risk of death compared to vaginal birth.⁵⁵

Increased Complications in Subsequent Pregnancies

A history of cesarean section dramatically increases the risks of severe subsequent pregnancy complications that are normally quite rare. Placenta previa, which has an incidence of 0.25 percent among women with unscarred uteri, rises to 1.87 percent after one prior cesarean.⁵⁶ There exists a dose-response pattern; with one prior cesarean, there is a 4.5x risk for previa; after two prior cesareans, the risk rises to 7.4x; after three, the risk is 6.5x. With four or more cesareans, the risk rises to nearly 45x the risk of previa in an unscarred uterus.⁵⁷



A low-lying placenta is also more likely to lead to placenta accreta. According to a 1997 study, the presence of a uterine scar independently increases the risk of placenta accreta from 0.01 percent in unscarred uteri to 0.25 percent when there is at least one prior cesarean section.⁵⁸ Again, the number of prior cesareans has been shown to increase the risk of accreta.⁵⁹ Placenta accreta may lead to severe hemorrhage, with subsequent hysterectomy being required in 50 to 82 percent of cases.⁶⁰ It can also lead to maternal death.

Placental abruption is also significantly increased in women with a prior cesarean section compared to women with no scar. The rate of abruption in Finland was found by Hemminki et al. to be 0.17 percent for women without prior cesarean and 0.49 percent for women with a prior scar.⁶¹ According to the National Center for Health Statistics, the rate of abruption in the US from 1989 to 1990 was 0.6 percent overall; infant death occurred in 10 percent of these cases. In 2001, Ananth et al. found an abruption rate of 0.65 percent, with a perinatal mortality rate of 11.5 percent. Although 55 percent of these were due to early delivery, the rate of death for full-term infants in the group with lowest mortality was still 25-fold higher in cases of abruption.⁶² Compare the risk of these complications to the rate of rupture for women attempting VBAC found by Lydon-Rochelle et al. (0.6 percent) and the rate of fetal death associated with rupture (5 percent). Although not usually life threatening, there are other complications to consider for subsequent pregnancies. Increased rates of secondary infertility have been reported after prior cesarean, as well as higher rates of miscarriage and ectopic pregnancy.⁶³

Recommendations

What conclusions can women and care providers draw from this analysis of the New England Journal of Medicine study and the conflicting opinions on VBAC safety being currently reported? Women who are planning for VBAC should not change their plans on the basis of this study alone and certainly not on the opinions of Greene. It is important to discuss options with partners and caregivers in order to make truly informed decisions that are appropriate for the individual woman.

The International Cesarean Awareness Network urges that women educate themselves about all of their alternatives, including doulas, midwives, and homebirth. More suggestions are found in ICAN's fact sheet, "Things You Can Do to Avoid an Unnecessary Cesarean," at www.ican-online.org.



Given the current political climate regarding VBAC, it is critical that women select their caregivers with caution. Find a caregiver who practices the midwifery model of care. Many healthcare providers pay lip service to a woman's desire for VBAC to gain her business, only to reverse their position as the woman approaches the end of pregnancy. Having a caregiver who truly believes in birth and in VBAC is a major factor in planning for success. Also remember that it is never too late to change caregivers or the planned place of birth. Women have walked out of hospitals mid-labor and changed caregivers even while pushing.

Evidence from this and other studies appears sufficient to conclude that induction of labor raises the risk of rupture, although the risk is still low. However, there may be times when the risks of induction are outweighed by the potential benefits of vaginal delivery. Because induction interferes with the normal process of labor and carries risks other than rupture, it should only occur in hospitals equipped to respond quickly to obstetric emergencies.

Implications for the Medical Model

One might wonder why this seemingly uncontroversial study has generated such a storm of media attention and fear mongering in the short time since its release. The answer is that it is being used as merely the latest weapon in the war to control women's access to birth choices, offering a flimsy yet handy excuse to limit the occurrence of a practice that many physicians have come to dislike: VBAC. Physicians are running scared from the risks of VBAC—not the minimal risks to mothers and babies but the risks to themselves. The most recent practice bulletin of the ACOG cites lawsuits as a major factor in approaching VBAC with more caution.⁶⁴ ACOG exists to protect and advance the interests of its surgeon members, with the health of women and infants an important, but secondary, goal. With the current president of ACOG an admitted advocate of primary elective cesarean surgery without medical indication,⁶⁵ it is little wonder that the pendulum of obstetric opinion in the US is swinging back toward more medicalization of birth and more unnecessary surgical delivery of babies. However, it is difficult to fault individual practitioners for their reluctance to continue attending VBACs. When one is being fired upon from all sides, the most prudent response is to take cover. Yet physicians still have the responsibility to be honest and forthcoming with women about their reasons for refusing to do VBACs, rather than giving women the false idea that they are recommending repeat cesarean for safety reasons.

ACOG has effectively made it very difficult, even impossible, for many physicians to continue to attend women desiring VBAC by recommending that VBAC occur only in hospitals with 24-hour immediate availability of the physician, anesthesia service, and an operating room. Many hospitals



across the country are now refusing to allow VBAC, and a growing number of physicians are no longer offering VBAC to women. Women in smaller communities are especially vulnerable to losing access to hospital VBAC, as administrators weigh their profitability and malpractice exposure and opt to let mothers and babies assume all the risks. Physicians in solo practice, common in rural America, understandably cannot afford to cancel an entire day's worth of office visits in order to be immediately available throughout a long VBAC labor, even if they want to. Other physicians are simply unwilling to spend their hours "labor-sitting." Yet if they are not "immediately available" and a rupture occurs, they will almost certainly be held at fault in any subsequent legal action. Midwives, who are unqualified to perform surgery and thus must have a reliable, willing backup surgeon in the event of emergency, may find it even more difficult to support a woman who desires VBAC. The irony is that VBAC women benefit dramatically by choosing midwives who practice under the midwifery model for their prenatal care and birth attendance, reducing their risks of repeat cesarean and other complications. Perhaps it is time for obstetricians to relieve themselves of the burden of VBAC and of attending the majority of births, for which their surgical skills are not needed. In the countries with the lowest cesarean rates and infant mortality rates, the primary caregivers for normal pregnant women are midwives.⁶⁶ Studies have shown that midwives achieve better outcomes, with less use of limited healthcare resources and fewer interventions, than do physicians. Midwifery care is on the rise again in the US as a growing number of women discover that they can not only safely birth their babies in partnership with a midwife, but also benefit from more personalized, woman-centered attention during a pivotal time in their lives. The rightful role of obstetrics is as backup to midwifery.

According to Marsden Wagner, MD, having a highly trained obstetrician surgeon attend a normal birth is analogous to having a paediatric surgeon babysit a healthy two year old. Midwifery uses a different paradigm by focusing not on the potential for abnormality but on the normality of pregnancy. To a midwife a breech delivery is a variation of the normal; to a doctor it is a pathological condition. [Cesarean] rates are lower when midwives rather than doctors attend the birth. Promoting more [cesareans] is part of a campaign to keep the obstetric profession in control of maternity care. Doctors tend to prefer technology; as a leading obstetrician in Canada said: "Nature is a bad obstetrician."⁶⁷

Fortunately for women and babies, nature is also an excellent midwife. By critically reviewing media reports and opinions generated by studies such as the one by Lydon-Rochelle et al., women can successfully separate the biases of a profession intent upon maintaining its near-monopoly through the promotion of unnecessary surgery from the evidence-based practices which best support natural, normal, safe childbirth.

NOTES

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Jill MacCorkle, BA, ME-PD, is the mother of Griffen Edgar, delivered by cesarean section, and Carlin Frances, born at home. She is the editor of The Clarion, the newsletter of the International Cesarean Awareness Network. Jill lives with her husband and children in Paris, France.

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