What About Uterine Scar Ruptures?

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What is a uterine scar rupture?

A complete uterine scar rupture is a potentially life threatening condition for both the mother and/or the baby that requires immediate surgical intervention. Fortunately, uterine ruptures from a prior cesarean with a **low-transverse scar** is a rare event and occurs in less than 1% of women laboring for a VBAC. It is a tear through the thickness of the uterine wall at the site of a prior cesarean incision. The majority of cesarean uterine incisions are low-transverse. The scar form this type of incision is the least likely to rupture in a subsequent pregnancy, labor, and birth.

Uterine ruptures have also been known to occur in some women who have never had a cesarean. This type of rupture can be caused by weak uterine muscles after several pregnancies, excessive use of labor inducing agents, prior surgical procedure on the uterus, or mid-pelvic use of forceps.

Some women have a **low vertical incision** on the uterus, made when there is a placenta previa (low-lying placenta), a large baby, a baby in a transverse position (lying horizontally in the pelvis) or a premature breech delivery.

When planning a VBAC it is important to determine if the previous low vertical scar has not stretched to the body of the uterus in the current pregnancy. The risk of rupture for a low vertical scar has been reported to be the same as for a low horizontal scar and as high as 1-7%.

Sometimes a woman may have **"T"** or **"J"** shaped scar on the uterus or one that resembles an inverted "T". These scars are very rare. It is estimated that between 4 and 9% of "T" shaped uterine scars are at risk for rupture.

Rarely, a woman may have a **classical (vertical) scar** in the upper part (the body) of the uterus. This type of incision is used for babies who are in a breech or transverse position, for women who may have a uterine malformation, for premature babies or in extreme circumstances when time is of the essence.

The risk of rupture for this type of scar has been reported to be between 4 and 9%. A classical scar on the thinner and more vulnerable part of the uterus tends to rupture with more intensity and result in more serious complications for mothers and babies. Mothers who have had several children and have a classical uterine scar are at higher risk for uterine rupture.

The American College of Obstetricians and Gynecologists (ACOG) and the Society of Obstetricians and Gynaecologists of Canada (SOGC) recommend that women with a classical scar have a repeat cesarean birth.

What are the symptoms of a uterine rupture?

A uterine rupture cannot be accurately predicted or diagnosed before it actually occurs. It can occur suddenly during labor or delivery. A few studies have suggested that measuring the thickness of the scar by ultrasound or following closely the pattern of contractions in labor may be useful in anticipating and therefore preventing a scar rupture. However, there is not enough information to prove that these methods should be widely adopted.

Several symptoms have been identified, but **do not necessarily occur with every uterine rupture**. Signs of uterine rupture that **may or may not be present**.

- Vaginal bleeding
- Sharp pain between contractions
- Contractions that slow down or become less intense
- Abdominal pain or tenderness
- Recession of the fetal head (baby's head moving back up into the birth canal)
- Bulging under the pubic bone (baby's head has protruded outside of the uterine scar)
- Sharp onset of pain at the site of the previous scar Uterine atony (soft muscles)

To date, studies have shown that a uterine rupture can be detected by electronic fetal monitoring because the women in these studies laboring for a VBAC were monitored electronically. Although some caregivers closely monitor VBAC labors with a fetoscope or a hand-help ultrasound measuring device, (the Doppler), no VBAC studies have yet been published on this method.

Abnormal fetal heart tones, variable decelerations, or bradycardia (slow heart rate) have been associated with a uterine rupture. It is important to note that with a uterine rupture, labor sometimes continues, there is no loss of uterine tone or amplitude of contractions.

How often does a cesarean scar rupture occur?

For women who had a prior cesarean birth the rupture can occur at the site of the previous uterine scar. Dozens of studies report that for women who have had one prior cesarean birth with a low-horizontal incision, the risk of uterine rupture is about 1% or less. Results of the best designed studies show that risks range from 0.09 to 0.8%. A woman who has had more than **one cesarean with a low horizontal incision** may have a slightly higher risk of rupture. One study that looked at the risks of uterine rupture for planned VBACs over a ten-year period at a teaching hospital that was often able to perform an emergency cesarean very quickly found the following results:

Risk of Uterine Rupture with Low Transverse Uterine Scars*

- Revised 10/14/2002

Number of Previous Cesareans	Successful VBACs	Rupture Rate	Perinatal Mortality
10,880 Planned VBACs with **one** prior scar	83%	0.6%	0.018%

1,586 Planned VBACs with **two** prior scars	76%	1.8%	0.063%
241 Planned VBACs with **three** prior scars	79%	1.2%	0

Source: Miller, D. A., F. G. Diaz, and R. H. Paul.1994. *Obstet Gynecol* 84 (2): 255-258

*This study included women with breech babies and twins and use of oxytocin.

How does the risk of a rupture compare with any other complications of labor whether the mother had a prior cesarean birth or not?

For women whose labors begin spontaneously, uterine rupture is reported to be less than 1% and the risks similar to or less than the risk of any other unpredictable Complication of labor and delivery.

Medical experts state that the risk of a uterine rupture with one prior low-horizontal incision is not higher than any other unforeseen complication that can occur in labor such as fetal distress, maternal hemorrhage from a premature separation of the placenta or a prolapsed umbilical cord.

Respected studies have concluded that the probability of any woman needing To have an emergency cesarean those other complications is approximately 2.7% or up to 30 times as high as the risk of uterine rupture.

For the year 2000, for approximately 4 million live births, the US National Center for Health Statistics reported the following complications that occurred during labor and birth: The table below compares the risks of a uterine rupture (with one low-transverse scar) with the risks of other unpredictable complications of labor and birth.

Reported Complications of Labor and Delivery in US for year 2000	**Rate per 1000 live births**
Umbilical Cord Prolapse	**1.9**
Fetal Distress	**39.2**
Abruptio Placenta	**5.5**

Source: **CDC: NCHS: Births: Final Data for 2000**
www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf

Uterine rupture rate per 100 women laboring for a VBAC, based on worldwide systematic reviews (0.09 to 0.8 %)	**0.9-8.0**

Source: Enkin et all 2000. **A Guide to Effective Care in Pregnancy and Childbirth**.

What happens if the scar ruptures?

Although uterine scar ruptures for women laboring for a VBAC are rare, the medical response is a rapid cesarean.

The longer it takes to diagnose and respond to a uterine rupture the more likely it is that the baby and/or the placenta can be pushed through the uterine wall and into the mother's abdominal cavity putting women at increased risk for hemorrhage and babies at increased risk for neurological complications.

The authors of A Guide to Pregnancy and Childbirth, an internationally respected evidence-based text, state that any birthing facility equipped to respond to a medical emergency can care for women laboring for a VBAC.

Whereas ACOG guidelines for an emergency cesarean previously allowed for a **maximum response time of 30 minutes for an obstetric emergency** recent controversial VBAC guidelines revised by ACOG have recommended that birth facilities who care for women laboring for a VBAC should have a physician capable of performing an emergency cesarean, anesthesia services, and staff "immediately available."

Birthing facilities vary in their guidelines and protocols for VBAC and response time to a uterine rupture and other unforeseen complications of labor. Many US facilities have recently determined that they don't have the capability to respond "immediately" in case of uterine scar rupture and are currently denying women the option to labor for a VBAC. (see **A Ban on VBACs**)

Caregivers who support VBACs say that the focus should be on improving access to quality of care for women who want a VBAC, not on discouraging them because of negative outcomes publicized in high profile medical malpractice law suits.

Dr. Bruce L. Flamm, an eminent researcher on VBACs cautioned that if US physicians were to discourage women from planning VBACs and to adopt a policy of elective repeat cesareans, it "would mean performing an additional 100,000 cesareans every year. It is unlikely this huge number of operations could be performed without many serious complications and perhaps even some maternal deaths."

In the event of a uterine rupture, what are the outcomes for mothers and babies?

The majority of studies report that in the rare event of a uterine rupture, if the labor was carefully monitored, the birth attendant was trained to attend VBAC births, and if the medical response was rapid, mothers and babies usually do well. One study in a large California hospital which had 24 hour emergency coverage reported that outcomes for babies were better when the response time was 18 minutes or less.

With access to a rapid cesarean, fetal death from a uterine rupture is an extremely rare event. Three large studies that determined the number of babies who died as a direct result from a uterine rupture when women labored for a VBAC found the following:

Number of women who labored for a VBAC	Number of babies who died from uterine rupture	Reference
17,613	5	Rageth, et al 2000
10,000	3	Rosen, et al 1991

5,022	**0**	**Flamm, et al 1994**

Women who receive good prenatal care, whose care providers are trained and experienced with VBAC, and who labor in a facility that is equipped to provide immediate medical care usually have good outcomes.

Women who are thinking about laboring for a **VBAC at home** may want to consider and make plans for the rare possibility of a uterine rupture.

Women thinking about laboring for a VBAC in a **free-standing birth center** may also want to ask about transport protocols in the rare event of a uterine rupture.

To find out more about VBACs in accredited birth centers in the USA contact the National Association of Childbearing Centers at **www.birthcenters.org**.

Can the risk for a uterine rupture be reduced?

Although it is not possible to predict which women are likely to experience a uterine rupture while laboring for a VBAC, recent studies have suggested that the risk for uterine rupture is higher when:

- Labor is induced with pitocin, prostaglandin gel, or misoprostol (Cytotec).

- The prior cesarean incision was closed with a single-layer of sutures (single-layer closure- often done in recent years to shorten the time in the operating room) as opposed to two layers of sutures (double-layer closure).

- Women become pregnant and labor for a VBAC within less than 18 months after a prior cesarean.

Informed Choice-Informed Refusal

Current US health law and medical-ethical guidelines give childbearing women who once gave birth by cesarean the option of laboring for a VBAC or scheduling an elective repeat cesarean. ACOG states that

"it has become clear that patients are entitled to participate with their physicians in a process of shared decision making with regard to medical procedures, tests, or treatments";.Once the patient has been informed of the material risks, and benefits involved";that patient has the right to exercise full autonomy in deciding whether to undergo the treatment, test, or procedure or whether to make a choice among a variety of treatments, tests, or procedures. In the exercise of that autonomy, the informed patient also has the right to refuse to undergo any of these treatments, tests, or procedures. This election by the patient to forgo a treatment, test, or procedure that has been offered or recommended by the physician constitutes informed refusal."

Women are encouraged to ask questions, gather information, and discuss their concerns with their care providers to enable them to make an informed choice for a VBAC or a repeat cesarean birth.

For additional information see **Making Informed Decisions**, **Patient Rights** and **The Vermont/New Hampshire VBAC Project**.

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