

# EXPLORING THE OBSTETRIC AND PERINATAL OUTCOMES OF WOMEN WITH A HISTORY OF UTERINE RUPTURE IN SUBSEQUENT PREGNANCIES

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## ABSTRACT:

**OBJECTIVE:** This study's goal is to learn more about the effects of future pregnancies after a complete uterine rupture, an uncommon but very dangerous obstetric condition that may have bad effects on both the mother and the baby. The research seeks to shed light on the related hazards and assist therapeutic decision-making for women with a history of uterine rupture by a thorough examination of the pregnancy outcomes.

**METHODS:** The incidence of whole and partial uterine ruptures in future pregnancies, as well as their accompanying maternal and perinatal outcomes, were evaluated in the research. To identify possible risk factors and guide therapeutic care methods, the features of both the old and new ruptures were also defined and studied.

**RESULTS:** Out of the 72 pregnancies studied, 37 had previous ruptures in the lower segment while 35 occurred outside this region. According to the data, there were a total of three new full ruptures and six new unremarkable partial ruptures, for rates of 4.2% and 8.3%, respectively. It's interesting to note that all three full ruptures happened prematurely in scars outside the bottom portion. Women who had previously ruptured in the lower section did not have any new full ruptures, but 8.6% of women who had previously ruptured outside the lower segment did. Even in the absence of new ruptures, corrected perinatal mortality was recorded at 1.3%, with a significant prevalence of preterm (37 weeks), which was mostly iatrogenic. Without any rupture, two hysterectomies were conducted, and in two of those instances, aberrant, invasive placentas were found.

**CONCLUSIONS:** The prognosis is favorable for pregnancies that occur after a prior total uterine rupture. The date of birth is a crucial factor since prematurity is a worry that both the woman and the obstetrician have. Comprehensive instructions, careful observation of symptoms, and rapid delivery if a rupture is suspected are all important components of effective therapeutic procedures.

**KEYWORDS:** uterine rupture, obstetric, pregnancy.

## INTRODUCTION:

Due to an increase in cesarean sections (CS), uterine rupture is becoming more commonplace globally [1]. This has led to an increase in the number of women seeking guidance on conceiving again after having a full uterine rupture. Complete uterine rupture can have devastating consequences, as it typically involves the serosa and membranes along with all the layers of the uterine wall. [2]. There are some bright spots when it comes to uterine ruptures. Partial ruptures that spare the membranes or serosa are significantly more frequent and less serious than full ruptures, which may be problematic and have in the past required a hysterectomy. However, even after such a trauma, the uterine wall might remain relatively thin, making it difficult to maintain a subsequent pregnancy. Nevertheless, where there were once just constraints, developments in medical science and technology now provide hope and answers.

The risk of recurrent rupture during pregnancy has only been examined in a very small number of studies. The majority of articles are case studies, with recurrent rupture rates ranging between 0 and 33% [3]. Nevertheless, a recent study found that recurrent rupture occurred between 4.7% and 13.7% of the time. [4]. When it comes to uterine rupture in expecting moms, the American College of Obstetricians and Gynecologists (ACOG) has issued a statement in which they advise taking preventative measures. The consensus is to schedule an elective cesarean section for women who have a history of this issue between weeks 36 and 38/6/7 of pregnancy, while specific adjustments may be required depending on an individual assessment. We can assure the best result for mother and child by being watchful and taking deliberate action [5]. The current research set intended to ascertain the frequency of recurrent complete rupture in fresh pregnancies as well as the results of such pregnancies. The description of the outcomes of these pregnancies may help with the unique assessment of each woman concerning suggestions for a future pregnancy, follow-up, and delivery date.

**METHODS:** The goal of the research is to provide information on the outcomes of subsequent pregnancies in women who have previously had a complete uterine rupture. This knowledge might aid medical practitioners in creating more effective management and treatment plans. The research offers insights into the variables that potentially impact pregnancy outcomes in women with a history of complete uterine rupture by a thorough review of prior and recent ruptures and their accompanying maternal and perinatal outcomes. This research uses a population-based, retrospective, descriptive methodology to examine the outcomes of subsequent pregnancies in moms who had previously undergone a complete uterine rupture. A total of 72 people were included in the study's sample, which included information on all births between 1979 and 2023 with a focus on moms who had subsequent pregnancies and births following a complete uterine rupture. It's significant to note that moms in the research had no surgical treatments between the rupture repair and the subsequent pregnancy. The research assessed the frequency of recurrent ruptures, the features of prior full ruptures, and the outcomes of future pregnancies. The incidence and consequences of fresh full and partial uterine ruptures were calculated by the researchers using frequency analysis. Moreover, odds ratios (ORs) and 95% confidence intervals (CIs) were used in cross-tabulation to estimate the probability of a new rupture depending on various aspects of past ruptures. SPSS version 27 was used to carry out the statistical analysis.

**RESULTS:** Over time, 274 women have experienced the harrowing ordeal of full uterine ruptures. However, upon closer examination, it was found that three of these women tragically lost their lives, and an additional 56 required hysterectomies, while 20 underwent sterilization procedures. Ultimately, after accounting for these complications, a group of 195 women remained for evaluation. These women included

88 who got pregnant, 16.2% who miscarried, and 81.8% who carried the pregnancy to birth at 28 weeks.

Table 1: Features of earlier full ruptures

Gestational age at rupture (Weeks)	N (%)
More Than 41	21(29.2%)
37 to 40	34(47.2%)
31 to 36	9(12.5%)
25 to 30	5(6.9%)
20 to 24	3(4.2%)
Rupture Place	
Lower segment	37(51.4%)
Outside lower segment	35(48.6%)
Corneum	8(11.1%)
Posterior & Anterior and wall	2(2.8%)
Anterior wall	3(4.2%)
Fundus	6(8.3%)
Posterior wall	7(9.7%)
Vertical scar	9(12.5%)
Occurrence Time	
After (Labor)	58(88.6%)
Before (Labor)	14(19.4%)
Perinatal deaths	
Neonatal deaths	15(20.8%)
Stillbirth	19(26.4%)

Table 2: Pregnancy outcomes in women who have previously ruptured their uterus

		N (%)
Delivery Mode	Vaginal	2(2.8%)
	Emergency CS	13(18.1%)
	Elective CS	57(79.2%)
Gestational age at rupture (Weeks)	More than 39	2(2.8%)
	37 to 38	44(61.1%)
	33 to 36	19(26.4%)
	28 to 32	7(9.7%)
	Less than 28	0(0%)
Maternal outcome	Abnormally invasive placenta	2(2.8%)
	Hysterectomy	2(2.8%)

	Partial rupture	6(8.3%)
	Complete rupture	3(4.2%)
	Uncomplicated	60(83.3%)
Infant outcome	PND	2(2.7%)
	PND corrected	1(1.3%)
	Neonatal death	1(1.3%)
	Stillbirth	1(1.3%)
	NICU admission	6(8.3%)
	Moderate asphyxia	1(1.3%)
	Healthy	63(87.5%)

The prior ruptures of 37 (51.4%) of the 72 women occurred inside the LS, whereas those of 35 (48.6%) occurred outside the LS (Table 1). Several of the earlier ruptures featured scars that had ruptured without being caused by CS. Among the cases evaluated, there were a variety of causes for uterine ruptures. Some were the result of rare and unusual circumstances, such as three cases of ruptures in women with bicornuate uteruses, or two cases that occurred as a traumatic injuries after a traffic accident. The causes and circumstances of the uterine rupture cases we've seen are varied. One occurred as a consequence of a myomectomy scar, and another occurred following a hysterotomy treatment to end a pregnancy at 20 weeks. In another instance, an ectopic pregnancy-related rupture took place at the tubocurarine site following a perforation during trans-cervical excision of a myoma. These unusual circumstances highlight the need of personalised evaluation and specialised treatment strategies when dealing with uterine ruptures.

The majority of the earlier ruptures that occurred outside of LS were on the lateral side of the uterine wall and vertical scars from classical CS. They were followed by ruptures in the posterior wall of the uterine corpus and the uterine fundus. Just 19.4% of ruptures in the past happened before the onset of labor, while about 47.2% occurred between 37 and 40 weeks. The research group consisted of 61.1% of mothers under the age of 35. 34 perinatal fatalities (47.2%) were caused by previous ruptures. The

largest proportion of pregnancies occurred during the most recent period (2012–2023). The results of subsequent pregnancies among moms who had prior complete uterine ruptures are shown in Table 2. Just two women delivered vaginally; the remainder (79.2%) had elective CS. From 1979 to 1989, two vaginal deliveries were documented. The first delivery was a premature birth at 32 weeks, which occurred without any complications following a previous uterine rupture in the lower segment. The second delivery was a spontaneous birth of twins at 36 weeks, which occurred prematurely after a traumatic rupture in the fundus of the uterus at 28 weeks.

In a study of 72 women who had previously experienced uterine rupture, researchers found that the risk of recurrence in subsequent pregnancies was much higher than the risk in women who had undergone a cesarean section without prior rupture. Of the 72 women, 3 experienced new total ruptures, resulting in a rate of 4.2%. This rate was significantly higher than the risk of 0.16% in women without prior rupture.

The full ruptures were characterized by intense abdominal discomfort and were first noticed at 29, 31, and 32 weeks in each of the three instances. Fortunately, there were no maternal deaths documented in the study, and the adjusted perinatal mortality rate was 1.3%. The study found that 36.1% of pregnancies ended in preterm birth, while 61.1% were delivered between 37 and 38 weeks. Compared to mothers with prior cesarean sections but no

prior rupture, the risk of preterm birth was significantly greater.

Table 3: Using obstetric history to predict new pregnancy outcomes

		Partial uterine rupture		Complete uterine rupture		Total
		N	%	N	%	
Place of previous rupture	Lower segment	2	5.4	0	0	37
	Outside lower segment	4	11.4	3	8.5	35
Interdelivery interval (Years)	1	2	12.5	1	6.3	16
	2 to 3	2	5.6	0	0	36
	More than 4	2	10	2	10	20
Previous gestational age (Weeks)	More than or equal to 37	4	7.3	2	3.6	55
	Less than 37	2	11.8	1	5.9	17
Occurrence of previous rupture	Before (Start of labor)	2	14.3	1	7.1	14
	After (Start of labor)	4	6.9	2	3.4	58

There were seven premature births between 28 and 32 weeks, with three resulting in whole ruptures and two resulting in partial ruptures. The remaining two cases were a spontaneous preterm vaginal birth at 32 weeks and a second emergency cesarean section at 28 weeks. The study also found that previous ruptures outside of the lower segment of the uterus were associated with a higher risk of recurrent rupture. Recurrence rates were also higher in women who gave birth after a period of 1 or 4 years compared to those who gave birth 2-3 years apart. (Table 3)

**DISCUSSIONS:**

Among 72 women who had previously had a complete uterine rupture, there were three additional cases (a rate of 4.2%; 8.6% if the prior rupture occurred outside the LS and 0% if it occurred within the LS). Acute abdominal discomfort was found in mothers who had repeated full ruptures throughout pregnancy. Except for two preterm babies at 28 weeks, six partial ruptures went without a hitch. It was primarily iatrogenic and was evident even in the lack of fresh ruptures. The adjusted perinatal mortality was 1.3%, and the rate of preterm (37 weeks) was quite high (36.1%). No repeat full

ruptures occurred in those with an inter-delivery period of 2–3 years. Similar to a prior research's incidence of 4.8% [12], the frequency of recurrent complete uterine ruptures was found in our investigation. When 11 research from various nations with low and high resource levels were combined, another study found an overall rate of 12.3% [6].

Even though only 36.1% of babies were born before 37 weeks, we had a reduced rupture rate. Moreover, we demonstrated that scheduling the birth at a younger gestational age was not always related to a lower risk of rupture, since all recurrent complete ruptures happened before term. Research from Beirut that examined 24 pregnancies revealed the same conclusion. [7] The latter research revealed no statistically significant difference between pregnancies with rupture and those without it in terms of mean or median gestational age. One research found that at 36 weeks, 85% of recurrent ruptures occurred. [8] No maternal fatalities occurred in our research, and there were few perinatal deaths, which highlights the need of having prompt availability of emergency obstetric care, irrespective of when a baby is delivered.

A prior rupture outside the LS was the cause of all three repeat full ruptures. As was shown

before in our work on pre-labor uterine ruptures [9], this suggests that women who had previously experienced an LS rupture have a better prognosis. Most people who had prior ruptures outside the LS, however, did not have a recurrent rupture. In contrast, research indicated that 100% of those with prior ruptures outside the LS had recurring ruptures [10]. In line with other research [11,12], we found that there were no total ruptures when there were 2-3 years between deliveries.

According to our research, women who have had past ruptures at a younger gestational age, who have had too close of space between deliveries, or who have had ruptures outside of the LS shouldn't be prohibited from attempting a new pregnancy. While it was not statistically significant, cautious counseling and monitoring are crucial since there is a higher potential for rupture.

It may comfort women who have previously ruptured that the outcomes of fresh pregnancies were positive, but the timing of the CS is the most difficult problem to resolve in counseling and planning. The management strategies used over the various periods in this research varied. A specific agreement on the best time for delivery in our national guidelines was also absent in prior years. As a result, the information is insufficient to provide a satisfactory response. Each individual's birth schedule was considered, with perinatal mortality at prior ruptures playing the biggest role in whether or not a rupture occurred. Because of this reason, moms and obstetricians were more fearful, which caused iatrogenic preterm birth. These facts might help us determine delivery times that are better and more impartial. Risks of premature maturity and newly developed total uterine rupture must be balanced. There may be a remedy if admission is made in the latter weeks, around 37–38 weeks. In addition to a repeat full rupture, our research revealed that women who had previously had a rupture were also at risk for a hysterectomy and a placenta that was excessively invasive (placenta accreta spectrum). A 2.8% placenta accretes spectrum rate has been found by our

investigation, which is somewhat higher than the 2.3% rate noted following four prior caesarean procedures. While it may be tempting to make a straight connection between a prior uterine rupture and an elevated risk of placenta accrete spectrum, doing so would oversimplify the complex circumstances surrounding these situations. In reality, there were pre-existing risk factors at work, including several scars and a history of premature caesarean sections, which must be taken into consideration when estimating the possibility of problems. With more scars [15] or a preterm CS procedure [16], the spectrum of placenta accrete has been shown to increase. In particular, if the rupture happened early in the gestational period or if the woman has many uterine scars, this is something that women who have had ruptures in the past should be advised about. Predicting the likelihood of severe intraoperative bleeding in these patients with the use of ultrasound scoring of the placenta accrete spectrum during pregnancy is recommended [17,18,19]. This might lead to the use of improved preventative measures to lessen such bleeding [20].

As there were no perinatal deaths in the study's final phase, moms who had ruptured in the past may have improved prognoses. It would be beneficial to do research on how pregnancy has fared in recent years after uterine rupture.

This research, which looked at pregnancies across the whole population of one nation, is the biggest one on the topic yet. Prior research mostly consisted of compilations of reports from various nations. To get more thorough findings, our research included pregnancies after all varieties of prior ruptures. The data, however, included information from various periods and, as a result, from various obstetrical procedures. It's possible that this had an impact on the frequency and results of recurrent rupture. We gathered 44 years' worth of instances since it is very uncommon for women to get pregnant following uterine ruptures. While there were fewer examples than expected, descriptive statistical analysis was the sole option.

**CONCLUSIONS:** Pregnancies after a complete uterine rupture in the past seem to have a bright future. The fear of the pregnant woman and the obstetrician's actions seem to work together to cause the majority of preterm births. As a result, the delivery's exact time continues to be a major obstacle. It is crucial to provide expecting moms thoughtful advice, to be alert for any warning indications, and to guarantee fast referral to a specialist institution when required in order to negotiate this terrain.

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