

Pregnancy After Uterine Rupture

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A 28-year-old woman, gravida 3 para 2, with two previous cesarean deliveries presents for prenatal care. Her second pregnancy was complicated by a uterine rupture at 36 weeks of gestation. She asks, "When should I be delivered during the current pregnancy?"

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THE CONUNDRUM

The incidence of uterine rupture during a trial of labor after cesarean delivery is 0.5–0.9%.¹ Uterine rupture is associated with significant morbidity, and it is generally accepted that women with prior rupture should be delivered by cesarean to avoid repeat rupture.¹ When considering delivery timing, the goal is to minimize the risk of repeat rupture while taking into account the risks of prematurity. There are limited data, however, to guide decision-making regarding the optimal timing of delivery. So when confronted with this clinical conundrum: 1) How should the patient be evaluated? 2) What is the evidence to counsel your patient? 3) What is a reasonable course of action?

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The Clinical Conundrums feature is an article type developed for clinicians who sometimes are faced with either clinical situations or patient questions for which little (if any) information is available to guide decision-making. Clinicians have all been faced with a situation in which they approach a trusted colleague and ask, "Can I run something by you?" The Clinical Conundrums feature attempts to provide answers to those types of questions.

Each author has indicated that she has met the journal's requirements for authorship.

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THE DATA

How Should the Patient Be Evaluated?

The complete obstetric history should be reviewed to determine circumstances of the previous rupture. Important details include gestational age at the time of rupture and whether the rupture occurred before labor onset. Operative reports should be reviewed with attention to location and extent of prior rupture.

What Is the Evidence to Counsel Your Patient?

Case series comprise the majority of available literature regarding management of subsequent pregnancy after uterine rupture. In 1969, Reyes-Ceja et al² published a case series of 22 pregnancies among 19 women with prior rupture from a single institution in Mexico. Nine were delivered by planned cesarean, and eight presented in active labor and underwent vaginal delivery. Repeat rupture occurred in only one patient leading the authors to conclude that surgical repair of the ruptured uterus instead of hysterectomy has a place in obstetric practice.

A subsequent review reported on cases of pregnancy after uterine rupture found in the literature from 1932 to 1971 as well as 36 additional pregnancies from the authors' institution in Nigeria. In total, the review included 194 patients with 253 pregnancies. The risk of repeat rupture was 12.8%; two women died after repeat rupture. Of the 122 women with data regarding location of prior rupture, there was a 32% rate of repeat rupture when the upper segment was involved and a 6% rate when only the lower segment was involved. Of cases with a reported gestational age at delivery (n=219), 85% of repeat ruptures occurred after 36 weeks of gestation. Intended mode of delivery was infrequently published; however, the majority of repeat ruptures were diagnosed after labor onset or vaginal delivery.³ Based on these data, the authors recommended cesarean delivery at 36 weeks of gestation for women with prior rupture into the upper segment and 38 weeks of gestation for those with prior rupture involving only the lower segment.

A recent review of the literature from 1972 to 2005 described 84 pregnancies with prior uterine



rupture. Cases included 80 cesarean deliveries and four vaginal deliveries with a repeat rupture rate of 4.7%. There was no mention of planned mode of delivery. Three of the four ruptures were repeat ruptures of upper segment scars.⁴ Interestingly, the authors also describe administration of late preterm corticosteroids at their institution in the Netherlands before delivery at 36–37 weeks of gestation, a practice only recently adopted in the United States with the publication of a randomized trial demonstrating the efficacy of late preterm steroids in reducing the risk neonatal respiratory morbidity.⁵

Another recent case series from a tertiary care center in Saudi Arabia reported a similar rupture rate of 4.5% when all women were delivered by cesarean, consistent with modern practice.⁶

One retrospective cohort study compared women with prior uterine rupture with those delivered by cesarean without a history of rupture from 1988 to 2011 at a single tertiary care center in Israel. Of 34,601 singleton cesarean deliveries, 0.1% (n=46) had a prior uterine rupture. A 15% recurrent rupture rate was found; details regarding gestational age at the time of repeat rupture, location of the prior scar, and stage of labor were not reported. As compared with those without a history of rupture, prior rupture was associated with preterm delivery, wound infection, cervical laceration, uterine dehiscence, and repeat uterine rupture in a subsequent pregnancy.⁷

Fox et al⁸ conducted a retrospective chart review of patients with prior uterine rupture or dehiscence delivered by a single practice in the United States from 2005 to 2013. Patients were delivered between 36 and 37 weeks of gestation or earlier if preterm labor occurred and were followed with ultrasonograms every 4 weeks. There were 20 pregnancies among 14 women with a history of rupture. No recurrent ruptures or severe morbidities were identified. Amniocentesis for fetal lung maturity was utilized in 51% of patients. Ultrasound monitoring did not change clinical decision-making regarding delivery timing or further observation. The authors concluded that a standardized approach with planned cesarean delivery before labor onset results in good outcomes.⁸

Pregnancy After Prior Classic Cesarean Delivery as an Analog for Pregnancy After Prior Uterine Rupture

When data are limited to case series and small cohorts, practitioners can look to analogous clinical scenarios to guide management. In this context, one might consider women with prior classic cesarean delivery as an analogous group to those with prior uterine rupture.

In patients with a history of classic cesarean delivery, the goals for management of delivery are the same as in women with prior uterine rupture—to balance the risk of uterine rupture with the risk of prematurity. A decision analysis using a hypothetical cohort of 10,000 women with a history of classic cesarean delivery was conducted to ascertain optimal delivery timing.⁹ The model compared four management strategies: 1) delivery at 36 weeks of gestation; 2) delivery at 39 weeks of gestation; 3) amniocentesis for fetal lung maturity at 36 weeks of gestation, and, if immature, administration of corticosteroids followed by delivery; and 4) weekly amniocentesis starting at 36 weeks of gestation with cesarean delivery when lung maturity was documented. The uterine rupture rate before labor onset was estimated at 3.7% based on literature review. Delivery at 36 weeks of gestation resulted in the highest number of respiratory distress syndrome cases but no other adverse outcomes. Twenty-seven deliveries at 36 weeks of gestation with one case of respiratory distress syndrome prevented one case of uterine rupture in the model. Delivery at 39 weeks of gestation resulted in the highest number of maternal and fetal deaths as well as the highest number of cerebral palsy cases. Testing for fetal lung maturity was not found to be beneficial.⁹

What Is a Reasonable Course of Action?

In women with a history of uterine rupture, the reported rate of repeat rupture ranges from 4% to 32%, with higher quality, more modern studies reporting a rate of 4–15%.

The risk of repeat rupture increases with an upper uterine segment scar. Given the high risk of repeat rupture in the setting of labor, women with a history of uterine rupture are not candidates for vaginal delivery. Although an imperfect analogy, the literature on prior classic cesarean delivery can help to inform clinical management for women with a history of uterine rupture. Although more studies are needed to create practice guidelines, it is our opinion that for women with a prior uterine rupture, planned cesarean delivery at 36–37 weeks of gestation without amniocentesis for fetal lung maturity is optimal to balance maternal and neonatal risks. Location of a previous scar and timing of rupture should also be considered. If delivery is planned before 37 weeks of gestation, the administration of antenatal late preterm steroids should be considered to reduce the risk of neonatal respiratory morbidity.⁵ In our case, the patient had a history of rupture at 36 weeks of gestation, and scheduled repeat cesarean delivery at 36 0/7 weeks is recommended.



THE BOTTOM LINE

The majority of data related to women with a history of uterine rupture comes from case series. Using a history of classic cesarean delivery as an analogous clinical scenario allows for a recommendation of cesarean delivery at 36–37 weeks of gestation without amniocentesis for fetal lung maturity. Large observational cohort studies are needed to enable more evidence-based decision-making.

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