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Original article

Pregnancy and delivery after complete uterine rupture

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ABSTRACT

Introduction. – To assess the obstetric outcome of pregnancies occurring after a complete uterine rupture.
Methods. – Descriptive study of a series of 11 pregnancies after complete uterine rupture.
Results. – This study includes 10 women with 11 pregnancies. There were no recurrences of complete uterine rupture. All women had cesarean deliveries between 32 and 37 weeks' gestation. There were no cases of either severe hemorrhage or placenta accreta and no maternal or neonatal deaths. All women had close clinical and ultrasound monitoring and were hospitalized during the third trimester.
Conclusion. – Women with a history of complete uterine rupture can have a subsequent pregnancy with a thoroughly favorable outcome with appropriate care conditions, including prophylactic caesarean section.

Key message box

Women with a history of uterine rupture can nonetheless have subsequent uncomplicated pregnancies with good outcomes.

Introduction

Uterine rupture is a rare obstetric complication with potentially life-threatening consequences for mother and fetus [1,2]. It most often occurs during labor; the incidence of a complete uterine rupture of a single uterine scar (from a previous cesarean) is estimated at 0.7% [3]. It can also occur, albeit still more rarely, in women with a non-obstetric uterine scar (for example, a myomectomy) or even an unscarred uterus [4]. Prognosis is best for both mother and fetus in cases of partial uterine ruptures [2,5]. Suturing the uterus is often simple and does not significantly compromise subsequent obstetric outcome in future pregnancies, although a prophylactic cesarean is recommended for these deliveries [2].

A complete uterine rupture is defined as the interruption of all layers of the uterine wall: the perimetrium, also called the serous or peritoneal coat, the myometrium, and endometrium. The incidence of complete uterine rupture is similar to that of partial uterine ruptures, each on the order of 3/10,000 in the general population in high-income countries [2,5]. Complete uterine ruptures are associated with poor neonatal prognosis [1,2], and the desire of having a new child is often expressed by the parents. Data about the outcome of subsequent pregnancies after a rupture are sparse and discordant: rupture recurrence rates range from 0% [6] to 33% [7], and neonatal mortality rates from 0% [6] to 22% [8].

The objective of our study was to describe, in our obstetrics department, the course and outcome of pregnancies in women with a history of complete uterine rupture.

Materials and methods

Population

This retrospective study identified and examined the records of pregnancies after complete uterine rupture followed at or transferred to the obstetrics department of the Croix-Rousse

Abbreviations: Weeks, Weeks of gestation; PROM, Premature rupture of the membranes; TPD, Threatened preterm delivery; GA, Gestational age; HMD, Hyaline membrane disease; EPL, Early pregnancy loss; PTD, Preterm delivery.

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Hospital after 24 weeks of gestation over the period from 2005 through the end of 2015.

Our study was approved by the Ethics Committee of the university hospital of Lyon (July 7, 2016).

Complete uterine rupture involves all layers of the uterine wall, including the serous perimetrium and often the vascular pedicles as well. Data describing the complete uterine rupture were collected from the operative reports. Patients with a history of a partial uterine rupture or without an operative report were excluded.

The women's characteristics and the obstetrical and pediatric data were collected from the computerized medical files.

Prenatal care and monitoring

Fig. 1 summarizes the management of these cases in our department. We inform women with a history of uterine rupture of the specific risks associated with their history (recurrence of uterine rupture, placenta accreta) and present them the procedures used to monitor their pregnancy. Even if the expected benefit of our procedures is not supported by scientific evidence, we inform women of the results of our local experience and of the literature. If they are seen in a preconception consultation, we evaluate the cesarean scar by ultrasound or hysterosonography.

Women with this history are seen every 3 weeks at clinical visits, which include ultrasound to monitor fetal growth, placental position, and the integrity of the lower segment. All women are hospitalized at 29 to 32 weeks of gestation, or earlier if they have uterine contractions before then. A course of corticosteroid therapy (two injections of betamethasone at a dose of 12 mg at an interval of 24 hours) for fetal maturation is administered between 30 and 34 weeks. In the absence of complications, a prophylactic cesarean is scheduled at 34 and 36 weeks.

Statistics

The quantitative variables were expressed by their medians, and their distributions by their interquartile range and minimum and maximum values.

Results

The study included 11 pregnancies in 10 women with a history of complete uterine rupture; that is, 11 deliveries after complete uterine rupture among a total of 40,034 deliveries in our department (Fig. 2).

Characteristics of the complete uterine ruptures

Table 1 summarizes the women's characteristics and the data concerning their history of uterine rupture. The median interval between the complete uterine and the pregnancy was 24 months (IQR: 19–48; min-max: 15–80). Only four of the 10 women had a previous cesarean. The rupture had occurred during labor in eight of the 10 cases; two women had an early spontaneous uterine rupture (one twin pregnancy and a pseudo-unicornuate uterus). Two women had a rupture limited to the uterus, measuring less than 3 cm (rupture type A); for six, it extended for more than 3 cm or onto adjacent organs (vagina, bladder, or the Douglas pouch) (rupture type B); and for the last two, it was an extensive uterine rupture wounding vascular pedicles (rupture type C). All women had undergone surgical repair by an experienced surgeon. Four women, all with type B or C ruptures, had severe hemorrhages.

In four of the 11 cases, preconception imaging made it possible to assess the scar: two by hysterosonography (case no. 1: defect $>$ 50% of the myometrium but residual thickness of 5–6 mm; case no. 3: suspicion of synechiae later ruled out by hysteroscopy); one by ultrasound, which was not very helpful (case no. 4), and the last by hysterosalpingography, which was normal (case no. 8). None of these resulted in scar repair.

Course of pregnancy and obstetric outcome

Table 1 summarizes the data about the course of pregnancies and obstetric outcomes. During pregnancy, clinical and ultrasound monitoring took place every 3–4 weeks for all women. Routine third-trimester hospitalization ensued for nine women, at a median gestational age of 30 weeks (IQR: 27 weeks + 2 days to

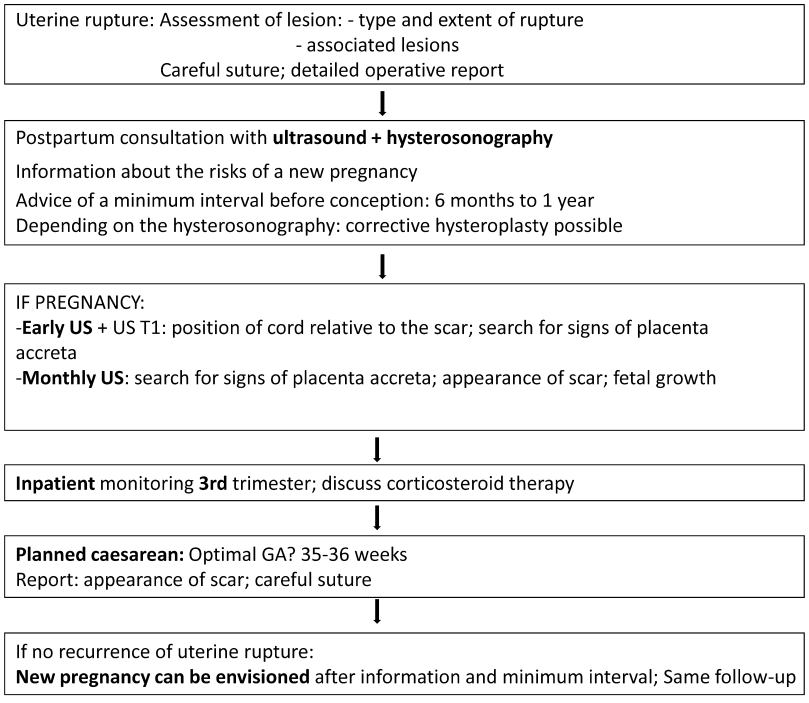

Fig. 1. Proposed management.

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