

OBSTETRIC UTERINE RUPTURE OF THE UNSCARRED UTERUS: A CASE SERIES OF SIX

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ABSTRACT

Objectives: Uterine rupture in an unscarred uterus is a reality. It is a rare obstetrical complication that requires prompt diagnosis and immediate management. The aim of our study is to describe and analyze the epidemiological characteristics, maternal and fetal prognostic elements, and different therapeutic modalities of uterine rupture in an unscarred uterus. **Methods:** This is a descriptive retrospective study spanning a 6-year period from 2017 to 2022. **Results:** The incidence was 1.7/10,000 deliveries, with a mean maternal age of 31.3 years. All patients were multiparous, and rupture occurred during labor in all cases. The main clinical presentation was a non-reassuring fetal heart rate tracing. Surgical treatment was conservative in 4 out of 6 cases. There were no maternal deaths, but the fetal prognosis was severe, with two fetal deaths. **Conclusion:** Unscarred uterine rupture is a rare but serious obstetric complication. In this series, maternal-fetal morbidity and mortality were high, consistent with the literature.

KEYWORDS: Uterine rupture; Unscarred uterus; Prognosis.

INTRODUCTION

Uterine rupture in an unscarred uterus is a rare and serious obstetric complication that can compromise short-term maternal and fetal prognosis as well as the medium-term obstetric prognosis of patients. This complication affects young women during their reproductive years. Few data are available on uterine rupture in an unscarred uterus due to the extreme rarity of this condition. The rate of hysterectomy is estimated to be between 20 and 30%, and fetal mortality between 12 and 35% [1-2]. The risk factors are poorly identified.

In this study, we present the clinical and therapeutic aspects of this condition based on a series of six cases collected in the gynecology-obstetrics department of the Maternity and Neonatology Center in Monastir, Tunisia.

MATERIALS AND METHODS

We conducted a retrospective descriptive monocentric study over a 6-year period from 2017 to 2022. The inclusion criteria were cases of uterine rupture in an unscarred uterus at term. An unscarred uterus

is defined as the absence of a uterine scar, regardless of the cause. We excluded ruptures occurring before 37 weeks' gestation, scarred uteri, uterine malformations, and patients with a history of gynecological surgery with perforation or at risk of scar that might have gone unnoticed (history of uterine surgery, uterine plastic surgery). Data were collected retrospectively from the patients' medical records and operative report books.

We carried out statistical analysis using Microsoft Office Excel 2019 and IBM SPSS. We studied the following criteria:

- Maternal age
- Parity
- Body mass index
- Gemellarity
- Abnormalities of the pelvis
- The circumstances of the uterine rupture (before or after labor)
- The characteristics of labor, delivery, and the postpartum period
- The characteristics of the rupture (its type and site)
- The type of treatment (conservative or not)
- The characteristics of the newborn (birth weight, Apgar score at 5 minutes, hospitalization in the intensive care unit, mortality)

RESULTS

During the study period, 34,255 deliveries took place. We recorded six cases of uterine rupture in an unscarred uterus. The incidence was 1.7/10,000 deliveries.

Patient characteristics (Table 1):

Maternal age ranged from 24 to 40 years, with an average of 31.3 ± 5.55 years. Parity was 3.67 ± 0.51 , ranging from two to five. Four patients were obese. All pregnancies were singleton. One patient had a pelvic abnormality, and there were no cases of hydramnios in these pregnancies.

Table1: (Main characteristics of patients.)

Patient	1	2	3	4	5	6
Age	24	32	25	33	40	34
Parity	2	3	4	4	5	4
BMI	34,9	31,1	27,6	45,7	33,2	26
Twin pregnancy	No	No	No	No	No	No
Gestational age	39	40	42WA+1jr	41WA+3days	40WA+1days	38wa+2 days
Clinical signs	Metrorrhagia	Hemodynamic instability	Metrorrhagia	NRFHT	NRFHT	Bradycardia
Moment of Discovery	Latent phase	Post Partum	Post Partum	Complete dilatation of cervix	Complete dilatation of cervix	Active phase cm dilatation
Labor induction	Dinoprostone	-	Misoprostol	Stripping membranes	Misoprostol	-

FBW	3900	3500	4000	4400	4200	3200
Apgar Score in 5 minutes	6	7	6	Fetal or neonatal death	Fetal or neonatal death	4
Site of rupture	Upper segment	Complex	Lower segment	Upper segment	Upper segment	Lower segment
Treatment	Uterine repair	Hysterectomy	Uterine repair	Hysterectomy	Uterine repair	Uterine repair
<p>NRFHT: non-reassuring fetal heart rate tracing; NICU: neonatal intensive care center; FBW: fetal body weight WA: weeks of amenorrhea; BMI: Body mass index</p>						

Circumstances of discovery and characteristics of labor and delivery (table 2): The mean gestational age was 40.1 ± 2.92 weeks, and 2 patients were at or past term. All cases of rupture occurred during labor. Two of them were discovered in the postpartum period: one following the onset of maternal hypotension and the other following the onset of metrorrhagia. Labor was induced in 66.7% of cases, and the average duration of the active phase was 0.57 hours. Three patients had a non-reassuring fetal heart rate tracing at complete dilatation of the cervix, two others presented with metrorrhagia, and one case of rupture was discovered with the onset of hemodynamic instability in the postpartum period. Three patients had normal vaginal deliveries, and three by caesarean section. All presentations were cephalic.

Table 2: (Characteristics of labor and mode of deliveries.)

Induced labour (%)		4(66.7)
Techniques of labour induction (%)	Stripping membranes	1(16.7)
	Misoprostol	2(33.3)
	Dinoprostone	1(16.7)
	extra-amniotic Foley's catheter	0
Types of delivery (%)	Vaginal delivery	3(50)
	Forceps	0
	Emergency cesarean	3(50)
Fetal body weight (g)	<3000	0
	3000-4000	3(50)
	>4000	3(50)
Average fetus weight		3870 grams
Average length of active phase		0,56 hours
Surgical techniques (%)	Uterine repair	4(66.7)
	Hysterectomy	2(33.3)

Site of UR: The most common site of UR was the upper segment in 66.7% of cases.

Therapeutic management: All cases were managed surgically, with conservative management by simple suture in four cases. Two cases required hysterectomy.

Maternal prognosis: We noted three cases of rupture complicated by hemorrhage. Two patients presented with postpartum hemorrhage complicated by hemorrhagic shock requiring transfusion. No maternal deaths were recorded. The neonatal weight ranged between 3,500 and 4,200 grams. Among the six children, there were two fetal deaths in utero and two cases of transfer to the neonatology department.

DISCUSSION

In this study, we collected six cases of rupture in unscarred uteri over a period of six years. Maternal and fetal morbidity appeared to be high, with three cases complicated by hemorrhage (two hemorrhagic shocks), two fetal deaths in utero, and two transfers to the neonatology department. The incidence of uterine rupture in unscarred uteri varies between series. In developing countries, it is 1/287 in Abiodun, Nigeria ^[3], and 1/519 in Elkady, Egypt ^[4]. In our series, the rate is 1.7 per 10,000.

In contrast, this rate is very low in developed countries, reaching frequencies of less than one per 10,000 ^[5]. In a recent registry study in Norway, Al Zirqi found a rate of 3.26 per 100,000 ^[6], and Mulot in France found a rate of 2.8 per 100,000 ^[7]. It is therefore clear that the frequency of UR depends on the level of socio-sanitary development and the quality of obstetric care. In addition, this variability in incidence rates could be explained by the heterogeneity of the definition of UR within the series, some of which have included cases of uterine perforation that went unnoticed (during aspiration or other surgical techniques with an endo-uterine approach).

There are many risk factors for the occurrence of UR in an unscarred uterus. Studies have shown an increased risk of rupture when prostaglandins and oxytocin are used ^[8]. According to Sweeten ^[9], this is due to a lack of automated control and systematic monitoring of labor. Multiparity is considered a risk factor for UR. In our series, 60% of patients were multiparous. This can be explained by histological changes in the uterine muscles. Other factors may include the fragility of the uterine wall, such as the presence of arteriovenous malformations, uterine diverticula, and endometriosis ^[10].

UR in an unscarred uterus presents heterogeneous and non-specific symptoms, leading to frequent delays in management and more serious complications ^[1] ^[6]. Metrorrhagia at the end of labor or in the immediate postpartum period should raise the alarm ^[11]. In addition, some authors mention symptoms such as pain that is resistant to analgesia and the onset of unexplained maternal hypotension ^[12], ^[13]. Wang ^[14] found in his series that non-reassuring fetal heart rate tracings were present in 80% of cases.

Uterine rupture is an obstetric emergency and must be treated immediately. Hysterectomy was the recommended treatment for UR until the 1980s. Today, it is mainly indicated in cases where repair has failed or is impossible. Suturing has the advantage of being easy and rapid and of preserving patients' fertility, with an estimated risk of recurrence of between 4% and 19% in a subsequent pregnancy ^[15].

The operation must consider certain parameters: the patient's age, parity, the extent of the lesions, the possible risk to future pregnancies, the resources, and above all the experience of the obstetric team ^[16].

Rupture in an unscarred uterus is fraught with high maternal and fetal morbidity and mortality ^[12], ^[17], probably due to the implausibility of the diagnosis, the delay in management, and the extent of the lesions. Plauche ^[18] et al found a fetal mortality rate of 44%, but the authors reported no maternal deaths. Shrinsky et al ^[19] found in their study that the maternal mortality rate was 20.8%, and the fetal mortality rate was 64.6%.

Conclusion: Uterine rupture in an unscarred uterus is a serious obstetric complication, with a high maternal-fetal mortality rate due to delayed diagnosis and inadequate management. All obstetricians should be aware of it. It should be suspected in the presence of a serious alteration in fetal heart rate, whether or not associated with hemorrhage. The management of this condition is a vital emergency, with maternal and fetal prognoses at stake, as well as the obstetrical outcome of the patients.

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