

# Uterine ruptures: epidemiological aspects and prognosis at N'djamena Mother and Child Hospital

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**BACKGROUND:** Uterine rupture is a non-surgical breach of the continuity of the myometrial wall, and is always a major obstetric emergency.

**OBJECTIVE:** To identify the main etiologies of uterine rupture aiming to improve its management and reduce its morbidity.

**MATERIAL AND METHOD:** This was a prospective and descriptive survey carried out for nine months in 2013 at N'Djamena Mother and Child hospital. The population studied was pregnant women (>28 gestational weeks), or in post-partum period, admitted for uterine rupture. Chi-square ( $X^2$ ) test ( $p<0.05$ ) was used to compare variables.

**RESULT:** We recorded 54 uterine ruptures among 9384 deliveries giving a frequency of 0.57%. The average age was 26.8 years with a range of 15 to 40 years. Thirty two of the 54 patients (57.4%) were multiparous (average parity was 3.8). Eighteen had a scarred uterus ( $p=0,014$ ). Among the causes, foeto-pelvic disproportion was observed in 44.4% of patients ( $n=24/54$ ) followed by the inappropriate use of oxytocin in 24.1% ( $n=13/54$ ). Complete uterine rupture was noted in 77.8%. Laparotomy was performed in all cases. The conservative treatment (suture of uterine lacerations) was done in 47 cases (87%). Hysterectomy was carried out in 7 cases (13%). Five patients died (9.3%) in the intensive unit care. Fifty foetuses (92.6%) died.

**CONCLUSION:** Uterine rupture is an obstetrical emergency. It remains a common cause of death for the mothers and foetuses. The prevention is possible.

Key words: *uterine rupture, epidemiological aspects and foeto-maternal prognosis.*

## Introduction

Uterine rupture is a non-surgical breach of the continuity of the myometrial wall of the uterus [1]. It is now rare in industrialized countries, thanks to improved ante- and peri-natal care [2]. In the sub-Saharan Africa it is a major obstetric emergency. Its frequency ranges from 0.6% in Central African Republic [3], 0.78% in Togo [4], 1.01% in Enugu (Nigeria) [5], 1.15% in Bamako (Mali) [6], 2.2% in Senegal [7] to 2.33% in Niger [8]. In Chad, there are no previous data on this serious subject.

Our objective was to identify the main causes of uterine rupture and so improve management and reduce morbidity and mortality.

## Material and method

This was a prospective and descriptive survey carried out for nine months (January, 14th 2013 to October 14th 2013) at N'Djamena Mother and Child hospital.

N'Djamena Mother and Child hospital is a third level hospital caring for referred patients from surrounding hospitals.

The population of the survey was composed of pregnant women (> 28 gestational weeks) or in the post-partum period who were admitted for uterine rupture.

Studied variables were: age, parity, etiology, number of prenatal consultations, treatment and prognosis. Consent from the patient for inclusion in the study was obtained after explaining to her the need for the survey. All consented patients with uterine rupture were included. Agreement of the Director of N'Djamena Mother and Child hospital and the ethical committee were also obtained. Data were analyzed using SPSS 17.0. Chi-square ( $X^2$ ) test ( $p<0.05$ ) was used to compare variables.

## Results

### Epidemiological aspects

#### Frequency

We recorded 54 uterine ruptures among 9384 deliveries (frequency of 0.57%).

The average age was 26.8 years (range 15 to 40 years). The highest proportion of cases (35.2%) were in the age

group 31 to 35 years (n=19/54), as shown in table 1.

Multiparous represented 57.4% (n=32/54) of the patients. Average parity was 3.8 (table 2).

#### *Prenatal consultation and admission mode*

Thirty eight patients (70.4%) had had less than the WHO-recommended 4 antenatal visits, the remaining 16 patients had 4 antenatal consultations. The majority of patients (n=34/54 i.e. 62.3%) lived in a rural area. Forty six patients (85.2%) were referred in labour from surrounding hospitals.

#### *Clinical data*

We recorded 18 patients with scarred uterus among 54 patients admitted for uterine rupture (p=0,014) (table 3).

Foeto-pelvic disproportion was most common at 44.4% (n=24/54). Inappropriate oxytocin used has concerned 24.1% (n=13/54). Inappropriate use of uterotonic (misoprostol and oxytocin) represented 18 patients (33.4%) (table 4).

#### **Pathological anatomy**

Complete rupture that involved all uterine occurred in 77.8% (n=42/54). Inferior segment was ruptured in 81.5% (n=44/54). Laparotomy was performed in all cases. Conservative treatment (suture of uterine lacerations) was done in 87% (n=47/54). Hysterectomy was carried out in 7 cases (13%).

Fifteen patients (27.8%) in the post-operative period were anaemic (see table 5).

#### **Foetal and maternal prognosis**

Five patients (5/54 i.e. 9.3%) died in the intensive unit care. Causes of maternal death were: severe anemia (4/5 i.e. 80%) and septic shock (1/5 i.e. 20%). We registered 50 foetal deaths among 54 foetuses, giving a perinatal mortality of 92.6%.

#### **Discussion**

##### **Epidemiological aspects**

In France, uterine rupture frequency varies between 1/1000 to 1/2000 [9], in the United States of American the frequency is less than 1 case for 1000 deliveries [10, 11]. The rupture frequency in our survey was 0.57%. Our proportion is similar to that reported in Madagascar (0.5%) [12] and Central African Republic (0.6%) [3]. However it is less than noted in Senegal (2.2%) [7] and Niger (2.33%) [8].

Our findings could be associated with the high number of patients visiting the study hospital and its proximity to surrounding hospitals. Patients prefer being seen in the Mother and Child Hospital as they benefit from free treatment.

According to the literature, the multiparous (4 parity)

**Table 1. Age of patients**

| Age in Years | Number (%) |
|--------------|------------|
| 15- 20       | 8 (14.8%)  |
| 21-25        | 13 (24.1%) |
| 26-30        | 11 (20.4%) |
| 31-35        | 19 (35.2%) |
| 36-40        | 3 (5.5%)   |
| Total        | 54 (100%)  |

**Table 2. Parity**

| Parity                   | Number (%) |
|--------------------------|------------|
| Primiparous              | 8 (14.8%)  |
| Pauciparous (parity 2-3) | 13 (24.1%) |
| Multiparous (≥parity 4)  | 11 (20.4%) |
| Total                    | 19 (35.2%) |

**Table 3. Relationship between previous uterus scar and number of uterine ruptures**

| Uterus scar      | Deliveries Number | Uterine rupture Number (%) |
|------------------|-------------------|----------------------------|
| Scarred uterus   | 137               | 18 (13.1%)                 |
| Unscarred uterus | 9247              | 36 (0.39%)                 |
| Total            | 9384              | 54 (0.57 %)                |

is the key risk factor for uterine rupture [3, 4, 6, 7, 9, 10, 11, 12, 13, 14].

Most patients (82.5%) had been referred and the majority (62.3%) lived in rural areas. Other surveys have reported a high proportion of referred patients of up to 98% [12; 15]. In Chad, patients living in peripheral areas have to consult at peripheral health center before they can be referred. Transport difficulties lead to delays in accessing better care in N'Djamena Mother and Child hospital.

#### **Etiology**

Foeto-pelvis disproportion was most commonly seen (44.4%). According to the literature, the etiologies of the reported causes of uterine rupture vary from one survey to another. In the Ivory Coast, foeto-pelvic disproportion was the most common [13]. However others suggest that the inappropriate use of oxytocin was the main etiological factor in around 40% of cases [12; 16]. Inadequate antenatal care and the high proportion of referred patients may explain our findings. Antenatal consultations are the opportunity at which to spot obstetrical complications.

**Table 4. Etiology**

| Etiology                   | Number (%) |
|----------------------------|------------|
| Foeto-pelvic disproportion | 24 (44.4%) |
| Dystocic presentation      | 12 (22.2%) |
| Inappropriate misoprostol  | 5 (09.3%)  |
| Inappropriate oxytocin use | 13 (24.1%) |
| Total                      | 54 (100%)  |

**Table 5. Post-operative morbidities**

| Morbidity            | Number (%) |
|----------------------|------------|
| Anemia               | 15(27.8%)  |
| infection            | 5 (9.3%)   |
| Dehiscence of suture | 2 (3.7%)   |
| Thrombocytopenia     | 1 (1.8%)   |
| No complication      | 31 (57.4%) |
| Total                | 54 (100%)  |

### Pathological anatomy

In the third trimester, the inferior segment of the uterus is the predilection part for rupture [17]. In this survey 81.5% of ruptures found in the inferior segment. Laparotomy was performed in all cases. The treatment was conservative in 87 %. The remaining patients (13%) required a hysterectomy. Rabarikoto [12] reported also more conservative treatment (86.1%). Diallo [15] noted a 44% hysterectomy rate. The achievement of hysterectomy (radical treatment) or suture of uterine laceration (conservative treatment) depends of the extension of uterine laceration and the hemodynamic state. When maternal prognosis is worst, hysterectomy is performed.

### Foetal and maternal prognosis

Maternal mortality in this survey was 9.3%. Our proportion of maternal deaths linked with uterine rupture is similar to reported elsewhere [3, 4, 10, 14]. This mortality rate was mainly due to the lack of blood products during the management. Severe anemia was the cause of 80% of the maternal death. As in previous studies [8, 12, 13, 18] we noted a high foetal death rate (92.6%).

### Conclusion

Uterine rupture is an obstetrical emergency. It remains a serious cause of death for the mother and foetus. Prevention is possible: it needs correct prenatal consultation, good surveillance of labour, and the improvement of referral peripheral centers.

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**Consent:** We got the consent of the patients and the agreement of the Director of N'Djamena Mother and Child hospital.

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