

# Delay for Performing Laparotomy for Extra Uterine Pregnancy in N'Djamena Mother and Child University Hospital

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## Abstract

**Background:** Ectopic pregnancy is defined as any pregnancy developed outside the uterine cavity. **Objective:** to study the relationship between the duration of laparotomy for EP and maternal prognosis. **Patients and method.** This was a prospective analytical study performed during a period of six (06) months, from May 1st to October 30, 2023, on delay time to perform laparotomy for EP in N'Djamena Mother and child University hospital (NMCUH). We included in this series all patients admitted for EP managed by laparotomy. Data were collected using Word software and analyzed using SPSS 18.0 version 2018. The p value statistical test was used to compare variables (p significant if  $\leq 5\%$ ). **Results:** We recorded 92 cases of EP out of 5751 pregnancies, giving a frequency of 1.6%. Among patients diagnosed with EP, 76/92 (82.6%) had an indication of laparotomy. In 90.8%, the EP was ruptured. On admission, the diagnosis of EP was made within <15 min in 43.2% of cases. The time between diagnosis and indication for laparotomy was less than 15 minutes in 96% of patients. Blood products caused a delay in 63.1% of cases, with a delay of >1 hour in 15.8% of cases. The time to sign the consent allowing doctor to operate was >1 hour in 14.5% of cases. The operating room was unavailable in 34.2% of cases, with an unavailability of >1 hour in 17.1% of cases. Total salpingectomy was performed in 93.4%. Salpingotomy was performed in 6.6%. The lethality rate was 3.9% with significant value when the delay after indication and admission in the operating room is >1 (p value = 0.03). **Conclusion:** Various factors, such as the search for blood products, the time loss to sign the consent form and the unavailability of the operating room, delay the laparotomy, influence maternal prognosis. Anticipation on these factors is necessary in order to limit the proportion of delays.

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## Keywords

Delay, Laparotomy, NMCUH, Chad

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### 1. Introduction

Ectopic pregnancy is defined as any pregnancy that developed outside the uterine cavity. The majority of ectopic pregnancies are therefore tubal pregnancies. It is a frequent occurrence due to the resurgence of sexually transmitted infections and smoking [1] [2] [3].

It is a serious problem, as it is still the leading cause of maternal death and subsequent infertility in Chad, with up to 50% infertility in nulliparous women in the world [4] [5] [6].

Much progress has been made in recent years in the management of EP. Treatment modalities depend on the stage of development. Treatment options include abstention, medical treatment and surgery by endoscopy or laparotomy [7]. Advanced forms often require surgery. However, in developing countries, the practice of endoscopic surgery is not widespread, making laparotomy as the treatment of advanced forms of EP. In Chad, the treatment of EP remains dominated by surgery (laparotomy).

We therefore initiated this series to study the relationship between the duration of laparotomy for EP and maternal prognosis.

### 2. Patients and Method

This was a prospective analytical study lasting covering a period of six (06) months, from May 1<sup>st</sup> to October 30, 2023, on the delay time to perform laparotomy for EP in N'Djamena Mother and Child University Hospital.

Patients were recruited in emergency room after diagnosing of the EP. The diagnose was clinic basing on signs like: amenorrhea, metrorrhagia, vagina bleeding, the scan and the pregnancy test. We included in this series all patients admitted for EP surgically managed by laparotomy and who consented to participate. There were followed after surgical during hospitalization.

Data were collected using a pre-established form containing variables related to the management.

Data were entered using Word and analyzed using SPSS 18.0 version 2018. p-value statistical tests were used to compare variables (p significant if  $\leq 5\%$ ).

### 3. Results

#### *Frequency*

We recorded 92 cases of EP out of 5751 pregnancies, giving a frequency of 1.6%.

Among patients diagnosed with EP, 76/92 (82.6%) had an indication for laparotomy, including 3 (3.2%) after failure of medical treatment (**Table 1**).

**Table 1.** Distribution of patients by age group.

Age (year)	n	%
<18	12	15.8
18 - 25	38	50
25 - 30	17	22.4
>30	9	11.8
Total	76	100

*Age*

Patients in the 18 - 25 age group accounted for 50%.

The mean age was  $24.3 \pm 2.1$  years, with extremes of 16 and 35 years.

*Origin*

Patients residing in N'Djamena represented 94.7% (n = 72).

*History*

Ten patients (13.2%) had a history of sexually transmitted infection and 2 (2.6%) had a history of EP. Considering the use of contraceptive method, 13 patients (17.1%) had used a contraceptive method (pill = 1, implant = 1 and injectable = 11).

*Clinical signs*

The symptomatic triad consisted with: amenorrhea, metrorrhagia and pelvic pain was present in 61.8% of cases (**Table 2**).

*Type of EP*

In 90.8% (n = 69) the EP was ruptured, compared with 9.1% (n = 7) unruptured.

*Time to confirmation of diagnosis*

On admission, the diagnosis of EP was made less than 15 minutes for 48 patients (63.2%). However, 16 patients (21.1%) and 12 patients (15.8%) were diagnosed within 15 - 30 min and >30 min respectively.

*Time between diagnosis and indication for laparotomy*

The time between diagnosis and indication for laparotomy was less than 15 minutes in 96% of patients (n = 73). Three patients (3.9%) who initially benefited a medical treatment had a delay between diagnosis and indication for laparotomy of 5 days.

*Causes of delay and time taken between indication for laparotomy and admission to the operating room*

The blood products caused a delay in 63.1% (n = 48), with a delay time > 1 h in 15.8% (n = 12) (**Table 3**).

The time taken to sign the consent file allowing the operation caused a delay > 1 h in 14.5% of cases (n = 11).

The operating room was unavailable in 34.2%, with unavailability of the operative room > 1 h in 17.1% (n = 13).

*Location of EP*

The EP was ampullary in 94.7% of cases (**Table 4**).

**Table 2.** Clinical signs.

Clinical aspects	n	%
Metrorrhagia and pelvic pain	15	19.7
Amenorrhea, metrorrhagia and pelvic pain	47	61.8
Amenorrhea and metrorrhagia	9	11.8
Amenorrhea and pelvic pain	5	6.6
Total	76	100

**Table 3.** Cause of delay and duration.

Cause of delay	n	%
<i>Looking of blood products</i>		
<5 mn	21	27.6
5 - 10 mn	3	3.9
11 - 30 mn	4	5.2
30 - 1 h	8	10.4
>1 heure	12	15.8
<i>Signature of consent file allowing the operation</i>		
<5 mn	35	46
5 - 10 mn	15	19.7
11 - 30 mn	9	11.8
31 mn et 1 h	6	7.9
>1 heure	11	14.5
<i>Unavailability of operating room</i>		
<15 mn	3	3.9
15 - 30 mn	6	7.9
31 - 45 mn	2	2.6
46 mn - 1 h	2	2.6
>1 h	13	17.1

**Table 4.** EP localization.

EP localization	n	%
Ampullary	72	94.7
Isthmic	3	3.9
Infundibular	1	1.3
Total	76	100

*Surgical procedure*

Total salpingectomy was performed in 93.4% (n = 71). Salpingotomy was performed in 6.6% (n = 5).

### *Prognosis*

Obstetrical prognosis was good in 96.1% (n = 73). The lethality rate was 3.9% (n = 3).

Considering maternal lethality, we noted that the maternal prognose was worse when the delay time from indication for laparotomy to admission in operative room was >1 h (p = 0.03).

One maternal death was recording (delay between indication and operation was 1 h). The hemodynamic stage of patients with ruptured EP the worse wen the delay to be operated was  $\geq 45$  mn.

## **4. Discussion**

The frequency of the EP in this study was 1.6% and an indication for laparotomy represented 82.6%. This frequency of EP agrees with data from authors such as Alabong [8] in Cameroon in 2020, Charlotte B [9], in Nigeria in 2020 and Suneeta S [10] in India in 2019 and Kripa [11] in Nepal in 2021 ranging between 1.3% - 1.56%. Whatever the frequency of EP, the gold standard for surgical treatment remains laparoscopic surgery. However, the availability of laparoscopy is a serious problem in developing country where laparotomy is the only remains the main surgical management. Certain situations, such as hemodynamic status, previous abdominal surgery and the experience of the surgeon, may justify laparotomy from the outset [12]. In our context, the unavailability of the laparoscopic column justifies systematic laparotomy.

Among the factors influencing the use of the laparotomy, the hemodynamic status is an important one. Blood loss is greater in cases of ruptured ectopic pregnancy. Ruptured EPs are common in developing countries, where patients are seen late [8] [9] [13]. This remains true in this series and that of Kripa in Nepal [11], with 90.8% and 75% of EPs respectively being ruptured.

The time taken to diagnose EP varies. The diagnosis is most obvious in patients seen late, in whom the symptomatic triad of amenorrhea, pelvic pain and metrorrhagia is often present. This study confirms this assertion, with 61.8% of patients presenting with the symptomatic triad (amenorrhea, pelvic pain and metrorrhagia). There are disparities in these rates. Charlotte [9] in Nigeria noted 71.6%, 89.3% and 96.4% respectively of bleeding, amenorrhea and pelvic pain. Diagnosis was done less than 15 minutes in 63.2% of cases. This time can be considered as time necessary to perform the biological pregnancy test and the echography. Clinical signs such as metrorrhagia and pelvic pain in a context of amenorrhea immediately allow one to the suspect an ectopic pregnancy.

According to current literature [14] [15], there should be no delay in performing laparotomy for ruptured EP (unstable patients). This assertion is disturbed in our context by the discovery of factors delaying laparotomy. Gabkika BM [16], in a series on the delay of caesarean section, reported that the main obstacles to caesarean section were: signature of the consent file allowing the operation, the unavailability of blood products. This study confirms with 48 patients (63.1%) that have experienced a delay linked to the unavailability of blood,

(15.8% with  $\geq 1$  hour). This delay is attributable to the department's protocol, which assigns the search of blood products in emergency to the patient's relatives. Blood collection from the National Blood Transfusion Center and the transport to the N'Djamena Mother and Child University Hospital could account for this delay.

We found that the unavailability of the operating room was the cause of the delay in admission to the operating room in 34.2%, (with unavailability  $> 1$  h in 17.1%). The availability of the operating room is variable, depending on certain periods and considering the status of N'Djamena's Mother and Child University Hospital, which is recognized as a reference structure for reproductive health. During peak periods, the N'Djamena Mother and Child Hospital's operating room are also used for emergency procedures (especially Caesarean sections).

A specific delay met only in our country is the delay to sign the consent file allowing the operation. We noted that the delay to sign the consent file was  $> 1$  h in 14.5% of cases ( $n = 11$ ). This delay is attributable to the attitude of some families, who refuse the surgical procedure. Indeed, the fear of surgical complications justifies these families' behavior who do not consider laparotomy to be a life-saving procedure.

Taking into account the location of the EP, the literature shows that there is a high proportion of ampullary extra uterine pregnancies [9] [10] [11] [17]. This study confirms these findings, with 94.7% of EPs being ampullary. These tubal localizations of EP often require surgical management in the event of rupture. There is no standard surgical treatment for the management of EP. Depending on the operative findings, and taking into account the patient's history and desire for pregnancy, salpingectomy or salpingotomy may be performed.

Salpingectomy, which is a radical treatment, alters the subsequent prognosis of patients' fertility, unlike salpingotomy, which favours the possibility of recurrence. We noted that 93.4% of patients had undergone salpingectomy. The same is true for Alabong [8], Charlotte [9] and Kripa [11], who report a high proportion of salpingectomies. We found that the maternal mortality rate was significant for a delay of more than 1 hour between the indication for laparotomy and admission in operating room ( $p = 0.03$ ). This delay exacerbates the precarious maternal state after blood loss, thus favoring the onset of complications likely to lead to death.

## 5. Conclusion

Treatment of EP by laparotomy is common practice in N'Djamena mother and Child University Hospital. Various factors, such as the search for blood products, signature of the consent form and unavailability of the operating room, delay laparotomy, thus influencing maternal prognosis. Anticipation on these factors is necessary in order to limit the proportion of delays.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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