



## Ectopic pregnancy experience in a tertiary health facility in South-South Nigeria

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### ABSTRACT

**Background:** Ectopic pregnancy is a life-threatening gynecological emergency, and a significant cause of maternal morbidity and mortality in Nigeria.

**Objective:** To determine the incidence, clinical presentation, risk factors and management outcomes of ectopic pregnancies in a tertiary health facility.

**Methods:** A retrospective study of all cases of ectopic pregnancies managed at the University of Port Harcourt Teaching Hospital (UPTH) from January 1, 2011 to December 31, 2015 was conducted. Data collected with the aid of data-entry forms designed for this purpose were analyzed using statistical package SPSS 20.

**Results:** There were 2,579 gynecological admissions and 12,421 deliveries, with 414 cases of ectopic pregnancies managed. Ectopic pregnancy constituted 16.1% of all gynecological admissions, and its incidence was 3.3%. A total of 345 cases were suitable for analysis. The mean age of the patients was  $27.9 \pm 5$  years. 330 women (95.7%) had ruptured ectopic pregnancies, and the remaining fifteen (4.3%) were unruptured. The commonest clinical presentation were abdominal pain and amenorrhoea in 99.7%. The commonest identified risk factor was a previous history of induced abortion in 328 women (95.1%). Two deaths were recorded, giving a case-fatality rate of 0.6%.

**Conclusion:** Majority of the patients presented with ruptured ectopic pregnancy. This has adverse effect in a society that places a high premium on child bearing. Early diagnosis, identifying of risk factors and timely intervention in the form of medical or surgical treatment will go a long way in reducing the morbidity and mortality associated with ectopic pregnancy.

**Keywords:** Ectopic pregnancy, amenorrhea, abdominal pain, case fatality, ruptured ectopic.



## Introduction

An ectopic pregnancy occurs when a fertilized ovum implants outside the normal uterine cavity.<sup>1</sup>

Most ectopic pregnancies occur in the Fallopian tube but implantation can also occur in the cervix, ovaries, and abdomen. An ectopic pregnancy is a potential medical emergency, and, if not treated properly, can lead to death from massive haemorrhage.<sup>2</sup> It is the leading cause of maternal mortality in the first trimester, and accounts for 10-15% of all maternal deaths.<sup>2</sup>

It is an important cause of maternal morbidity and mortality in developing countries, where the majority of patients present late with rupture and hemodynamic compromise.<sup>3</sup> It is also a cause of fetal wastage and has been associated with recurrence and impairment of subsequent fertility.<sup>4</sup>

Currently, the overall incidence of ectopic pregnancy is increasing worldwide,<sup>5-14</sup> but the case-fatality rate has decreased.<sup>10</sup> This might be due to a combination of increasing incidence of pelvic inflammatory disease (PID) and better antibiotics which permit tubal patency with luminal damage following infection, and an increase in ovulation induction, assisted reproductive technology, and also improved diagnostic techniques.<sup>6,11</sup> The incidence of this life-threatening condition varies from 0.67% in developed countries<sup>4</sup> to 0.9%–4.38% in Nigeria.<sup>15-20</sup> More than 95% of ectopic pregnancies occur in the fallopian tube, making this the commonest site.<sup>6-8</sup>

The etiology of ectopic pregnancy is not well understood. Many of the risk factors are associated with prior damage to the Fallopian tube. Pelvic inflammatory disease, puerperal sepsis, post abortion sepsis, appendicitis, and the use of intrauterine contraceptive devices have all been identified as sources of pelvic infection and major risk factors.<sup>5,6,8</sup> Other etiological risk factors are tubal/pelvic surgeries, endometriosis, exposure to diethylstilbestrol in-utero, chromosomally abnormal embryo, use of progesterone-only pills, cigarette smoking, conception following induction of ovulation and in vitro fertilization and embryo transfer (assisted reproductive technology), history of previous abortion, previous ectopic pregnancy, history of infertility, race, and age above 35 years.<sup>7,11</sup> However, women with ectopic pregnancy frequently have no identifiable risk factors.<sup>7</sup>

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The clinical presentation of ectopic pregnancy is variable with pelvic or abdominal pains in most cases. The patients also present with secondary amenorrhoea and abnormal vaginal bleeding; dizziness, and/or syncope are seen in advanced stages of intra-peritoneal haemorrhage following rupture.<sup>1,6,19</sup> Ruptured ectopic pregnancy leads to acute onset of abdominal pains and cardiovascular collapse, and without prompt intervention, can invariably lead to death.<sup>25</sup>



The diagnosis of ectopic pregnancy has become more frequent during the last decades but the incidence of ruptured ectopic pregnancy rupture has declined in western countries.<sup>26-27</sup> This decline is due to quantitative hCG measurements, minimally invasive surgery, transvaginal ultrasonography and laparoscopy, which is the goal standard.<sup>26</sup> Early diagnosis reduces the risk of tubal rupture and allows more conservative medical treatments to be employed.<sup>27</sup> However, in our environment it is the reverse as most of our patients present with ruptured ectopic pregnancy and cardiovascular collapse in some cases.

This retrospective analysis was done to determine the incidence, clinical features, risk factors, and management outcomes of ectopic pregnancy in a tertiary care hospital in Nigeria.

## **Methodology**

This study was carried out at the gynaecology unit of the University of Port Harcourt Teaching Hospital (UPTH). The hospital receives referrals from all parts of the state and also from neighbouring states. The unit has 40 beds in the gynaecology ward and three beds in private/semi-private rooms. There are five units; each unit has four consultant obstetricians, five specialist senior registrars and two registrars with many experienced nurses and midwives. Ethical approval for this study was obtained from the ethics committee of the hospital.

This was a retrospective study of all cases of ectopic pregnancy admitted and managed at the University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt over a 5 year period (January 1, 2011 – December 31, 2015). All cases of diagnosed ectopic pregnancy admitted through the accident and emergency unit as well as the gynecology clinic that were managed in the gynecological ward of UPTH were included in the study. The diagnosis of ectopic pregnancy was made mainly by history-taking, clinical physical examination, laboratory and radiological (ultrasound) investigations. The variables to be analyzed were retrieved from theatre records, ward register and case notes over the period under review. These variables included age, parity, occupation, clinical presentation, risk factors, and findings at laparotomy, the outcome of treatment and duration of stay in hospital after surgery. The proforma for each patient was checked for completion before it was entered into a spreadsheet and analyzed. The gynecology admissions and total birth records for the period under review were also collected from the gynecology and labour ward registers. All those whose medical records were incomplete or missing were excluded from the study.



## Statistical analysis

The Statistical package SPSS 20 was used for data analysis. The results are represented in simple percentages and tables.

## Results

There were 2,579 gynecological admissions and 12,421 deliveries over the period under review, out of which 414 cases were ectopic pregnancies. The incidence of ectopic pregnancy in this study was 3.3% which constituted 16.1% of all gynaecological admissions during the study period. A total of 345 cases were suitable for analysis after excluding the fifteen cases with incomplete records and missing case notes. The mean age of the patients was 27.9 years  $\pm$  5 years with age range of 17 to 45 years. Most of the women (52.5%) were single and 52.8% were nulliparous. Table 1 shows the details of the socio-demographic characteristics of the patients.

The clinical presentation is shown in Table 2. The commonest presentation was abdominal pain and amenorrhoea in 344 of the women (99.7%), 303 (87.8%) had vaginal bleeding, 74 (21.4%) presented with dizziness/fainting attack, and 48 (13.9%) presented in shock. Amenorrhoea was reported by all the patients, of which 96.2% were 12 weeks of gestation and below (Table 3). The commonest site of ectopic gestation (Table 4) was the ampullary region of the fallopian tube (75.1%), while the tubo-ovarian site had the lowest occurrence (2.6%). Table 5 shows that 197 (59.7%) of ruptured ectopic pregnancies occurred at 8–12 weeks' gestation, and the majority of these occurred in the ampullary (77.3%) and 12.7% occurring in the Isthmic region of the fallopian tube. All the ectopic pregnancies located in the interstitial/cornual region (7.0%) of the fallopian tube ruptured at a gestational age of 8 weeks or above.

There was a past history of induced abortion in 328 (95.1%) had, while 70 (20.3%) had pelvic inflammatory disease, as risk factors for ectopic gestation (Table 6). Other associated risk factors were previous miscarriage (10.1%), previous history of abdomino-pelvic surgery (4.6%), use of intrauterine contraceptive devices (1.4%) and previous ectopic pregnancy (0.9%).

Table 7 shows that the commonest surgical modality of treatment was salpingectomy (90.4%); others were salpingectomy with metroplasty (7.0%) and Salpingo-oophorectomy (2.6%).

Anaemia was the commonest (90.1%) postoperative complication in this study. Two-third of the patients had blood transfusion. None of the patients had minimal access surgery, medical or conservative management.



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Table 8 shows a comparison between the frequencies of morbidity associated with both ruptured and unruptured ectopic pregnancies, indicating more morbidity with ruptures. The mean duration of hospital admission was  $6 \pm 1$  day. The case-fatality rate was 0.6%. The two mortalities were from excessive hemorrhage from rupture of interstitial/cornual tubal ectopic pregnancies.

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**Table 1. Bio-demographic characteristics**

| Age group             | Frequency  | Percentage |
|-----------------------|------------|------------|
| <20                   | 16         | 4.6        |
| 20-24                 | 84         | 24.3       |
| 25-29                 | 117        | 33.9       |
| 30-34                 | 88         | 25.5       |
| 35-39                 | 32         | 9.3        |
| ≥40                   | 8          | 2.3        |
| <b>Parity</b>         |            |            |
| 0                     | 182        | 52.8       |
| 1                     | 78         | 22.6       |
| 2                     | 28         | 8.1        |
| 3                     | 29         | 8.4        |
| 4                     | 22         | 6.4        |
| ≥5                    | 6          | 1.8        |
| <b>Marital status</b> |            |            |
| Married               | 164        | 47.5       |
| Single                | 181        | 52.5       |
| <b>Occupation</b>     |            |            |
| Hair stylist          | 20         | 5.8        |
| Student               | 106        | 30.7       |
| Housewife             | 52         | 15.1       |
| Business woman        | 54         | 15.7       |
| Trader                | 59         | 17.1       |
| Nurse                 | 5          | 1.4        |
| Civil servant         | 36         | 10.4       |
| Seamstress            | 8          | 2.3        |
| Apprentice            | 5          | 1.4        |
| <b>Total</b>          | <b>345</b> | <b>100</b> |



**Table 2. Clinical presentation of patients with ectopic pregnancy**

| Presentation              | Frequency  | Percentage   |
|---------------------------|------------|--------------|
| Abdominal pain            | 344        | 99.7         |
| Amenorrhoea               | 344        | 99.7         |
| Vaginal bleeding          | 303        | 87.8         |
| Fainting attack/dizziness | 74         | 21.4         |
| Shock                     | 48         | 13.9         |
| <b>Total</b>              | <b>345</b> | <b>100.0</b> |

**Table 3. Duration of amenorrhoea for both ruptured and unruptured ectopic pregnancies**

| Duration of amenorrhea | Frequency  | Percentage   |
|------------------------|------------|--------------|
| ≤ 7 weeks              | 128        | 37.1         |
| 8-12 weeks             | 204        | 59.1         |
| >12 weeks              | 13         | 3.8          |
| <b>Total</b>           | <b>345</b> | <b>100.0</b> |

**Table 4. Site of ectopic pregnancy**

| Site                 | Frequency  | Percentage   |
|----------------------|------------|--------------|
| Ampulla              | 259        | 75.1         |
| Isthmus              | 42         | 12.2         |
| Interstitial/Cornual | 25         | 7.2          |
| Fimbrial             | 10         | 2.9          |
| Tubo-ovarian         | 9          | 2.6          |
| <b>Total</b>         | <b>345</b> | <b>100.0</b> |

**Table 5. Gestational age at rupture for specific sites**

| Gestation age(weeks) | ≤7 weeks<br>N (%)     | 8-<br>12weeks<br>N(%) | >12 weeks<br>N(%) | Total<br>N(%) |   |
|----------------------|-----------------------|-----------------------|-------------------|---------------|---|
| Ampullary            | 70(21.2)              | 180(54.5)             | 5(1.5)            | 255(77.3)     |   |
| Interstitial/Cornual | 0(0.0)                | 12(3.6)               | 11(3.3)           | 23(7.0)       | <b>X<sup>2</sup>=213.17</b><br><b>p-value=0.000</b> |
| Fimbrial             | 1(0.3)                | 2(0.6)                | 1(0.3)            | 4(1.2)        |   |
| Isthmic              | 42(12.7)              | 0(0.0)                | 0(0.0)            | 42(12.7)      |   |
| Tubo ovarian         | 3(1.0)                | 3(1.0)                | 0(0.0)            | 6(1.8)        |   |
| <b>Total</b>         | <b>116<br/>(35.2)</b> | <b>197(59.7)</b>      | <b>17 (5.1)</b>   | <b>330</b>    |   |



**Table 6. Risk factors in patients with ectopic pregnancy**

| <b>Risk factors</b>               | <b>Frequency</b> | <b>Percentage</b> |
|-----------------------------------|------------------|-------------------|
| Previous induced abortion         | 328              | 95.1              |
| Previous PID                      | 70               | 20.3              |
| Previous miscarriage              | 35               | 10.1              |
| Previous abdomino-pelvic surgery  | 16               | 4.6               |
| Intrauterine contraceptive device | 5                | 1.4               |
| Previous ectopic pregnancy        | 3                | 0.9               |

**Table 7. Type of surgical treatment**

| <b>Surgery</b>              | <b>Frequency</b> | <b>Percentage</b> |
|-----------------------------|------------------|-------------------|
| Salpingectomy               | 312              | 90.4              |
| Salpingectomy + metroplasty | 24               | 7.0               |
| Salpingo-oophorectomy       | 9                | 2.6               |
| Total                       | 345              | 100               |

**Table 8. Postoperative morbidity associated with ruptured and unruptured ectopic pregnancy**

| Morbidity                 | Ruptured N (%) | Unruptured N (%) |                                       |
|---------------------------|----------------|------------------|---------------------------------------|
| Severe anaemia (PCV <21%) | 6(1.7)         | 0                |                                       |
| Pyrexia                   | 11(3.2)        | 0                | X <sup>2</sup> =1.38<br>p-value=1.000 |
| Wound dehiscence          | 7(2.0)         | 0                |                                       |
| Wound sepsis              | 3(0.6)         | 0                |                                       |
| Maternal death            | 2              | 0                |                                       |

### Discussion

Ectopic pregnancy is a life-threatening gynecological emergency, especially in a resource-poor setting like Nigeria that has very poor maternal health indices. The incidence of ectopic pregnancy in our center during the period under review was 3.3%; this is consistent with the 3.1% reported in Benin, Nigeria.<sup>28</sup> It was however, higher than the 2.6% and 2.1% reported in Ife and Abakaliki respectively,<sup>29,20</sup> and lower than the 4.62% from a previous study in Okolobiri.<sup>30</sup> The difference in incidence within the same country may illustrate different risk factors associated with the regions and zones. Despite the difference in incidence within the same country, it illustrates a rising incidence of ectopic pregnancy in our environment and globally.<sup>9-14</sup>

Ectopic pregnancy accounted for 16.1% of all gynecological admissions in our center. The high rate of ruptured ectopic pregnancies found in this study goes a long way to show that most people living in developing countries like Nigeria have poor health-seeking behaviour and an aversion to surgery.<sup>22</sup> Also, a low level of awareness in females may play a role.



The peak age of incidence was in the 25–29 year age group, this is consistent with findings from other parts of the country.<sup>3,17</sup> It corresponds to the age of reproduction and peak sexual activity. More than half of the women were nulliparous, which is comparable to findings from some other health institutions, where low parity constituted a high-risk group.<sup>17, 20</sup> This may be because most young unmarried people with unintended pregnancies often procure unsafe abortions, which may predispose them to having an ectopic gestation in future pregnancies.

Various risk factors have been implicated in the rising incidence of ectopic pregnancy. The common implicated factors include the high prevalence of pelvic inflammatory disease and sexually transmitted infections.<sup>31</sup> The increased use of assisted reproductive technology may also be a factor.<sup>31</sup>

In this study, a previous history of induced abortion and pelvic inflammatory disease were the major risk factors. Similar findings have been reported by other studies.<sup>20, 28, 30</sup> This may be due to a higher incidence of unprotected sexual activity and poor contraceptive uptake amongst the younger age group.

Most of the patients presented late with abdominal pain, amenorrhoea and vaginal bleeding. This is often secondary to rupture and late diagnosis or presentation. Other clinical presentations include fainting attack/dizziness and shock. These are due to complications associated with ruptured ectopic pregnancy, which may be life threatening without prompt and effective interventions.

During the period under review, majority of the patients had ruptured ectopic pregnancy, and our diagnosis was mainly based on history and physical examination. Pregnancy tests were used as supportive diagnostic investigations, with diagnosis confirmed by transabdominal ultrasound scan. Ultrasound is useful in evaluating patients with suspected ectopic pregnancy,<sup>8</sup> mainly by documenting the presence or absence of an intrauterine pregnancy at a discriminatory zone of about 6,500 mIU/mL of beta human chorionic gonadotropin ( $\beta$ -hCG).<sup>4</sup> It also excludes the differential diagnosis of ectopic pregnancy.

The commonest site of ectopic pregnancy in our study was the ampullary region of the fallopian tube, which has also been reported as the commonest site by other studies.<sup>20,28,29</sup> Some cases of unruptured ectopic pregnancy can be managed expectantly in compliant patients if the  $\beta$ -hCG titer is low (200 mIU/mL).<sup>6,7</sup> However, none of the patients in this study had expectant management because they did not meet the criteria for this.

Acute presentation with ruptured ectopic pregnancy and cardiovascular compromise from massive blood loss often result in life-threatening morbidity or mortality. For women who present in shock,



immediate surgery after resuscitation is both diagnostic and therapeutic. This requires immediate resuscitation of such patients with intravenous fluid and blood, emergency laparotomy with salpingectomy, and conservation of the ovaries, as was done for the majority of our patients as life-saving measures. Laparoscopic surgery can be used both for diagnosis and treatment of unruptured ectopic pregnancy, provided there are no contraindications. This was not available during the period under review.

Salpingectomy was the commonest life-saving surgical procedure performed, since most of the patients presented with ruptured ectopic pregnancies and hemoperitoneum. In developing countries like Nigeria, where the majority of patients present after rupture, emergency surgical interventions remain the mainstay of treatment.<sup>28-30</sup> This is in contrast to the developed countries where conservative treatment by minimal access surgery or medical means is the main treatment modality.<sup>32</sup>

Patients with ruptured ectopic pregnancies had more morbidities. This may be due to the delay in seeking treatment and diagnosis, and may have contributed to the longer duration of hospitalization as was seen in this study. Anaemia was the commonest postoperative complication in this study. Two-thirds of the patients had blood transfusion, none had autologous transfusion. This places an additional burden on the already-limited health resources in our center.

The case fatality rate of 0.6% recorded in this study was similar to the case-fatality rates recorded in a previous study in Benin.<sup>28</sup> The two deaths recorded resulted from massive blood loss from the ruptured interstitial/cornual ectopic pregnancy.

Ectopic pregnancy still remains a major gynaecological problem associated with significant mortality and morbidity. A high prevalence of unsafe abortions and pelvic inflammatory disease result in a high incidence of ectopic pregnancy in our environment. Early diagnosis, identifying risk factors and timely intervention in the form of medical or surgical treatment will go a long way in reducing the morbidity and mortality associated with ectopic pregnancy.

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### **Ethical Approval**

University of Port Harcourt Teaching Hospital Ethical Committee Approval.

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