

# Ectopic pregnancy: A 5-year review of cases in a secondary health facility in Delta State, Nigeria

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## Abstract

**Background:** Ectopic pregnancy and the associated risk factors remain a public health concern, with attendant maternal morbidity and mortality. Due to the reported increase in prevalence in several studies across Nigeria in the last few decades, periodic review of management is of relevance for institutional comparison.

**Aim:** The aim of the study was to determine the prevalence, risk factors and management of ectopic pregnancy in Eku Baptist Government Hospital, a secondary health facility providing free maternity services, and compare these with an earlier study in the same facility and other parts of Nigeria.

**Methods:** A retrospective study of cases of ectopic pregnancy managed at Eku Baptist Government Hospital in a 5-year period: 1 January 2013–31 December 2017. Data analysis was done by SPSS version 22 (IBM).

**Results:** The institutional prevalence rate of ectopic pregnancy was 2.7%. Ectopic pregnancies constituted 12.2% (113/926) of gynaecological admissions. The mean age of participants was  $29 \pm 5.5$  years, and 69.5% of them were married. The highest (59.1%) risk for ectopic pregnancy was previously induced abortion. The most frequent (94.3%) complaint at presentation was a lower abdominal pain. Ruptured ectopic accounted for 97.1% of cases. All the patients had laparotomy including three unruptured cases. There was no fatality in this study amongst participants.

**Conclusion:** This study established a lower prevalence of ectopic pregnancy and zero mortality, with the introduction of free maternity service, compared to an earlier study. This findings suggest earlier presentation of patients with ectopic pregnancy. Prevalence and outcome of ectopic pregnancy can be further improved by effective contraceptive enlightenment and use, provision of postabortion care, provision of facilities for early detection and management.

**Keywords:** Ectopic pregnancy, induced abortion, prevalence

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## INTRODUCTION

Ectopic pregnancy is the implantation of the fertilised ovum at a site other than the normal endometrial cavity.<sup>1-3</sup>

It remains a potentially fatal gynaecological emergency, especially in the tropics where most of the patients present

with ruptured ectopic, and the resultant contribution to maternal mortality.<sup>3,4</sup>

In Nigeria, the reported incidence of ectopic pregnancy is 0.9%–4.38%.<sup>5,6</sup> In the United Kingdom (UK), the incidence is approximately 11/1000.<sup>7</sup> Amongst women

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attending early pregnancy units (EPUs), the incidence is 2%–3%.<sup>8,9</sup> Case fatality in the UK has been reducing over recent years, probably due to early diagnosis and treatment.<sup>7</sup> Case fatalities of 27.9/1000 and 37/1000 had been reported in Accra, Ghana, and Lagos, Nigeria, respectively.<sup>10,11</sup>

The leading role of pelvic inflammatory disease in the aetiopathogenesis of ectopic pregnancy has been well documented, and early treatment does not necessarily prevent tubal damage.<sup>12</sup> Other factors reported include previous ectopic pregnancy, previous tubal surgery, endometriosis, infertility and its treatment.<sup>13</sup> Also implicated, as a cause of ectopic pregnancy, are previous caesarean sections, tubal spasm, psychological and emotional factors as well as a congenital defect in the Fallopian tube.<sup>13,14</sup> Management of ectopic pregnancy is influenced by factors such as availability of laparoscopic skills and equipment, the clinical state of the patient, availability of transvaginal ultrasound scan and quantitative  $\beta$ -human chorionic gonadotropin, for early presentation.<sup>5,15</sup>

Ekus Baptist Government Hospital was established in the early fifties by the American Baptist Mission. For a period, spanning five decades, it provided broad-based health services, comparable to any teaching hospital in Nigeria, to the people of the Niger Delta and the Mid-West, in addition to residency training in family medicine. In November 2007, with the takeover of the health facility by the state government, it introduced free maternity services. An 11-year review<sup>16</sup> of ectopic pregnancies in the health facility was conducted when it was run as a mission hospital. This study, which is about 13 years after the last, was to determine the incidence, risk factors and management of ectopic pregnancy in Ekus Baptist Government Hospital as a secondary public health facility with free maternity service and compare these with earlier studies, both at Eku and other parts of the country.

## METHODS

This was a retrospective study of cases of ectopic pregnancies managed at Ekus Baptist Government Hospital, a secondary health facility in Delta State of Nigeria. Between 1 January 2013 and 31 December 2017, relevant information on cases of ectopic pregnancies managed in the hospital was obtained from the theatre operating records and gynaecological ward. Statistics of deliveries was obtained from the maternity ward and confirmed with the data from the medical records. A total of 113 ectopic pregnancies were recorded during the period, for which 105/113 (92.9%) case notes were available for analysis.

Information on sociodemographic, parity, risk factors associated with ectopic pregnancy, clinical presentation, surgical findings and nature of blood transfused was transferred to a computer database.

## Data analysis

Data collected were analysed by the Statistical Package for the Social Sciences software version 22 (IBM., Chicago, Illinois, USA). Analysis of variables was summarised using means and standard deviations. Frequencies and proportions were used for qualitative variables.

## RESULTS

During the 5-year period of study, there were 113 ectopic pregnancies and 4200 deliveries, giving a prevalence rate of 2.7%. Ectopic pregnancies constituted 12.2% (113/926) of gynaecological admissions. The highest number of ectopic pregnancies recorded was in 2016 with 30 cases, whereas the lowest was 2013 with 17 cases.

Table 1 shows the sociodemographic characteristics of the participants. The mean age of participants was  $29 \pm 5.5$  years. About 3/4 (70/105) of participants were below 31 years. Only 3.8% (4/105) were in the age range of 40–45 years. The majority (69.5%) of the participants were married. Over 50% (57/105) of participants had a secondary level of education. About 50% (47/105) were traders and 4.8% unemployed. Equal proportion (45.7% each) of nulliparous and parous participants had

**Table 1: Sociodemographic characteristics of subjects with ectopic pregnancy (n=105)**

Characteristics	Frequency (%)
Age, mean $\pm$ SD	29 $\pm$ 5.5
21-25	35 (33.3)
26-30	35 (33.3)
31-35	22 (21.0)
36-40	9 (8.6)
40-45	4 (3.8)
Marital status	
Married	73 (69.5)
Single	32 (30.5)
Educational level	
Primary education	25 (23.8)
Secondary education	57 (54.3)
Tertiary education	23 (21.9)
Occupation	
Unemployed	5 (4.8)
Students	27 (25.7)
Civil servants	6 (5.7)
Traders	47 (44.8)
Farmer	11 (10.5)
Housewife	9 (8.6)
Parity, mean $\pm$ SD	2.35 $\pm$ 1.49
0	48 (45.7)
1-3	48 (45.7)
4-6	9 (8.6)

SD: Standard deviation

ectopic pregnancy. Only 8.6% of participants were in the parity range of 4–6.

Table 2 shows the risk factors associated with ectopic pregnancy. The majority (59.1%) of the participants with ectopic pregnancy in this study had a history of induced abortion. This was closely followed by 47.7% of participants with the previous history of pelvic inflammatory disease.

Lower abdominal pain was found in most of the patients (94.3%) on presentation, followed by amenorrhoea (63.8%) and history of abnormal vaginal bleeding (51.4%) [Table 3].

Findings at surgery revealed that 97.1% (102/105) of participants had a tubal ectopic, whereas 2.9% had an ovarian ectopic. Ampullary ectopic accounted for 56.2% [Table 4].

Unilateral salpingectomy constituted 93.3% (98/105) of the surgical procedure, 3.8% had a cornual resection, while 2.9% had unilateral salpingo-oophorectomy.

The majority (85.7%) of the participants received homologous blood transfusion only, whereas 11.4% (11/105) received a combination of autologous and homologous units of blood. The three cases of unruptured ectopic were not transfused. The mean units of blood transfused was  $2 \pm 0.7$ . Six of the participants received four units of blood each [Table 5].

The three unruptured ectopics had partial salpingectomy. This decision was informed by the fact that the three of them were parous and objected to conservative management. The contralateral Fallopian tubes for all three were grossly normal.

There was no case fatality recorded amongst the participants.

## DISCUSSION

The institutional prevalence rate of ectopic pregnancy in this study was 2.7%. Ectopic pregnancy also accounted for 12.2% of gynaecological admissions. An 11-year review<sup>16</sup> of ectopic pregnancies in the health facility was conducted when it was run as a mission hospital reported a higher prevalence rate of 3.3%. During the same period, ectopic pregnancy accounted for 9.5% of gynaecological admissions. The reasons for this reduction in the incidence of ectopic pregnancy might include presentation of cases to a number of other secondary health facilities practising

**Table 2: Risk factor associated with ectopic pregnancy**

Risk factor	Frequency (%)
Previously induced abortion	62 (59.1)
Pelvic inflammatory disease	50 (47.7)
Previous abdominal/pelvic surgery	13 (12.4)
Age $\geq 35$	17 (16.2)
History of infertility	6 (5.7)
Use of progesterone-only contraceptive	9 (8.6)
No identifiable risk factor	20 (19.0)

**Table 3: Clinical presentation of patients with ectopic pregnancy (n=105)**

Clinical presentation	Frequency (%)
Lower abdominal pain	99 (94.3)
Amenorrhoea	67 (63.8)
Abnormal vaginal bleeding	54 (51.4)
Nausea/vomiting	5 (4.8)
Diarrhoea	1 (1.0)
Fainting spells/dizziness	49 (46.7)
Shoulder tip pain	1 (1.0)
Pallor	27 (25.7)
Shock	15 (14.3)
Abdominal tenderness	32 (30.5)
Pelvic adnexal mass	15 (14.3)

**Table 4: Surgical findings at laparotomy/site of ectopic (n=105)**

Site of ectopic	Frequency (%)
Ampullary	59 (56.2)
Isthmic	25 (23.8)
Fimbria	14 (13.3)
Cornual/interstitial	4 (3.8)
Ovarian	3 (2.9)

**Table 5: Blood transfusion (n=105)**

Blood transfusion	Frequency (%)
Autologous	8 (7.6)
Homologous	90 (85.7)
Autologous and homologous	4 (3.8)
No transfusion	3 (2.9)

free maternity service, which were established in the last decade by the state government.

The prevalence rate of ectopic pregnancy in Lagos was 2.3%.<sup>14</sup> The reported rates from Sokoto, Zaria, Benin and Nnewi were all, however, between 1% and 2%.<sup>3,13,15-18</sup> Some of the reasons frequently reported and replicated in our study for the varied incidence rates include the prevalence of sexually transmitted infection, induced abortions, contraceptive practice, chronic pelvic inflammatory disease and population studied (urban or rural) amongst others.<sup>8,14,16,19</sup>

The proportion of married women (69.9%) in this study was higher than the 62.6%,<sup>16</sup> in the earlier work. When this high level of ectopic pregnancy amongst married women is compared with the high (59.1%) number of induced

abortion, as a leading risk factor amongst participants, it could be suggested that induced abortion as a method of child spacing in suboptimal environment, inadequate post-abortion care and tubal infection might be an explanation for this. Findings from patients who presented with abortion complications supported the fact that the procedure was carried out by unskilled personnel. Pelvic inflammatory disease was the second leading risk factor. It is possible that some of the infections predated marriage.

The mean age of participants was  $29 \pm 5.5$  years, and three-quarter of the participants were below 31 years. Nulliparous women accounted for 45.7% of cases. It is a source of worry that the fertility potential of these patients was likely to be compromised by the underlying risk factor(s) that led to the ectopic pregnancy. These demographic characteristics have been reported by other studies.<sup>13,16,17</sup>

The risk factors frequently cited from different studies<sup>13,16,17,18</sup> in Nigeria on ectopic pregnancy have not changed over the last few decades. These include induced abortions, pelvic infections and abdominal surgeries amongst others. While admitting the fact that most of the rates quoted in literature on the incidence of ectopic pregnancy in Nigeria are institutional rates, and thus probably exaggerated, the institution of post-abortion care, sex education in secondary schools, with emphasis on genital disease prevention, through the barrier method of contraception, will go a long way in incidence reduction.

Eku Baptist Government Hospital, situated in Ethiope East Local Government Area of Delta State, is the only standard health facility serving the community. There are, however, patent medicine dealers, hospital health assistants and other hospital workers who are frequently patronised for induced abortion by dilatation and curettage, often in an unhygienic environment. Many of these patients later present at the government hospital with complications such as pelvic sepsis which has a negative impact on their reproductive performance.<sup>16,20,21,22</sup> The association of induced abortion with ectopic pregnancy in this study is likely an indirect one, resulting from inadequate antibiotic management of ascending pelvic infection and consequent tubal damage.

Almost (97.1%) all our patients presented with ruptured ectopic pregnancy. A similar study conducted over a decade earlier had 95.3%,<sup>16</sup> of the participants presenting with ruptured ectopic, the study in Nnewi revealed 80.6%,<sup>18</sup> ruptured ectopic, while 94.6% and 80.3% rates of ruptured ectopic were reported in Makurdi and Benin, respectively.<sup>17</sup>

The reason for this high rate of rupture is often due to delays before presentation at the facility. Despite the introduction of free maternity service in Delta State, observation seems to suggest that most women do not present for antenatal care until the second trimester, thereby closing the window of early diagnosis of ectopic pregnancy and conservative management. EPU, where it is practised, provides an opportunity for diagnosis and management of early pregnancy complications, including ectopic pregnancy. The unit does not exist at Eku Baptist Government Hospital.

In the more endowed setting, most women with ectopic pregnancy in EPU are diagnosed before tubal rupture,<sup>23</sup> and with patients presenting in haemodynamically stable conditions, laparoscopy is a preferred surgical modality of management of patients with ectopic pregnancy.<sup>24</sup> In contrast, all our patients had laparotomy including the three with unruptured ectopic, due to late presentation and absence of laparoscopy equipment.

Tubal ectopic accounted for 93.3% of the participants. There was only three ovarian ectopic (confirmed with histological reports). Unilateral salpingectomy, corneal resection and salpingo-oophorectomy were performed on tubal, interstitial and ovarian ectopics, respectively. This was consistent with other studies.<sup>11,16,25</sup> The mean units of blood transfused was  $2 \pm 0.7$ .

There was no maternal death in this study. An explanation might be the fact that removal of user fee could have influenced the earlier presentation, and also as a result of the relatively shorter duration of this study which was 5 years compared to the 11 years in the earlier study,<sup>16</sup> that reported fatality of 2.5% in the same facility. Other studies in Nigeria without maternal deaths included those in Makurdi and Nnewi.<sup>11,16,25</sup>

The study limitation includes the relatively small sample size, bias, incomplete case note retrieval and its retrospective design.

## CONCLUSION

This study established a lower prevalence of ectopic pregnancy and a zero case fatality, with the introduction of free maternity service compared to an earlier study. This findings suggest earlier presentation of patients with ectopic pregnancy. Prevalence and outcome of ectopic pregnancy can be further improved by effective contraceptive enlightenment and use, provision of postabortion care, provision of facilities for early detection and management.



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## Conflicts of interest

There are no conflicts of interest.

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