

# THE PREVALENCE OF ECTOPIC PREGNANCY IN JOS, NORTH CENTRAL NIGERIA: A REPRODUCTIVE HEALTH CHALLENGE

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## ABSTRACT

**BACKGROUND:** Ectopic pregnancy is a life threatening gynecological emergency with a rising incidence of maternal morbidity especially in resource poor settings. Most cases present in the emergency unit when ruptured.

**Objective:** The objective of this study was to determine the prevalence, identifiable risk factors, clinical presentation and management outcome of ectopic pregnancy.

**METHOD:** This was a retrospective review of cases of ectopic pregnancies seen and managed in the gynecological unit of Plateau State Specialist Hospital (PSSH) Jos from 1st September 2012 to 31st August, 2017. The medical records of the patients managed for ectopic pregnancy as well as the delivery register from the labor room, theater register and gynecological admissions during the study period were retrieved. The data were collected with the aid of data entry form designed for this purpose. The relevant data collected were analyzed using epi info 16 version and presented in tables.

**RESULTS:** During the period, a total number of 13,596 deliveries were recorded while there were 2067 gynecological admissions. One hundred and seventy two (172) patients had ectopic pregnancies accounting for 1.27% of all deliveries and 8.3% of gynecological admissions. The mean age of the patients was 29±5 years. The peak age group was 20-25 years (32.0%); 92(53.5%) had secondary school as their highest level of education; 135(78.5%) were married and 49(28.4%) were multigravida. All the patients; 172(100%) presented with a history of abdominal pain while 8(4.7%) presented in shock. A total of 161(93.6%) were diagnosed based on history and clinical examination findings; 152(88.4%) had trans-abdominal scan and 12(7.0%) had abdominal paracentesis (though frowned at in modern day practice). The commonest identifiable risk factors for ectopic pregnancies were pelvic inflammatory disease (PID) in 111(64.5%) of patients followed by previous history of abortions in 17(9.9%) of patients. A total number of 169(98.3%) of the patients had total salpingectomy for ruptured ectopic pregnancies via open abdominal surgeries with 87(50.6%) done on the right fallopian tubes. Three (1.7%) of the patients had oophorectomy. Eighty one(47.1%) of the patients had blood transfusion with no case fatality.

**CONCLUSION:** Ectopic pregnancy still remains a major health challenge among women of reproductive age group in Nigeria. Efforts should therefore be directed at prompt and timely management to reduce maternal morbidity and mortality in developing countries, availability and accessibility of contraceptive methods, accessibility to healthcare centers and affordable healthcare, proper treatment of PID, use of better technologies in management of cases and human capacity development.

**KEYWORDS:** Prevalence, reproductive age group, ectopic pregnancy, resource poor settings, life threatening, emergency

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## INTRODUCTION

Ectopic pregnancy is simply defined as a condition in which the fertilized ovum or blastocyst implants at a site other than the normal endometrial cavity.<sup>1,2</sup> It is a common life threatening pregnancy related emergency and a cause of maternal morbidity and mortality in the first trimester.<sup>3,4</sup> The threat to life is seen more in developing countries where apart from maternal complications, fetal loss is inevitable.<sup>3-6</sup>

Ectopic pregnancy is a global challenge with a rising incidence over the past three decades but with decrease case fatality rate.<sup>5-12</sup> The incidence varies significantly among institutions and countries depending on the denominator used in calculation and the facilities available for diagnosis.<sup>6-12</sup> The reported incidence of this life threatening emergency varies from 0.67% in Western countries to as high as 0.9-4.38% in Nigeria.<sup>5,13-16</sup> Previous studies in South-East Nigeria reported an incidence of between 1.3-2.1% while in the North between 1.74-1.79%.<sup>17-20</sup> More than 95% of ectopic pregnancies occur in the fallopian tube, making this the commonest site.<sup>2,8,21</sup>

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The global rise in ectopic pregnancy is associated with increasing rates of pelvic inflammatory diseases (PID), puerperal sepsis, previous pelvic surgeries, increase in ovulation induction, advances in assisted reproductive technology, tubal surgeries, use of intrauterine contraceptive devices (IUCD) and other forms of contraceptive method due to hormonal effects and the availability of better diagnostic tools.<sup>7,10,13,21-22</sup> Other etiological risk factors are endometriosis, chromosomally abnormal embryo, cigarette smoking, post-abort sepsis, previous history of abortion, previous history of ectopic pregnancy, history of infertility, race and age above 35 years.<sup>5-22</sup> However, ectopic pregnancy can occur without any obvious risk factors.<sup>10-21</sup>

In developing countries, the importance of this gynecological emergency is peculiar because rather than join the global trend of early diagnosis and conservative approach to management, we are often challenged by late presentation with tubal rupture in more than 80% of the cases despite high index of suspicion.<sup>13,21-22</sup> Also, we are challenged by absence or poor diagnostic tools, limited capacity to handle such emergencies and poor referral system.<sup>4-18</sup>

It is necessary that women of reproductive age presenting with history of amenorrhea, lower abdominal pain, vaginal bleeding, syncopal attacks or hypotension go through diagnostic work-up to rule out ectopic pregnancy.<sup>1-21</sup> Those with positive pregnancy test can then undergo ultrasound scanning, quantitative estimation of  $\beta$ -hCG, laparoscopy and diagnostic curettage.<sup>1-21</sup> Other ancillary tests include renal function test, hemoglobin concentration and blood grouping.<sup>1-22</sup> The treatment of ectopic pregnancy is influenced by the clinical state of the patient, the site of the ectopic gestation, the reproductive wish of the patient and the available facilities and technology which is a challenge in developing countries.<sup>13,18,23</sup> Surgical treatment for ectopic is still the norm and 'gold standard' either by laparotomy or minimal access surgery.<sup>1-23</sup> The surgical procedure may be radical (salpingectomy) or conservative (linear salpingotomy and salpingostomy).<sup>4-23</sup> Expectant and medical treatments may also be used but good patient selection is important. In expectant management, the initial  $\beta$ -hCG must be less than 1000 IU/L and should fall by at least 15% in the

first 24 hours.<sup>1-23</sup> For medical treatment, systemic methotrexate is usually employed by ultrasonographically or laparoscopically guided injection into the gestational sac in asymptomatic patients.<sup>1-21</sup>

A dilemma may arise when there is a properly and reliably diagnosed ectopic pregnancy with a live fetus. Nevertheless the magnitude of complications of ruptured ectopic gestation are enormous, that delaying the treatment of a reliably diagnosed ectopic to a time of rupture or imminent rupture in order to justify not tampering with life may be considered unethical and illegal.<sup>18-24</sup> This work therefore will review patients with ectopic gestations with the aim of ascertaining the prevalence, presentation, risk factors, site of ectopic, surgical procedure and hemodynamic state of the patient. It will compare with trends in advanced countries, advocate improvement in societal awareness of the menace, early diagnosis and interventions to reduce its contribution to maternal morbidity and mortality to the state, national and global statistics.

## METHODOLOGY

This was a retrospective study of all cases of ectopic pregnancies seen in the gynecology emergency unit, admitted and managed at the Plateau State Specialist Hospital (PSSH) over a 5-year period (1<sup>st</sup> September, 2012 to August, 31<sup>st</sup> 2017). The hospital is a state owned tertiary health facility in Jos Plateau state, Nigeria. The hospital received referrals from all parts of the state and neighboring states. All cases of diagnosed ectopic pregnancy admitted through the gynecology emergency unit and admitted into the gynecological ward were included in this study. The medical records of all the patients admitted and managed for ectopic pregnancy during the study period were retrieved and relevant data on age, parity, clinical presentation, risk factors, findings at laparotomy, and the outcome of treatment were collected using data-entry forms designed for this purpose. The gynecological ward admissions and total birth records for the study period were also retrieved from the gynecological and labor ward record books. All those with incomplete medical records or missing information were excluded from the study. Also excluded were those patients seen and referred out due to logistic challenges.

Statistical analysis was by simple descriptive statistics and presented in mean and frequency tables.

#### ETHICAL CONSIDERATION:

This study was approved by the ethical committee of the hospital and records subsequently extracted for analysis

#### RESULTS:

In the five year review period, there were a total of 2067 gynecological admissions, 13,596 deliveries and 172 cases of ectopic pregnancies. The

prevalence of ectopic pregnancy in this study was 1.27% of total deliveries and 8.3% of gynecological admissions. The mean age of the patients was 29±5 with 169 (98.3%) of the patients presenting with ruptured ectopic pregnancy.

Table 1 showed the socio-demographic characteristics of the patients with 54 (31.4%) presenting with ruptured ectopic pregnancy been within the age group 26-30 years. A total of 92 (53.5%) of the patients had secondary school education while 135 (78.5%) of these patients were married. The distribution of the patient's parity showed 49 (28.4%) been grand multiparous.

**Table 1: Socio-demographic Characteristics of The Patients**

Variables	Number of Patients	Percentage (%)
<b>A AGE (YEARS)</b>		
<20	3	1.7
20-25	55	32.0
26-30	54	31.4
31-35	38	22.1
36-40	20	11.6
41-45	2	1.2
TOTAL	172	100
<b>B LEVEL OF EDUCATION</b>		
None	4	2.3
Primary	43	25
Secondary	92	53.5
Tertiary	33	19.2
TOTAL	172	100
<b>C MARITAL STATUS</b>		
Married	135	78.5
Single	36	20.9
Divorce	1	0.6
TOTAL	172	100
<b>D GRAVIDITY</b>		
1	34	19.8
2	33	19.2
3	34	19.8
4	22	12.8
≥5	49	28.4
<b>TOTAL</b>	<b>172</b>	<b>100</b>

Table 2 showed the distribution of the identifiable risk factors. A total of 111(64.5%) of the patients had a history of previously been treated for pelvic inflammatory disease, 13(7.6%) had previous history of abdominal surgeries and 11(6.3%) had previous history of ectopic pregnancy.

**Table 2: Identifiable Risk Factors**

Variables	Number of Patients	Percentage (%)
Previous abortion	17	9.9
Previous STD/PID	111	64.5
Previous surgeries	13	7.6
Contraceptive (pills/injectable/implant)	13	7.6
Contraceptive (IUCD)	7	4.1
Previous ectopic	11	6.3
TOTAL	172	100

Table 3 showed the clinical presentation of the patients. All the patients (172) presented with a history of abdominal pain, 154 (89.5%) with a history of amenorrhoea, 165(95.9%) with vaginal bleeding while 8(4.7%) presented in shock.

**Table 3: Clinical Presentation of Patients**

Variables	Number of Patients	Percentage (%)
Abdominal pain	172	100
Amenorrhoea	154	89.5
Vaginal bleeding	165	95.9
Shock	8	4.7

Table 4 showed the distribution of diagnostic methods used. Majority of the patients (161 of 172) or 93.6% were diagnosed from the history and clinical examination findings while 12 (7.0%) had abdominal paracentesis. Others methods are as shown in the table.

**Table 4: Diagnostic Methods**

Variables	Number of Patients	Percentage (%)
Pregnancy test	102	59.3
Paracentesis	12	7.0
Abdomino-pelvic scan	152	88.4
History/clinical examination	161	93.6

Table 5 showed a breakdown of the management, site of ectopic pregnancy, hemodynamic status of the patients and prognosis or outcome of management. A total of 169 (98.3%) of the patients had unilateral salpingectomy while three (1.7%) had oophorectomy. All the surgical procedures were carried out by open laparotomy. Among the patients, 87 (50.6%) had ruptured ectopic pregnancy affecting the right fallopian tube, 81(47.1%) had blood transfusion and all (172) were treated and discharged home.

**Table 5: Management and Prognosis of Patients with Ectopic Pregnancy**

Variables	Number of Patients	Percentage (%)
<b>A SURGERIES</b>		
Salpingectomy	169	98.3
Oophorectomy	3	1.7
TOTAL	172	100
<b>B SITE OF ECTOPIC PREGNANCY</b>		
Right	87	50.6
Left	82	47.7
Ovary	3	1.7
TOTAL	172	100
<b>C BLOOD TRANSFUSION</b>		
Yes	81	47.1
No	91	52.9
TOTAL	172	100
<b>D PROGNOSIS</b>		
Discharged home	172	100
Death	0	0
TOTAL	172	100

## DISCUSSION

Ruptured ectopic pregnancy is a life threatening emergency especially in resource poor settings where budgetary allocation to health is low.<sup>3,4</sup> Nigeria is not an exception where maternal health indices are poor.<sup>3-6</sup>

The incidence of ectopic pregnancy in this study was 1.27%; this was higher compared to figures from Western countries of 0.67% but within the range of 0.9-4.38% in most Nigerian studies.<sup>5,13-16</sup> In Nigeria; there are regional variations of 1.3-2.1% in Eastern Nigeria, 1.74-1.79% in Northern, 1.68-2.31% in South-South and 1.02-1.2% in Western part of the country.<sup>12-20</sup> This goes to confirm the rising incidence of ectopic pregnancy in our environment and globally.<sup>5-12</sup>

In this study, Ectopic pregnancy accounted for 11.7% of all gynecological admissions during the study period. This was higher than 4.5% reported in a study in Eastern Nigeria.<sup>7</sup> This rising trend could be as a result of poor health seeking behaviors or late presentation, high cost of health care, inaccessibility to qualified care givers and good health care centers and poor diagnostic tools.<sup>10-24</sup>

In this study, the incidence of ectopic pregnancy was found to be higher in the age group 20-25 years (32.0%), in those with secondary school education (53.5%), more among married women (78.5%) and in multi-gravid women (28.4%). These statistics could be as a result of high risky sexual behaviors associated with the reproductive age group individuals as reported in other studies.<sup>10-27</sup> In a study in Eastern Nigeria, ectopic pregnancy was common among the unmarried women and reproductive age group but in contrast amongst nulliparous women as in other regional studies.<sup>7,10,25-26</sup> In a study in Senegal however, ectopic pregnancy was reported more in women of higher parity.<sup>27</sup>

In this study, the major identifiable risk factor for ectopic pregnancy was previous history of pelvic inflammatory disease (PID) accounting for 64.5%. Others were previous history of abortion (9.9%), previous surgeries (7.6%), contraceptive (11.7%) and previous history of ectopic pregnancy (6.3%). This is similar to reported findings where previous history of PID is a predominant risk factor for ectopic pregnancy.<sup>7-10,13,26-30</sup>

Predominantly in this study, the clinical presentation was that of lower abdominal pain in 172(100%) of the patients followed by history of vaginal bleeding in 165(95.9%) of the patients and that of amenorrhea in 154(89.5%). Other clinical features are dizziness/fainting attacks, shoulder tip pain and sudden collapse/shock. This is similar to reported findings in both global and Nigerian studies.<sup>1-32</sup> This means for a woman of reproductive age with a history of abdominal pain and amenorrhea, ectopic pregnancy should be ruled out.

The commonest site of ectopic pregnancy from our findings was the fallopian tube in 169(98.3%) of the patients while ovarian pregnancy occurred in 3(1.7%) of the patients. The preponderance of ectopic pregnancies on the right in this study was similar to the trend globally.<sup>6,18-21,23,33-35</sup> This right sided preponderance has been attributed to appendicitis. This is as reported in other studies where most of the ectopic pregnancies occurred within the fallopian tube and on the right.<sup>1-35</sup>

All the patients regrettably had ruptured ectopic pregnancy with 161(93.6%) diagnosed clinically from history and examination findings. Other modalities of diagnosis are transvaginal ultrasound scan where available or trans-abdominal as commonly available in developing countries, laparoscopy and quantitative human chorionic gonadotrophin assay in the early diagnosis of ectopic pregnancy.<sup>1-35</sup> Other supportive investigations are the pregnancy test, hemoglobin, renal function test and paracentesis abdominis (though frowned at in modern practice). In this study, 12(7.0%) of the patients had paracentesis.<sup>31</sup>

Treatment of ectopic pregnancy in this study was by laparotomy with salpingectomy.<sup>1-35</sup> This practice is similar to that in other centers in Nigeria and indeed Africa due to the late presentation by patients with a large number being ruptured on presentation.<sup>10-21</sup> In developed countries however, where patients usually present early, and the availability of facilities for quantitative human chorionic gonadotrophin assay, laparoscopy and transvaginal ultrasound scan enable early diagnosis and conservative treatment, such radical surgery by laparotomy has become the exception rather than the rule.<sup>1-35</sup> In those climes, conservative treatment, either

surgical or medical, is the preferred therapeutic option.<sup>35-36</sup> Conservative surgery has been shown to be superior to radical surgery at preserving fertility, reduced operating time, hospital stay, convalescence time, cheaper and having an improved cosmetic result.<sup>1-36</sup>

In this study, we had no mortality except for morbidity. This was similar to studies in other parts of the country.<sup>7,13,18,21-24</sup> Other studies had mortality rates of 1.5-3.7%.<sup>13,28-29</sup> In this study, 81(47.1%) of the patients had blood transfusion. Anemia, which was the commonest complication in this study, was due to excessive blood loss from the ruptured ectopic pregnancy necessitating blood transfusion similar to other studies.<sup>7,17-18</sup> Most patients were transfused with blood from the hospital blood bank services.

In conclusion, given the high risk of recurrence and the finding that 11(6.3%) of the patients had a previous history of ectopic pregnancy as opposed to 3.4% in a study in Eastern Nigeria, women with a history of previous ectopic pregnancy should be followed carefully even in the absence of symptoms.<sup>7,33</sup> This should be highly encouraged in our environment where emphasis is placed on childbearing, increasing risk of early age of sexual exposure, PID and unsafe abortions. There is also need on the girl child education on sexual re-orientation, improve healthcare system, reduce cost of care, improve access to care and contraceptive use, human capacity development and healthcare funding.

#### COMPETING INTEREST

The Author do not have a competing interest to declare.

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