

## **RISK FACTORS AND OUTCOMES OF ECTOPIC PREGNANCIES AT AMINU KANO TEACHING HOSPITAL, KANO, NIGERIA**

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### **ABSTRACT**

**Objectives:** To determine the incidence, risk factors, clinical presentation, morbidity and mortality of ectopic pregnancies at Aminu Kano Teaching Hospital.

**Methods:** It is a retrospective study of patients with ectopic pregnancies treated at Aminu Kano Teaching Hospital (AKTH), Nigeria, from 1<sup>st</sup> January, 2005 to 31<sup>st</sup> December, 2009. The record folders were retrieved from the record department of the hospital and analyzed using Epi Info Electronic statistical software. Data on socio-demographic characteristic, clinical features, postoperative outcomes and duration of hospital stay were extracted.

**Results:** One hundred and ninety seven patients were admitted with ectopic pregnancy during the period under review. Their case notes were retrieved giving a retrieval rate of 91.14%. The mean age was  $26.72 \pm 5.20$ , the mean parity was  $2.03 \pm 2.33$ . The major risk factors were past history of induced abortion (26.70%), and sexually transmitted infections (18.30%). Abdominal pains (93.30%), amenorrhoea (60.00%), vaginal bleeding (58.30%), abdominal tenderness (83.30%) and cervical motion tenderness (90.00%) were the major clinical features. The ampulla was involved in 58.33% of cases and salpingectomy was the surgical option in 95.56%. Shock (3.33%) and anaemia (3.33%) were the major complications.

**Conclusions:** The incidence of ectopic pregnancy at Aminu Kano Teaching Hospital is 1.29%. The most important association is with pelvic infection. Therefore, efforts have to be emphasized on prevention, early and vigorous treatment of pelvic and sexually transmitted infections.

**Key Words:** Ectopic pregnancy, Risk factors, Outcomes, Nigeria.

### **INTRODUCTION**

Ectopic pregnancy is defined as pregnancy in which the embryo is implanted outside the uterine cavity<sup>1</sup>. It is the most life threatening emergency in pregnancy leading to maternal death<sup>2</sup>. It is a common gynaecological condition worldwide; a major health hazard and a tragedy of reproduction<sup>3</sup>.

Ectopic pregnancy is 10 times as dangerous as vaginal delivery and 50 times as induced abortion<sup>4</sup>. It is associated with impaired fertility as the patient has only 40-60% chance of

reproduction after surgery and 7-10% chance of recurrence<sup>4,5</sup>.

The incidence of ectopic pregnancy has increased worldwide<sup>6</sup>. This increase is not unconnected with the increase in the incidence of pelvic infection, increasing rate of induced abortion, the practice of assisted reproduction and improvement in the diagnostic techniques for ectopic pregnancy<sup>6</sup>.

The reported incidence of ectopic pregnancy varies from 0.67% in western countries<sup>7</sup> to 0.9-

4.38% in Nigeria<sup>8,9</sup>. The incidence at Aminu Kano Teaching Hospital, Kano is 1.06%<sup>10</sup>. It is also 1.4% in Ilorin<sup>3</sup> and 2.31% in Lagos<sup>6</sup>.

In the developed world, though there is an increase in the incidence of this condition, the mortality from it has been on the decline<sup>11</sup>. This is not so in the developing countries where it is an important cause of maternal death.

In Lagos, Nigeria, it was reported to be responsible for 30% of emergency gynaecological admissions<sup>10</sup>, 6-8% of maternal death<sup>12</sup> and has a case fatality rate of 3.7%<sup>10</sup>. In Ghana, a neighbouring West African Country, a case fatality rate of 27.9/1000 was reported<sup>13</sup>.

The aetiology of ectopic pregnancy is not well understood<sup>14</sup>. However, several risk factors have been found to be associated with ectopic pregnancy. These include pelvic inflammatory disease (PID), post-abortal sepsis, postpartum sepsis, previous ectopic pregnancy, reversal of tubal pregnancy, previous caesarean section, tubal spasm, congenital defects of the fallopian tubes, psychological and emotional factors<sup>6</sup>.

Others are in-utero exposure to diethylstilbestrol, infertility, use of IUCD, documented tubal pathology, multiple sexual partners, cigarette smoking, vaginal douching, early age at first intercourse<sup>14</sup> and high level of oestrogens and progesterones<sup>15</sup>.

Salpingectomy is the most frequently performed surgical treatment for ectopic pregnancy<sup>3</sup>. This is because in most instances in our practice the ectopic pregnancy is ruptured. Other less radical and conservative methods of treatment includes salpingostomy and trans-fimbrial extraction<sup>16</sup>.

This study was taken to determine the incidence, risk factors, clinical presentation, morbidity and mortality of ectopic pregnancy at Aminu Kano Teaching Hospital over a five year

period (2005-2009). It is hoped that the findings here will help in preventing recurrence of factors contributing to the morbidity and mortality associated with ectopic pregnancy.

## **MATERIALS AND METHODS**

This is a descriptive (retrospective) study of patients with ectopic pregnancy treated at Aminu Kano Teaching Hospital, Nigeria from 1<sup>st</sup> January 2005 to 31<sup>st</sup> December 2009. The case notes were retrieved from the records department and analyzed using Epi Info. The following information were extracted from the case notes: age, parity, marital status and clinical features. Others include gestational age at presentation, types of clinical presentation, sites of ectopic pregnancy, type of surgical treatment, postoperative outcome and duration of stay in the hospital. The data collected were analyzed and the results were presented in tables; mean, mode and standard deviation were employed where applicable.

## **RESULTS**

During the period under study, a total of 197 cases of ectopic pregnancies were treated, constituting 6.52% of 3,023 gynaecological admissions.

One eighty case notes were retrieved, giving a retrieval rate of 91.14%. There were 15,247 deliveries within the period; therefore, the incidence of ectopic pregnancy was 1.29% of deliveries. Table I shows the age distribution of the patients with the age range of 14 to 44 years. The mean age was 26.72±5.20 and majority of the patients (33.33%) were between the ages of 25-29 years. Up to 28.30% of the patients were within the gestational ages of 7-10 weeks though 31.70% of the patients were unsure of their last menstrual period.

Up to 132 patients (73.30%) were married. While 39 (21.70%), six (3.30%) and three (1.70%) patients were single, separated and widowed respectively. Sixty patients (33.33%) were pregnant for the first time, while 36 patients (20.00%), 24 patients (13.33%), 27 patients (15.00%), 12 patients (6.67%), were para one, two, three, and four respectively. Twenty one patients (11.67%) had parity of five and above. The mean parity was  $2.03 \pm 2.33$ . The modal parity was among the nulliparous women.

Table II shows the associated aetiological factors in patients with ectopic pregnancy. Some patient had more than one risk factor. In majority of patients (35%), the risk factors were not identified. The commonest risk factors identified were history of more than one abortion (26.70%), previous history of sexually transmitted infection (18.30%) and use of progesterone containing contraceptive (11.11%).

Table III: reveals the clinical features at presentation. Most patients had multiple clinical features. Abdominal pain was the commonest clinical features (88.30%). Abdominal tenderness was elicited in 83.30% of the patients, whilst only 3.30% presented in shock.

Total salpingectomy was the surgical option in 172 patients (95.56%). Three patients with abdominal pregnancy (1.67%) had evacuation of the conceptus. Salpingoophorectomy, transfibrial extraction and salpigostomy were the surgical options in one (0.56%), three (1.67%) and one (0.56%) patient(s) respectively.

Majority of the tubal pregnancy (105 patients) were in the ampulla (58.33%) while the least (15 patients) was in the fimbrial region (8.30%).

Others were isthmus (16.67%), interstitial (11.67%). One patient had ovarian pregnancy (0.56%) while three patients had abdominal pregnancy (1.67%).

The right tube was involved in 57.00% of the patient. Up to 91.70% of the patient presented acutely with ruptured ectopic pregnancy. One patient presented with un-ruptured tubal pregnancy (0.56%). Others presented with sub-acute (slow Leaking) ectopic.

Various complications were encountered amongst the patients. Shock (six patients) and anaemia (six patients) were encountered most (3.33%). Two patients developed sepsis and wound infection (1.11%), one patient had anaesthetic complication (0.56%). One hundred and sixty three patients (90.56%) had no complication. There was no maternal death. Table IV shows the duration of hospital stay with a range of 5-14 days. The mean duration was 6.63 days.

**Table I: Socio-demographic Characteristics**

Age Distribution of the Patients			
Age (years)	Frequency	Percentage (%)	
14-19	15	8.33	
20-24	48	26.67	
25-29	60	33.33	
30-34	39	21.67	
35-39	18	10.00	
40-44	0	0.00	
Total	180	100.00	
Gestational Age			
Gestational age (weeks)	Frequency	Percentage (%)	
1-3	6	3.30	
4-6	42	23.30	
7-10	51	28.30	
11-14	21	11.70	
15 or >	3	1.70	
Unsure of date	57	31.70	
Total	180	100.00	

**Table II:** Risk Factors of Patients with Ectopic Pregnancy

Risk factors	Frequency	Percentages
Not identified	63	35.00
>One previous abortion	48	26.70
STI	33	18.30
IUCD	6	3.30
PCC	20	11.11
Previous pelvic surgery	12	6.700
Previous ectopic History of infertility	3	1.70
Cig. Smoking	3	1.70
Assisted reproduction	0	0.00

Note: PCC= Progesterones Containing Contraceptives.  
Cig. = Cigarette.

**Table III:** Clinical Features of the Patients with Ectopic Pregnancy

Symptoms/signs	Frequency	Percentages (%)
Abd swelling	60	33.33
Diarrhoea	100	55.56
Dysuria/frequency	21	11.70
Fever	90	50.00
LAP	168	93.30
PV bleeding	105	58.30
Amenorrhoea	108	60.00
Dizziness	87	48.30
Fainting	33	18.30
Shoulder tip pains	9	5.00
Vomiting	54	30.00
Adnexal mass	9	5.00
Adnexal tenderness	39	21.70
Bugginess of POD	75	41.70
CET	162	90.00
Guarding	81	45.00
Palor	90	50.00
Rebound tenderness	150	83.30
Shock	6	3.30
Tachycardia	90	50.00

Note: LAP= Lower Abdominal Pains  
A b d = A b d o m i n a l  
PV= Per vaginam.

**Table IV:** Duration of Hospital Stay

Duration	Frequency	Percentages
5	66	36.67
6	24	13.33
7	66	36.67
8	6	3.33
9	6	3.33
10	3	1.67
14	9	5.00
Total	180	100.00

**DISCUSSION**

In this review, the incidence of ectopic pregnancy at Aminu Kano Teaching Hospital was 1.29% of deliveries. This is similar to the findings of Uzoho et al at Aminu Kano Teaching Hospital Kano<sup>10</sup> and other findings in Northern part of Nigeria<sup>3, 17, 18</sup> but lower than the reported figure from the Southern part of the country<sup>9</sup>. This could be attributed to the perceived low level of chronic pelvic inflammatory diseases in the region<sup>19</sup>.

A significant number of patients (53.33%) were of low parity (0-1) and belong to the age group of 25-29 years; this is similar to the findings of Aboyeji,<sup>3</sup> Ola<sup>9</sup> and Ilesanmi<sup>20</sup>.

An appalling 73.30% of the patients were married and 68.33% were less than 30 years of age; they (including those that are unmarried) being the most sexually active as well as fertile group, are more at risk of exposure to sexually transmitted diseases behaviourally and biologically. Here, adolescents, which most of them were, tend to choose partners who are likely to be at risk of sexually transmitted diseases<sup>21</sup>. Besides, for social and economic

reasons, adolescents may experience difficulties in having access to barrier methods of contraception and may have less access to sexually transmitted diseases care because of lack of money or restrictive policies<sup>6</sup>. In adolescents, the columnar epithelium, which is susceptible to Chlamydia and gonococcal organisms, extends from the endocervical canal to the ectocervix making it fully exposed to pathogens during unprotected sexual intercourse<sup>21</sup>.

History of at least one previous induced abortion is a significant risk factor for ectopic pregnancy. This was similar to the findings of Anorlu in southern part of Nigeria<sup>6</sup>. This is because in Nigeria where there is restrictive abortion law, many are performed illegally under unhygienic condition where asepsis is not observed, resulting in an increased risk of post-abort sepsis<sup>6</sup>. In developed countries, where abortion is legalized and performed in hygienic condition by a skilled person, there is no excess risk of ectopic pregnancy following induced abortion<sup>22</sup>. Up to 18.30% of the patients had past history of sexually transmitted diseases including pelvic inflammatory disease. Anorlu had reported a higher figure in southern part of Nigeria<sup>6</sup>. This could be attributed to the early marriage seen in the North which could limit multiple sexual exposures.

Previous pelvic surgery, including previous ectopic pregnancy constituted 8.40%. This value was short of the figure reported by Anorlu in Lagos<sup>6</sup>. This could also be related to the less number of Specialists and surgeries done in the North. Surgery causes scarring as a complication followed by anatomical abnormality of the fallopian tubes, which prevent normal embryo transport<sup>11</sup>. Most pelvic surgery performed in Aminu Kano Teaching Hospital where for myomectomy, ruptured

ectopic pregnancy, ovarian cystectomy, ruptured appendix and, pelvic abscess following complicated induced abortion. Pelvic adhesions and scarring are the long term complications of most of these surgeries.

Upto 3.30% of the patient had IUCD at the time of presentation. Anorlu reported a higher figure in the southern part of the country<sup>6</sup>. This could be attributed to less patronage of IUCD amongst patients in my study. Nevertheless, it was still contradictory to other studies from Nigeria<sup>8, 9, 20</sup> and also from other countries<sup>11</sup>. This increase of ectopic pregnancy with the use of IUCD in our environment could be attributed to the high prevalence of reproductive tract infections found in this part of the world.

Until recently, progesterone containing contraceptives were not popular in Nigeria<sup>6</sup>. About 11.11% of the women were on it on presentation. This risk relation was also reported by Doyle<sup>11</sup>.

Up to 1.70% of the patients were found to be on infertility treatment. The relative smaller figure was probably due to smaller sample size. However, several studies have shown that treatment of infertility, such as reconstructive surgery of fallopian tubes, hormonal therapy using clomiphene citrate and human chorionic gonadotropins endangers patients to ectopic pregnancy<sup>11, 23</sup>.

Abdominal pains, amenorrhoea and vaginal bleeding represent the most common symptoms on presentation in this review; which is similar to other studies<sup>9, 24, 25</sup>. Atypical symptoms of ectopic pregnancy found in this review include fever (50.00%), diarrhoea(55.56%), vomiting(30.00%), dysuria and frequency(11.70%). Similar findings have been reported by others<sup>9, 17, 20</sup>. The reasons for these are not obvious but they may serve as pitfalls in

making a diagnosis. Akingba and Eneli in Lagos suggested that the habit of using purgatives for the relief of any abdominal ailment might be responsible for the gastrointestinal symptoms<sup>26</sup>.

Abdominal tenderness was the most common sign elicited in our study. This is similar to other reports on ectopic pregnancy<sup>3,19,27</sup>. Up to 90% of the patients who had pelvic examination had positive cervical motion tenderness. This is similar to the findings from other studies<sup>19,28</sup>.

The gestational ages of patients at presentation were mostly within 7 to 10 weeks (28.30%), though 31.70% of patients were unsure of their last menstrual period. This was similar to other studies<sup>27,29</sup>.

Laparotomy still remains the mode of surgical option since most of our patients (91.70%) presented acutely with ruptured ectopic pregnancy. In addition, they had significant haemoperitoneum and were haemodynamically unstable. This is consistent with other reports<sup>17,20</sup>.

Salpingectomy was performed on all patients with ruptured ectopic pregnancy due to extensive tubal damage. This procedure is technically simple to perform. One patient (0.56%) had linear salpingostomy because she was nulliparous and the ectopic pregnancy was unruptured. This was lower than the figures of 2.14% and 1.30% reported by Ola<sup>9</sup> and Onwuhafua<sup>17</sup> respectively. The staggering 0.56% of salpingostomy was presumably lower than what was recorded in the developed countries.

The 1.67% of transfimbrial extraction observed in this review was higher than 0.9% reported by Ola<sup>9</sup> in Lagos. These procedures have been associated with high incidence of persistent trophoblastic tissues, postoperative morbidity

and subsequent ectopic pregnancy<sup>14</sup>; hence, they are less commonly performed except when the contra lateral tube is diseased.

The right tube was involved in up to 57.00% of cases in this review. This was believed to be due to the presence of appendix. This was similar to established patterns reported in other studies<sup>3,9,17,28</sup>. The ampulla was found to be the most common site (58.33%) of tubal pregnancy and the fimbria was the least site representing 8.33%. Ikeme<sup>29</sup> reported similar pattern in Enugu.

The duration of hospital stay was 5-14 days. Most cases went home on either 5<sup>th</sup> or 7<sup>th</sup> postoperative day (36.70%). The mean duration of hospital stay was 6.63 days, which was shorter than 8 days reported by Baffoe<sup>13</sup>. This could be attributed to the low level of postoperative complications amongst our patients.

Prolonged hospital stay of more than 10 days was observed in 5.00% of patients. This was less than the figure reported by Gharoro in Benin, Nigeria<sup>24</sup>. This could also be attributed to the low level of postoperative complications amongst our patients.

More than 80% of the patients had intra-operative blood transfusion. Up to 3.33% of the patients had anaemia after surgery which warranted additional blood transfusion of at least two units of blood. This was consistent with other studies<sup>24,29</sup>. Other peri-operative morbidity were shock (3.33%), wound infection (1.11%), sepsis (1.11%), and anaesthetic complication (0.56%). There was no mortality amongst the patients.

None of the patient had auto transfusion. Emphasis should therefore be placed on auto transfusion where applicable. Auto transfusion will eliminate or reduce the incidence of blood related diseases, most importantly the

transfusion of HIV<sup>29</sup>.

**Conclusion:** The incidence of ectopic pregnancy at Aminu Kano Teaching Hospital is 1.29%. The most important association is with pelvic infection. Therefore, efforts have to be emphasized on prevention, early and vigorous treatment of pelvic and sexually transmitted infections. Health workers have to be educated about the risk factors and clinical features of ectopic pregnancy so as to have a high index of suspicion and early diagnosis. The liberal use of abdominal ultrasound scan in women who are amenorrhoeic and have abdominal pain is also advocated.

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