

Ruptured Ectopic Pregnancy in a Nigerian Tertiary Hospital: What has Changed?

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Abstracts: *Background:* Ruptured ectopic pregnancy continues to be a major surgical emergency in gynecology. Due to the contribution of ectopic pregnancy in maternal mortality indices in Nigeria, an intervallic review of it has become very necessary.

Objectives: This is to determine the prevalence, clinical presentation, risk factors, and the management outcomes of ectopic pregnancies.

Methods: This is a retrospective study of cases of ectopic gestations managed in the gynecological unit of Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi, South-east Nigeria from January 1st 2013 to December 31st, 2017. Information was obtained from the case files, theatre and labor ward registers. We only included women with ruptured ectopic pregnancy that were managed surgically. Cases that were managed medically or conservatively were excluded. The proforma was initially used for retrieving data from case files obtained from the Medical Record department of the hospital. The data was later transferred to SPSS version 23 for analysis.

Results: During the period, there were a total of 5301 deliveries, 901 gynecological admissions and 67 ectopic pregnancies recorded. This gives a prevalence of 1.3% of total deliveries and 6.7 of gynecological admissions. However, only 56 case files were available with complete information for the study, and could be used for further analysis. The majority were in the age group of 25-29 years. The prevalence was highest among the secundigravida 17, (30.4%) followed by and primigravidas, 13(23.2%). Previous pelvic inflammatory disease 30(53.6%), previous induced abortion 16(35.7%), and previous abdominopelvic surgery 10(26.8%) were the most common associated risk factors.

Lower abdominal pain 54(96.4%), amenorrhea 50(89.3%), vaginal bleeding 40(71.4%) and syncope/shock attack 38(67.9%) were the predominant symptoms at presentation. Majority 34(60.7%) of the tubal rupture occurred at gestational age of 8-10weeks. Thirty (53.6%) cases occurred at the right tubes. Most, 71.4% (40) of the tubal ectopic gestations were ampullary. Majority of the patients 51(91.1%) had unilateral salpingectomy, 14(25.0%) had total salpingectomy while 5(8.9%) had cornual repair. Forty six (85.7%) women received blood transfusion. The case fatality rate was 1.8% which was exclusively due to anesthetic complication.

Conclusion: The prevalence of ruptured ectopic pregnancy is still high in Nigeria with pelvic infection being the most common associated risk factor. Only tubal ectopic pregnancy was reported. There are no reported cases for abdominal pregnancies, ovarian pregnancies and heterotopic pregnancies within the last half decade, although with first mortality from ectopic pregnancy being recorded, which appears to signify a changing pattern.

Keywords: Pelvic inflammatory disease, good quality review, ruptured, cornual rupture.

INTRODUCTION

Ectopic pregnancy has continued to be a nightmare to many ongoing pregnancies especially in low-income countries [1]. It is a condition of immense gynecological importance, particularly in the developing world, because of the prodigious mortality associated with it and the enormous threat to life [2]. When ruptured, ectopic pregnancy is a genuine gynecological crisis [3-5].

Ectopic pregnancy is a global problem and has shown a rising incidence during the last three decades

the world over [4]. The incidence fluctuates significantly among health institutions and countries, depending on the denominator used in its calculation and the facilities available for diagnosis. Though, currently the overall incidence is increasing worldwide, the case-fatality rate is decreasing [3-5]. This total increase in incidence might be due to a combination of increasing pelvic inflammatory diseases and better antibiotics that permit tubal patency with luminal damage following infection, and an increase in the use of ovulation induction, assisted reproductive technology, and improved diagnostic techniques [1,4]. The reported incidence of this life threatening condition varies from 0.67% in the western countries to 1.2-2.7% in Nigeria [2,4-10].

The gynecological importance of ectopic pregnancy in our environment is peculiar because rather than join

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the global trend of early diagnosis and conservative approach in management, we are still challenged by late presentations, with rupture in more than 80% of cases [4-9]. We are also challenged by poor diagnostic tools, limited capacity to handle emergencies and consequent burden of increase in maternal morbidity and mortality and consequent reproductive failure [1,2]. In managing ectopic pregnancy therefore, there is need for a high index of suspicion [10,11].

Although previous studies [2,10] have been done in Nnewi, Nigeria on ectopic pregnancy, repeated appraisal is necessary so as to identify any emerging issues in our management in the hospital. This work therefore reviewed patients with ectopic gestation in Nnewi, Nigeria with the aim of determining the prevalence, clinical presentation, risk factors, and the management outcomes in a low-resource setting.

MATERIALS AND METHODS

This was a retrospective study of all cases of ectopic pregnancies managed at NAUTH from January 1st, 2013 to December 31st 2017. The case files of the patients with ectopic pregnancy were traced through the accident and emergency unit, gynecology ward and the theatre register. Sixty seven case files were seen. The labor ward register was also used to ascertain the total number of deliveries for the same period. Information on the biosocial data, clinical symptoms and signs, diagnostic tool employed; sites and treatment options, risk factors for the disease as well as associated morbidity and mortality were extracted. All the surgeries were salpingectomy by open laparotomy and general anesthesia with endotracheal intubation was used in all the cases. The data was analyzed with simple descriptive statistics and presented in frequency, and tables. The proforma was initially used for data collection which was entered after checking for completeness, cleaning and coding into computer SPSS version 23. Data analysis was done and the results were displayed in tables.

RESULTS

In the 5 year review period, there were a total of 5301 deliveries, 901 gynecological admissions and 67 ruptured ectopic pregnancies recorded. This gives a prevalence of 1.3% of total deliveries and 6.7% of gynecological admissions. However, only 56 case files were available with complete information for the study, giving a retrieval rate of 84.0%. The socio-demographic status of the women is shown in Table 1. The majority

were in the age group of 25-29 years, 27(48.2%). However, 40 (71.4%) were married and majority 32 (57.2%) had secondary education as their highest educational attainment. A few number of patients, 13 (23.2%) had tertiary education.

Table 1: Socio – Demographic Characteristics of the Women

Variables/subgroup	Frequency (N=56)	Percentage
Age (Years)		
19-24	7	12.5
25-29	27	48.2
30-34	10	17.9
35-39	8	14.3
40-45	4	7.1
Marital Status		
Single	16	28.6
Married	40	71.4
Highest Educational Level		
Tertiary	13	23.2
Secondary	32	57.2
Primary	11	19.6
Parity		
0	13	23.2
1	17	30.4
2	8	14.3
3	6	10.7
4	4	7.1
5	2	3.6
6	3	5.4
7	1	1.9
8	2	3.6
Gestational age at Rupture		
5-7 weeks	18	32.1
8-10 weeks	34	60.7
11-13 weeks	4	7.2

Gravidity distribution of patients with ruptured ectopic pregnancy ranged from 1-9. The prevalence was highest among the secondgravida, 17(30.4%) and primigravidas, 13(23.2%). Previous abdominopelvic surgery, 30(53.6%), previous induced abortion, 16(35.7%), and previous pelvic inflammatory disease, 10 (26.8%) were the most common risk factor in these patients. This is shown in Table 2. Table 3 shows the

Table 2: Risk Factors Associated with Ectopic Pregnancy

Risk factor*	Frequency	Percentage
Previously induced abortion	16	15.7
Abdominopelvic surgery	10	9.8
Previous pelvic inflammatory disease	30	29.4
Age \geq 35 years	10	9.8
Previous ectopic pregnancy	4	3.9
Infertility	8	7.9
IUCD/Hormonal	4	3.9
Unidentified	20	19.6

*=Some patients had more than one risk factors.
Abbreviations: IUCD=Intra Uterine Contraceptive Device.

Table 3: Contraceptive usage among the Women during the Period of the Ectopic Pregnancy

Contraceptives	Frequency	Percentage
Patient on any form of contraceptive	16	28.6
Patient not on any contraceptive	46	71.4

contraceptive usage among women with ruptured ectopic pregnancy.

The clinical presentation of the women is shown in Table 4. Lower abdominal pain 54(96.4%), amenorrhea 50(89.3%), vaginal bleeding 40(71.4%) and syncope/shock attack 38(67.9%) were the predominant symptoms at presentation. All patients 56(100%) had positive pregnancy test. Also, 8 (14.3%) of the patients were retroviral disease positive, while majority 34 (60.7%) of the tubal rupture occurred at gestational age of 8-10 weeks.

Table 4: The Clinical Presentation of the Women

Risk factor	Frequency	Percentage
Amenorrhea	50	89.3
Abnormal vaginal bleeding	40	71.4
Lower abdominal pain	54	96.4
Syncope/Shock	38	67.9
Positive pregnancy test	56	100.0

Emergency laparotomy was the treatment employed in all the patients. All the ectopic pregnancies occurred in the tubes and they were all ruptured before presentation. Thirty (53.6%) and twenty six (46.4%) of the ectopic gestations occurred at the right and left

tubes respectively. Most, 40 (71.4%) of the tubal ectopics were ampullary. This is shown in Table 5. Majority of the patients, 38(67.8%) had partial salpingectomy, 14(25.0%) had total salpingectomy while 5(8.9%) had cornual repair. Forty six (85.7%) women received blood transfusion. There was only one maternal death and that was due to anesthetic complication.

Table 5: The Portion of the Tube Involved in the Ectopic

Portion	Frequency	Percentage
Ampulla	40	71.4
Isthmic	7	12.5
Fimbriae	5	8.9
Interstitial	4	7.2

DISCUSSION

The rate of ectopic pregnancy has followed a snowballing trend during the last four decades globally [1,3,12-14]. This study has revealed a high prevalence of 1.3%. Globally, the reasons for the rising trend is thought to include earlier diagnosis of cases that would otherwise have resolved due to accessibility of more sensitive methods such as hormonal tests, transvaginal ultrasound and diagnostic laparoscopy [2]. However, increase in incidence in low-income countries could be

due to increasing prevalence of chronic pelvic inflammatory disease as a consequence of pelvic infections from sexually transmitted infections, unsafe abortion and puerperal infections [3].

The prevalence of 1.3% in this study is comparable to similar studies by Abubakar *et al.* [3] (1.5%) in Sokoto, Udigwe *et al.* [2] (1.3%) in Nnewi and Lawani *et al.* [5] (2.1%) in Abakiliki, all in Nigeria. It is however higher than 1 in 161 (0.6%) by Arup Kumar *et al.* in India but lower than a recent study in Port Harcourt, Nigeria by Ugboma *et al.* [15]. The reasons for this may be due to wide geographic distribution.

The peak age incidence was age group of 25-29 years which also corroborated with the finding of Etuknwa *et al.* [8] and Udigwe *et al.* [2] in Nigeria. The relative high frequency of ectopic gestation in the age group 25-29 years was not surprising since this corresponds to the age of reproduction and topmost sexual activity. The prevalence of ectopic pregnancy in this study was highest among the married patients (77.7%) which correlate with (77.8%) reported by Udigwe *et al.* [2] and Abubakar *et al.* [3] in Nigeria. However, Etuknwa *et al.* [8] reported a dominance of single (unmarried) women. This higher incidence among married women may be due to higher rate of pregnancies among this group of women than their counterpart.

The parity range in this study was similar to that of other previous studies on ectopic pregnancies [8,9,14]. The preponderance of ectopic pregnancy in both first and second pregnancy is not surprising as it may be due to the key risk factors of multiple sex partners, previous sexually transmitted disease and abortions that preceded ectopic pregnancy in a seemingly cause-effect relationship [14].

Majority of the patients (82.1%) were not using any form of contraception at the time of the ectopic pregnancy. This is in keeping with a study done by Abubakar *et al.* [3] in Sokoto, Nigeria which revealed that women who used contraception were less likely to have ectopic pregnancy when compared with their opposite counterpart. However, if a woman who is using minipill or intrauterine contraceptive device (IUCD) or post coital pill becomes pregnant, the chances of that pregnancy being ectopic are increased [1,12]. This is because it is thought that IUCD reduces intrauterine gestation by 99.5% and tubal implantation by 95% but has no effect on ovarian pregnancies in IUCD users [1,10,12].

Abdominal pain, (96.4%) was the most common symptom while amenorrhea (89.3%) was the second most common symptom in this study. These findings were similar to that noted by Udigwe *et al.* [2] and Igwegbe *et al.* [10] in Nnewi, Nigeria and Poonam *et al.* [16] in India. Abdominal pains in any woman in the child bearing age with amenorrhea and anemia should raise the suspicion of ectopic pregnancy. Abdominal pains analogous to that of frank peritonitis is not uncommon since most of the patients present with the ruptured variety of ectopic pregnancy [2,3] (as seen in 100% of cases in this study) unlike in the high-income countries where the unruptured variety is more common [3].

Vaginal bleeding occurred in 71.4% of the patient which is similar to the published report by Etuknwa *et al.* [8] and Udigwe *et al.* [2] all in Nigeria. This vaginal bleeding is probably thought to be due to decidual separation following fetal demise with estrogen and progesterone withdrawal [1].

Pelvic inflammatory disease (53.5%), previous induced abortion (35.7%) and abdomino-pelvic surgery (26.5%) were three most common associated risk factors in this study. This finding is similar to reports from previous authors [2,8,10]. These conditions are associated with increased risk of peritonitis, salpingitis or endometritis. The end result of this inflammatory process may lead to pelvic peritoneal, tubal or endometrial adhesions which in turn increases the risk of ectopic gestation [1]. Induced abortion is often complicated by intrauterine and tubal infection in our environment since it is most often carried out by non-medical or inadequate trained personnel as the abortion law is restricted [1].

All the ectopic pregnancies in this study occurred in the fallopian tube which is similar to studies found in other studies [2,3,5,8]. The reason for this finding might be explained by the finding of earlier study [3] which revealed that all the biopsies from patient with ectopic pregnancies or histology of ectopic pregnancy showed a marked degree of deciliation. It was further explained that loss of ciliated cells from the ampulla may decrease the efficiency of ovum transport, leading to delay in the ovum entering the isthmus and subsequently uterine cavity [3].

The preponderance of ectopic on the right is similar to the trend all over the world [2,3,9-17]. The right sided preponderance has been attributed to appendicitis [2]. Most of the patients (71.4%) had ampullary ectopic

pregnancy which is consistent with studies from other teaching hospital centres [2,10,17].

In this study, all the patients (100%) presented with ruptured tubal ectopic pregnancy when conservative and medical management would no longer be offered. Hence, all the patients had emergency exploratory laparotomy. This is similar to other studies done in low-income countries [1,2,5,8,11]. The patients could have benefited from medical or expectant therapy if they had presented on time when tubal rupture had not occurred [10].

Majority (91.1%) of the patients had unilateral salpingectomy. This is similar with other studies in Nigeria which noted that about 90% of patients will present with ruptured ectopic and salpingectomy exceeding 90% [2,10,17].

Over the years, however, the therapy for ectopic gestation has evolved from a radical procedure to conservative treatment aimed at the preservation of fertility [13]. The most recent development in this treatment of ectopic gestation is in the use of agents such as methotrexate, actinomycin D, potassium chloride, hyperosmolar glucose, prostaglandins and mifepristone [7]. These agents may be directly injected into the ectopic sac or in some cases systemically via the oral, intramuscular or intravenous routes [1,3]. In this study, none of the methods was used as all the cases ruptured before presentation. In the study done by Abubakar *et al.*, [3] 3.8% of women benefited from medical treatment with intramuscular methotrexate thus reflecting an array of late presentation among our population. Ruptured ectopic pregnancy is therefore is a contraindication to the use of these methods [3,5,8].

One maternal death was recorded in this study which gives a case fatality rate of 1.8%. This was consistent with that reported from previous studies [1,9,11,15,16.] However, this one case of maternal death is a negative breakthrough in the management of ectopic pregnancy in Nnewi, Nigeria. This is because previous two studies in the hospital by Udigwe *et al.* [2] and Igwegbe *et al.* [10] recorded no case of maternal mortality. This maternal death is as result of anesthetic complications. As done in a previous study by Igwegbe *et al.*, this finding further justifies why repeated appraisal of the common entities that lead to maternal mortality is paramount.

One limitation of the present study was that it was retrospective in design and so the data may have been

missed as usual. Previous studies in the study hospital have documented cases of abdominal pregnancies [18-20], ovarian pregnancies [10] or heterotopic pregnancies [21], which were not reported in our present data set. It is possible that the risk factors for these types of ectopic pregnancies are changing. However, the strength of the study is that it has provided an up-to-date findings in the study center since the last published data on ectopic pregnancy trends is almost a decade old.

CONCLUSION

In conclusion, the prevalence of ruptured ectopic pregnancy is still high in a Nigerian population with pelvic infection being the most common associated risk factor. Surgery remains the only treatment option and the case fatality rate was 1.8%. Only tubal ectopic pregnancy was reported. There are no reported cases for abdominal pregnancies, ovarian pregnancies and heterotopic pregnancies within the last half decade, although with first mortality from ectopic pregnancy being recorded, which appears to signify a changing pattern.

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DISCLOSURE

The author reports no conflicts of interest in this work.

AUTHOR CONTRIBUTIONS

CBO, CJE and GUE contributed to study design, and manuscript writing and revision. CJE and EAE contributed to data collection, and manuscript writing. CJE, GUE and CBO contributed to analysis, manuscript writing and revision. All authors approved the final manuscript, and agreed to be accountable for all aspects of the work.

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