

A five-year review of ectopic pregnancy at university of Maiduguri teaching hospital

Onah Livinus Nnanyereugo ¹, Maduka Chike Joachim ^{2,*} and Ifeanyi Anthony Ezugwu ¹

¹ Department of Obstetrics and Gynaecology, Faculty of clinical Medicine Enugu State University Teaching Hospital/College of medicine, Enugu State Nigeria.

² Department of Obstetrics and Gynaecology, Faculty of clinical Science, University of Maiduguri Teaching Hospital, Maiduguri, Borno State, Nigeria.

Magna Scientia Advanced Research and Reviews, 2025, 14(01), 091-099

Publication history: Received on 12 April 2025; revised on 30 May 2025; accepted on 02 June 2025

Article DOI: <https://doi.org/10.30574/msarr.2025.14.1.0068>

Abstract

Back ground: Ectopic pregnancy continues to be a life-threatening gynaecological emergency in our environment.

Objective: This is to determine the epidemiology, risk factors, mode of presentation and management of cases, managed in this centre over a five years period.

Materials and Methods: This is a retrospective study of cases of ectopic pregnancies managed in the gynaecological unit of UMTM Maiduguri from 1st January 2012 to 31st December 2016.

Result: During the period, there were a total of 15,163 deliveries and 3,181 gynaecological admissions in the centre. One hundred and two patients had ectopic pregnancy accounting for 0.7% of all deliveries and 3.2% of all gynaecological admissions. Majority of the patient (47.0%) were between 25-29 years of age, 39.8% attended secondary education and 94.0% were married. Most of the patient (68.7%) were Para 1 to 4. The duration of amenorrhoea ranged between 5-16 weeks and 44.6% of the patient had a period of amenorrhoea of 7-9 weeks. The two most common risk factors in the review were previous abortion (37.3%) and pelvic inflammatory disease (27.7%) but 20.5% of patient did not have any identifiable risk factors. Lower abdominal pain (85.5%) was the commonest symptoms and lower abdominal tenderness (80.7%) was the commonest signs. In 67.1% of the patient, the implantation site was in the ampulla and 59.8% of the patient had ruptured ectopic pregnancy. All the patients were managed by laparotomy and the 30.1% of the patient that were transfused, were given homologous blood.

Conclusion: The rate of ectopic pregnancy in our centre is relatively low. Most of the patients presented with ruptured ectopic pregnancy, hence making tubal conservative treatment inapplicable. Emphasis should be on prevention of common risk factors in our environment, early detection and prompt intervention of ectopic pregnancies so as to give patients opportunities for tubal conservative treatment.

Keywords: Ectopic Pregnancy; Gynaecological Emergency; Risk factors; Mode of presentation; Management

1. Introduction

Ectopic pregnancy is a leading cause of maternal morbidity and mortality in the first trimester of pregnancy in developing countries.^{1,2} Ectopic pregnancy is defined as implantation and development of fertilized ovum outside uterine cavity.³

* Corresponding author: Maduka Chike Joachim

The incidence of ectopic pregnancy is rising while the mortality has been on the decline in the developed countries.^{3,4} However, the incidence of ectopic pregnancy in our center had remained static 0.9 %.^{5,6} The increase in incidence is associated with increase in pelvic inflammatory disease (PID), advances in early diagnosis with the uses of trans-vaginal ultrasound scan (TVS), serum beta human chorionic gonadotropin (hCG), and laparoscopy, of cases that otherwise would have resolved without causing any symptom.^{4,6} The reported incidence in Nigeria ranges between 0.9 % and 4.26 %, ^{2,6} 1 in 24.4 deliveries in Ghana,⁸ 2 % in U.S.A, 1.1 % in UK, 1.1-1.8 % in Europe and is reported to be rising.^{3,4} Most patient in developing countries usually present late with rupture variety, with the attendant haemo-peritoneum and its consequences.^{5,6,7}

More than 95 % of ectopic pregnancies occur in the fallopian tube.⁹ The other sites include; cervix < 1 %, caesarean scar < 1 %, ovaries <3.2 %, and abdominal cavity 1.3 %.⁹ Bilateral tubal pregnancy may still occur (1:200,000).⁸ Combined intrauterine and extra-uterine pregnancy (heterotopic pregnancy) occur though rare in spontaneous pregnancy (1:25000-30000) and 1:100 following assisted reproductive technology (ART)^{3,9,10}. Several factors have been shown to increase the risk of ectopic pregnancy. These risk factors share a similar mechanism of action and these include; loss of ciliary function of the tube, impaired muscular activity of the tube, tubal narrowing, crypt formation within the mucosa as a result of adhesion and peri-tubal adhesion with kinking of the tubes.^{9,10} It has been observed that pelvic inflammatory disease is the most common risk factor for ectopic pregnancy and treatment of the disease does not necessarily prevent tubal damage.¹⁰ The other reported risk factors include tubal surgery, failed sterilization, failed intrauterine contraceptive device (IUCD), previous ectopic pregnancy, abortion, puerperal sepsis, congenital defect in the tube, multiple sexual partners, previous abdominal/pelvic surgeries, endometriosis, infertility and infertility treatment.^{10,11,12}

In managing ectopic pregnancies, there is need for a high index of suspicion. Women of reproductive age presenting with amenorrhoea, abdominal pain, vaginal bleeding, and syncope should have pregnancy test performed. Those patients with positive pregnancy test should have a diagnostic work up to detect ectopic pregnancy. Ultrasound scan evaluation especially trans-vaginal scan is invaluable but where the result is equivocal, ancillary test should be done. These include quantitative estimation of beta hCG (doubling and or discriminating level), diagnostic uterine curettage and laparoscopy.¹³

The treatment of ectopic pregnancy is influenced by the clinical state of the patient, the site of the ectopic pregnancy, the reproductive wish of the patient and available facilities and technology.^{14,15} In majority of cases, surgery is the mode of treatment. The surgical treatment may either be an open laparotomy or laparoscopic depending on the surgeon's skill, availability of equipment and clinical state of the patient.^{12,14,15} The surgical procedure may also be radical (Salpingectomy), or conservative (Salpingostomy).^{14,15} Expectant and medical treatment may also be used but good patient selection is important. In expectant management, the initial beta-hCG must be less than 1500 IU/L and should fall by at least 15% in the first 24 hours.³ For medical treatment, the initial beta-hCG must be less than 3000 IU/L with minimal or no symptoms, gestational sac less than 5 cm, no haemo-peritoneum and no evidence of cardiac activities. Single systemic methotrexate is usually employed.^{10,14} Other agents that can be used include actinomycin D, Prostaglandins etc. However, ultrasonographically or laparoscopically guided injection into the gestational sac can lead to resolution in asymptomatic patients with ectopic pregnancy.^{10,14,15}

A dilemma may arise when there is a properly and reliably diagnosed ectopic pregnancy with alive fetus. Nevertheless, the magnitude of complication of ruptured ectopic pregnancy 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.^{1,16}

The objective of this study is to determine the epidemiology, risk factors, mode of presentation and management of cases, managed in this centre. This will be used to review the trend in our center and elsewhere.

2. Materials and methods

This was a retrospective study of ectopic pregnancies at University of Maiduguri Teaching Hospital (UMTH), Maiduguri from 1st January 2012 to 31st December 2016. The gynaecology ward admissions, gynaecology emergency unit and theatre operation registers were used to obtain the identities of the patients. Their case files were retrieved from the record department. During the study period, 102 women were diagnosed with and operated for ectopic pregnancy. However, only 83 case folders were available with complete information for the study, giving a retrieval rate of 81%. Data collected were demographics, duration of amenorrhoea, risk factors for ectopic pregnancy, clinical profile, types of surgical treatment offered, findings at surgery and blood transfusion. All patients were managed by laparotomy and general anaesthesia with endotracheal intubation. Data were coded, entered and analyzed on IBM SPSS statistics for

windows, version 20.0. Armonk, NY: IBM Corp, 2012. and presented in simple frequencies and percentages. Similarly, data on the total gynaecology admissions and as well as deliveries during the period of study were retrieved from the statistics unit of the hospital. Ethical clearance was obtained from the hospital ethical committee.

3. Results

During the 5-year review period, there were a total of 15,163 deliveries, 3181 gynaecological admissions and 102 ectopic pregnancies, giving an incidence of 0.7% (7/1000 deliveries) of ectopic pregnancy and 3.2% of gynaecological admissions.

The socio-demographic characteristics of the patients are shown in the table 1 below. Their age ranged from 19-38 with mean age $\pm$ SD of $27.9 \pm (3.9)$ years. The majority (n=39; 47.0%) were in the age group 25-29 years. Married women accounted for 78 (94.0%) and most of the patients (n=33; 39.8%) had secondary education as their highest education attainment. Greater numbers of the patients were house wife (n=61; 73.5%). Fifty-seven patients (68.7%) were Para 1-4, 16 (19.3%) nulliparous and 10 (12.0%) grandmultiparous.

Table 2 showed the duration of amenorrhoea in the study population and it ranged between 5-16 weeks with a mean of $8.4 \pm (1.2)$ weeks. Majority (n=37; 44.6%) of the patients were amenorrhoeic for 7-9 weeks. Only 2 (2.4%) patients had a period of amenorrhoea exceeding 12 weeks.

The risk factors for ectopic pregnancy and the clinical profile of the patients are depicted in table 3. The two most common risk factors in the review were; previous abortions (n=31; 37.3%) and pelvic inflammatory disease (n=23; 27.7%). However, 17 (20.5%) of the patients had no identifiable risk factors. Infertility and previous abdominal/pelvic surgeries accounted for 7(8.4%) each as a risk factor in this review. Lower abdominal pain (n=71; 85.5%) and vaginal bleeding (n=51; 61.4%) were the two most common presented symptoms.

The two most common clinical signs were Lower abdominal tenderness (n=67; 80.7%) and cervical excitation tenderness (n=45; 54.2%).

Table 4 showed intra-operative findings of cases managed in the study population. Majority of the patients had tubal ectopic pregnancies. In 55 (66.3%) of the patients, the site of implantation was at the ampulla, 2 (2.4%) each were found in cornua and ovaries and one patient had negative laparotomy. Forty-nine (59.8%) of patients had ruptured ectopic pregnancies. Unruptured ectopic pregnancies accounted for 20 (24.4%), while slowly leaking were 13 (15.9%). The contra-lateral tube was grossly normal in 73 (91.3%) of the patients. In 22 (26.5%) of the patients, the amount of haemoperitonium seen was 500-1000mls, 12 (14.5%) was 1001-2000mls and only 6 (7.2%) was above 2000mls.

The various management options were presented in table 5. Majority of the patients (n=77; 93.9%) had unilateral salpingectomy while 2(2.4%) of them had cornual resection. Twenty-five (30.1%) of the patient with ectopic gestation were transfused with blood. Twenty (80.0%) of patient transfused received 2-4 units of blood, 3(12.0%) received 5 units of blood and 2(8%) received only 1 unit of blood. Twenty-two (26.5%) of the patients spent 6 days in the hospital, while 21 (25.3%) of patients spent 4 days in the hospital and only one patient spent more than 10 days. There was no maternal death recorded in the study population.

Table 1 Demographic data of the study population

AGE (YEARS)	NUMBER	PERCENTAGE (%)
≤ 19	1	1.2
20-24	12	14.5
25-29	39	47.0
30-34	25	30.1
≥ 35	6	7.2
Total	83	100.0
Mean $\pm$ SD=27.9 ($\pm$ 3.9)		
PARITY		

0	16	19.3
1-4	57	68.7
≥ 5	10	12.0
Total	83	100.0
Mean± SD=3.0± (1.5)		
Marital status		
Married	78	94.0
Single	5	6.0
Total	83	100.0
Educational level		
No formal education	12	14.4
Primary	21	25.3
Secondary	33	39.8
Tertiary	17	20.5
Total	83	100.0
Occupation		
House wife	61	73.5
Civil servant	13	15.7
Student	5	6.0
Trader	4	4.8
Total	83	100.0

Table 2 Duration of Amenorrhea of the study population

Duration (weeks)	Number	Percentage (%)
4-6	19	22.9
7-9	37	44.6
10-12	25	30.1
>12	2	2.4
Total	83	100
Mean ±SD=8.4 ± (1.2)		

Table 3 Risk factors, mode of presentation, and clinical signs at presentation of the study population

Risk factors	Number	Percentage (%)
Previous abortions	31	37.3
Pelvic inflammatory disease	23	27.7
Infertility	7	8.4

Abdominal/pelvic surgery	7	8.4
Multiple sexual partners	4	4.8
Previous tubal surgery	2	2.4
Previous ectopic pregnancy	1	1.2
Nil	17	20.5
Mode of presentation	Number	Percentage (%)
Lower abdominal pain	71	85.5
Vaginal bleeding	51	61.4
Vomiting	23	27.7
Dizziness	21	25.3
Fainting	9	10.8
Dysuria/frequency	4	4.8
Fever		
Clinical signs	Number	Percentage (%)
Lower abdominal tenderness	67	80.7
Cervical excitation tenderness	45	54.2
Adnexal tenderness	26	31.3
Full pouch of Douglas	24	28.9
Adnexal mass	7	8.4

Table 4 Intra-operative findings of the study population

Implantation sites	Number	Percentage (%)
Ampulla	55	66.3
Isthmus	18	21.7
Fimbriae	5	6.0
Cornua	2	2.4
Ovaries	2	2.4
Negative finding	1	1.2
Total	83	100.0
Condition of the gestation	Number	Percentage (%)
Ruptured	49	59.8
Unruptured	20	24.4
Slowly leaking	13	15.9
Total	82	100.0
Contra-lateral tube	Number	Percentage (%)
Grossly normal	73	91.3
Grossly abnormal	7	8.7

Total	80	100.0
Haemoperitonium (mls)	Number	Percentage (%)
Nil	24	28.9
<500	19	22.9
500-1000	22	26.5
1001-2000	12	14.5
>2000	6	7.2
Total	83	100.0

Table 5 Management of ectopic pregnancy in the study population

Surgical technique	Number	Percentage (%)
Salpingectomy	77	94.0
Salpingostomy	1	1.2
Salpingo-oophorectomy	1	1.2
Corneal resection	2	2.4
Oophorectomy	1	1.0
Total	82	100
Units of blood transfused	Number	Percentage (%)
I	2	8
2	12	48
3	4	16
4	4	16
5	3	12
Total	25	100

4. Discussion

The incidence of ectopic pregnancy in this study was 0.7% (7/1000 deliveries) of total deliveries which was lower than 0.9% from previous studies in this center,^{5,6} 1.3% reported by Udigwe et al in Nnewi,¹ 1.5% reported by Pantl et al in Sokoto,³⁸ 4.26% reported by Yakasai et al in Kano,² 2.4% in Ghana,⁹ 2 % in U.S.A, 1.1 % in UK, 1.1-1.8 % in Europe.³ It is however higher than 0.6% by Arup Kumar et al in India.¹⁸ What is responsible for this lower rate cannot be elucidated but the cultural norm of early marriage in this part of the country which will likely lead to less exposure to some of the risk factors for ectopic pregnancy could be a possibility.

The peak age incidence was among women in the age group 25-29 years. This is similar to finding by Udeigwe et al¹ and Pantl et al³⁸ in Nnewi and Sokoto respectively. This corresponds to the age of reproduction and peak sexual activity. Its preponderance in the first, second and third pregnancy is not surprising as this may be explainable by the fact that major risk factors of abortions and pelvic inflammatory disease precede the ectopic pregnancy in a cause-effect relationship. Majority of the patient in this study (94%) were married and most of them (73.5%) were also house wife. Greater number of them (39.8%) has secondary education as highest level of education attainment. This was similar to early study in this center.⁶

Majority of the patients (44.6%) had amenorrhoea for 7-9 weeks representing the period required for the growing gestation to distend the tube and cause symptoms.⁶ The major risk factors of ectopic pregnancy identified in this study

were previous abortion and pelvic inflammatory disease. They are responsible for 65% of the risk factors in this study. These two factors may be suggestive of tubal damage as a final common pathway which was consistent with the previous finding in this center⁶ and findings in Nnewi, Enugu, Lagos and Sokoto.^{1,5,17,38} Absence of a risk factor does not in any way exclude the occurrence of ectopic pregnancy.³⁶ However, 20.5% of the patient in this study did not have any identifiable risk factor.

The symptoms and clinical signs of ectopic pregnancy will vary depending on the stage of development of the ectopic pregnancy and the hemoperitoneum that has occurred.²³ The symptoms at presentation: abdominal pain, vaginal bleeding, vomiting, dizziness and syncopal attack were similar to findings in other studies.^{2,6,12,14,15,19} Lower abdominal pain and vaginal bleeding were the commonest symptoms at presentation in this study. The clinical signs: lower abdominal tenderness, cervical excitation tenderness, adnexal tenderness, fullness in the pouch of Douglas and adnexal mass were also not different. However, lower abdominal tenderness and cervical excitation tenderness was found to be the common clinical signs responsible for 80.7% and 54.2% of cases respectively in this study. This was also the trend in other studies.^{20,25}

Pregnancy test, abdominal paracentesis, culdocentesis, abdominal, and transvaginal ultra sound scan was used in evaluating the patients. Because of the nature of the patient state, two or three of these test were perform in addition to clinical features in making diagnosis in this review. This was similar to other study in developing countries.^{13,14,16,25}

Most of the patient had ampullary ectopic pregnancy which was consistent with studies from other centres.^{28,33,34} Majority of the ectopic pregnancies in this review (59.8%) were ruptured at the time of presentation. This was similar to early study and finding from other studies^{22,33,34,38}. The high level of rupture in developing countries was said to be due to late presentation and delay in the diagnosis because of socio-cultural reasons.^{6,29,38} Regrettably, 59.8% of cases who had ruptured ectopic pregnancy were not diagnosed before the appearance of the symptoms. This was similar to findings from other studies in developing countries where rupture at presentation occurred in 70-95% of ruptured ectopic pregnancy.^{20,23,26,29} The condition of contralateral tube was grossly normal in majority of the patients. This was similar to early study in this centre.⁶ Because of the high number of ruptured ectopic in our review, 71.1% of the patients had hemoperitoneum and majority of them (48.6%) lost more than 500mls of blood. This was similar to previous review in this centre.⁶

Although surgery is the mainstay of management, expectant and medical therapy can be offered to a patient. However, due to the peculiarity in our environment where even the tertiary centers are not adequately equipped when compared with developed countries and also the nature of our patient in which majority of them had ruptured damaged tubes, salpingectomy by laparotomy remains the common management offered to patients. Majority of the patients in this review (93.9%) were managed by salpingectomy at laparotomy. Those that had cornual ectopic pregnancies had cornual resection. One of the patients with ovarian ectopic pregnancies had oophorectomy while the other patient had salpingo-oophorectomy. Elsewhere in the developed world, minimal access (laparoscopic) surgery has become the preferred technique unless the woman is haemodynamically unstable.^{31,32}

All the patients that required blood transfusion were given homologous blood and no auto transfusion was done and this was similar to other studies.⁶ In developing countries where only HIV antibodies screening is performed to clear a blood for transfusion, there is possibility of transfusing a HIV positive blood from a patient in the window period.

No maternal death was recorded in this study which was similar to other studies.^{1,2,6,34}

5. Conclusion

Ectopic pregnancy still remains a major gynaecological problem associated with considerable morbidity, although the trend is on the decline in our center. A high index of suspicion and use of modern diagnostic techniques will assist in early diagnosis, obviating the need for radical treatment. A high prevalence of pelvic inflammatory diseases and abortions resulted in high incidence of ectopic pregnancy in this study. Emphasis should be on prevention of common risk factors in our environment, early detection and prompt intervention of ectopic pregnancies so as to give patients opportunities for tubal conservative treatment.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

- [1] Udigwe GO, Umeononihu OS, Mbachu II. Ectopic pregnancy: A 5-year review of cases at NnamdiAzikiwe University Teaching Hospital (NAUTH) Nnewi. *Niger Med J* 2010; 51 (4):160-3.
- [2] Yakasai IA, Abdullahi J, Abubakar IS. Management of ectopic pregnancy in Aminu Kano Teaching Hospital Kano, Nigeria: A 3-year. *Glo Adv Res J Med Med Sci* 2012; 1 (7): 181-185.
- [3] Jurkovic D. Ectopic pregnancy. In: Edmonds DK (Eds). *Dewhurst's Textbook of Obstetrics and Gynaecology*. 8th edition. Wiley- Black well Science Ltd UK 2018:76-87.
- [4] Surette AM, Dunham SM. Early pregnancy risks. In: Dechenery AH, Nathan L, Roman AS, Laufer N (Eds). *Current Diagnosis and Treatment, Obstetrics and Gynaecology*. 11th Edition New York: McGraw Hill Medical publishing division 2018: 234-249.
- [5] Ibrahim SM, Isa B, Usman HA, Audu BM. Tubal ectopic pregnancy at University of Maiduguri Teaching Hospital, North-eastern Nigeria: A ten-year review. *Earth J Org* 2014; 3(1): 309-317.
- [6] Geidam AD, Chama CM, Mairiga AG. Ectopic pregnancy at the University of Maiduguri Teaching Hospital- A Ten-year review. *Kanem J Med Sci*, 2007; 2 (1):12-16.
- [7] Igwegbe AO, Eleje GU, Okpala BC. An appraisal of the management of ectopic pregnancy in a Nigeria tertiary hospital. *Ann Med Health Sci Res*. 2013; 3 (2): 166-170.
- [8] Eze JN, Obuna JA, Ejikeme BN. Bilateral tubal ectopic pregnancies: A report of two cases. *Ann Afr Med*. 2012; 11:112-115.
- [9] Kwawukume EY, Idrisa A, Ekele BA. Ectopic pregnancy. In: Kwawukume EY, Emuveyan EE (Eds). *Comprehensive Obstetrics in the tropics*. 2nd edition. Asante and Hittscher printing press Ltd Ghana 2015: 282-288.
- [10] Dutta DC. Haemorrhage in Early pregnancy. In: Konar H, editor. *Textbook of Obstetrics*. 7th edition, London. New Central Book Agency Ltd; 2013:177-182.
- [11] Lawani OL, Anozie OB, Ezeonu PO. Ectopic pregnancy: a life-threatening gynaecological emergency. *Int J Women's Health* 2013; 5:515-521.
- [12] Onwuhafua PI, Onwuhafua A, Adesiyun GA, Adze J. Ectopic pregnancies at the Ahmadu Bello University Teaching Hospital, Kaduna Northern Nigeria. *Trop J Obstet Gynaecol* 2001; 18(2): 82-86.
- [13] Chama CM, Obed JY, Ekanem AA. Trans-vaginal ultrasound Scan Versus Laparoscopy in the diagnosis of suspected ectopic pregnancy. *J Obstet Gynaecol* 2001; 21(2):184-186.
- [14] Amajuoyi CC, Onyegbule AO, Ejelonu TU, Onyeabochukwu AD. A 5 year review of ectopic pregnancy at Federal Medical Centre, Owerri, South East, Nigeria. *Niger J Med* 2014: 207-212.
- [15] Adewunmi AA, Rabiun KA, Tayo OA, Aletan OE. Ectopic Pregnancy in Lagos State University Teaching Hospital Ikeja, lagos. *The Nigerian Medical Practitioner*, 2010; Vol 58, No 1-2:13-16.
- [16] Orji EO, Fasuba OB, Adeyemi B, Dare FO, Onwudiegwu V, Ogunniyi SO. Mortality and Morbidity associated with misdiagnosis of ectopic pregnancy in a defined Nigerian population, *J, Obstet Gynaecol* 2002; 22:548-550.
- [17] Anorlu RI, Oluwole A, Abudu OO, Adebajo S. Risk factors for ectopic pregnancy in Lagos; Nigeria. *Acta Obstet Gynaecol Scand* 2005; 84(2):184-188.
- [18] Arup KM, Nilotpal R, Kakali SK, Pradip KP. Ectopic pregnancy an analysis of 180 Cases. *J Indian Med Assoc* 2007; 105: 308-314.
- [19] Abdul LF. Ectopic pregnancy in Ilorin: a review of 278 Cases. *Niger J Med* 2000; (9):92-95.
- [20] Igberase GO, Ebeigbe PN, Igbekoyi OF, Ajufoh BI. Ectopic pregnancy. An 11-year review in a tertiary centre in the Niger Delta. *Trop Doct* 2005; 35(13):175-177.

- [21] Gharoro EP, Igbafe AA. Ectopic pregnancy revisited in Benin City: analysis of 152 Cases. *Acta Obstet Gynaecol Scand* 2002; 81(12):1139-43.
- [22] IbekwePC. Ruptured advanced tubal ectopic pregnancy simulating uterine rupture: a case report. *Niger J Med* 2004; 3 (2):196-8.
- [23] Walker JJ. Ectopic pregnancy. In: *Clinical Obstetrics and Gynaecology*. Lippincot William and Wilkins, Inc 2007; 50(1):89-99.
- [24] Dickens BM, Feweders A, Cook RJ. Ectopic pregnancy and emergency care ethical and legal issues. *Int Obstet Gynaecol* 2003; 82(1):121-6.
- [25] Mukul LV, Teal SB. Current management of ectopic pregnancy. *Obstet Gynecol Clin North Am* 2007; 34 (3):403-419.
- [26] Monga A. Ectopic pregnancy. In: Monga A, Baker P, editors. *Gynaecology by Ten Teachers*. 19th edition, London: Hodder Arnold education; 2011:94-98.
- [27] Poonam Y, Uprety D, Banerjee B. Ectopic pregnancy. A two-year review from BPKIHS, Nepal. *Kathmandu University Med J* 2005; 3: 365-9.
- [28] Omokanye LO, Balogun OR, Salaudeen AG, Olatinwo AW, Saidu R. Ectopic pregnancy in Ilorin, Nigeria: A four-year review. *Niger Med J* 2013; 20:341-5.
- [29] Ikeme AC, Ezugwu HU. Morbidity and mortality following tubal ectopic pregnancy in Enugu, Nigeria. *J Obstet Gynaecol* 2005; 25(6):596-8.
- [30] Obed SA. Diagnosis of unruptured ectopic pregnancy is still uncommon in Ghana. *Ghana Med J*. 2006;40 (1):1-7.
- [31] Odejinmi FO, Rizzuto MI, Macrae RE, Thakur V. Changing trends in the Laparoscopic Management of ectopic pregnancy in a London district general hospital. 7 years' experience. *J Obstet Gynaecol* 2008; 28(6): 614-7.
- [32] Karri K, Harris CP. Successful Laparoscopy Management of ectopic pregnancy in a district general hospital. *J Obstet Gynaecol* 2005; 25(8): 769-71.
- [33] Nayama M, Gallaise A, Ousemane N, Idi N, Tahiron A, Garba M, Djibril B, Boukewoum. Management of ectopic pregnancy in developing countries; examples of a Nigerian reference maternity. *Obstet Gynaecol fertile* 2006; 34(1):14-8.
- [34] Swende TZ, Jogo AA. Ruptured tubal pregnancy in Makurdi, North Central Nigeria. *Niger J Med* 2008; 17(1): 75-7.
- [35] Musa J, Daru PH, Mutihir J, Ujah IA. Ectopic pregnancy in Jos Northern Nigeria. Prevalence and impact on subsequent fertility. *Niger J Med* 2009; 18(1): 32-8.
- [36] Orazulike NC, Konje JC. Diagnosis and management of ectopic pregnancy. *Women Health (LondEngl)*. 2013; 9(4): 373-385.
- [37] Erickson BT. Ectopic pregnancy. In: Bader T, editor. *Obstetrics and Gynaecology secrets*. 3rd edition. Maryland Heights: Mosby; 2007: 109-113.
- [38] Panti A, Ikechukwu NE, Lukman OO, Yakubu A, Egundu SC, Tanko BA. Ectopic pregnancy at Usman Danfodiyo University Teaching Hospital Sokoto. A ten-year review. *Ann Niger Med* 2012; 6:87-91.