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## *Full Length Research Paper*

# **Management of ectopic pregnancy in Aminu Kano teaching hospital Kano Nigeria: A 3-year**

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Ectopic Pregnancy is one of the commonest causes of first trimester maternal death. In addition subsequent morbidity including reproductive challenges can be distressing. The risk of severe morbidity and mortality is related to gestational sac rupture. The study aimed to evaluate the pattern of presentation and management of ectopic pregnancy in our hospital as well as identify challenges and proffer suggestions to improve overall patient care. A retrospective review of the case records of women who had emergency laparotomy based on a clinical diagnosis of ectopic pregnancy in our department between 1<sup>st</sup> November 2008 and 31<sup>st</sup> October 2011 was done. Ectopic pregnancy represented 4.26% of all deliveries, 5.55% of all gynaecologic admissions and 26.01% of all gynaecological surgeries. The mean age of the patients was 27.8 years with a range of 15-41 years. The highest frequency occurred in the 25-34 year age groups (61.39%). The commonest presenting symptoms were abdominal pain in 98 (97.03%), amenorrhoea in 74 (73.27%) and vaginal bleeding in 65 (64.36%). Thirteen patients (12.87%) presented in shock had prompt resuscitation and surgery. The main site of occurrence was tubal 89 (88.12%) and all patients had laparotomy. Salpingectomy was done in 87 (86.14%) while 1 (0.99%) each had "milking out" and linear salpingostomy respectively. Excision and reconstruction was done for the 5 (4.95%) women with ovarian pregnancies. Laparotomy was negative in 5 (4.95%) of the women and only 2 (1.98%) had a diagnostic laparoscopy prior to laparotomy. The majority of the surgery was done by the senior resident (67.33%), followed by the Registrar (29.70%) and the consultant (2.97%). Eighty six (85.15%) of the surgeries were done during call hours. Ruptured ectopic pregnancy is the main mode of presentation in our setting and laparotomy with salpingectomy is the main stay of management. However, majority of the women are haemodynamically stable at presentation and operative laparoscopy could have been a viable alternative.

**Keywords:** Ectopic Pregnancy, Laparotomy, Laparoscopy, Salpingectomy, Kano.

## **INTRODUCTION**

Ectopic pregnancy is one of the commonest causes of first trimester maternal death in developed countries and only follows induced abortion in sub-Saharan Africa (Patrick et al., 2002). There is considerable regional

variation in its incidence and globally, it has been on the rise over the past three decades. Worldwide, ectopic pregnancy complicates 0.25 – 2.0% of all pregnancies (Patrick, et al., 2002).

In Europe and North America, the incidence is estimated at 2% of live births. In the developing world however, data are few and often out of date. Nonetheless, ectopic pregnancy accounted for 0.5- 2.3%

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of all live births in Africa from the 1960s to the mid 1980s (Rose et al., 2005). In Sub-Saharan Africa, the incidence varies from 1.1% in Transkei, South Africa through 2.9% at Nosy Be Hospital in Madagascar to up to 4% at the National Teaching Hospital in Cotonou, Benin Republic (Patrick, et al., 2002). In Nigeria, ectopic gestation occurs once in every 111 deliveries in Ilorin, in 18.1 per 1,000 deliveries in Sokoto and to as high as 43.8 per 1,000 deliveries in Lagos (Patrick, et al., 2002; Airede and Ekele, 2005; Rose et al., 2005; van Mello et al., 2009).

The main clinical findings in patients with ectopic pregnancy include amenorrhoea of variable duration, abdominal pain, vaginal spotting, and abdominal/adnexal tenderness. Others may present with classic picture of acute abdomen with hypovolaemic shock. The above scenario mostly applies to a ruptured extra-uterine gestation and it is the most common pattern in developing countries. In contrast, the dominant presentation in developed countries is that of unruptured ectopic pregnancy which is often diagnosed early in the course of early evaluation of amenorrhoea at the early pregnancy assessment unit (Farquhar, 2005). Therefore, the management goal will depend on the pattern of presentation. This will include resuscitation, ancillary investigations and definitive treatment.

In contemporary clinical practice, the diagnosis of an unruptured ectopic pregnancy is heavily reliant on the combination of a high index of clinical suspicion, quantitative assay of the beta subunit of human chorionic gonadotrophin (*b*-hCG) and transvaginal ultrasound. These facilitate early diagnosis before rupture occurs and allows for conservative treatments. The pattern of rise in chorionic gonadotrophin levels in ectopic pregnancy is lower than in a normal gestation and allows for detection of an ectopic. In the first forty days post-conception, hCG levels double approximately every 48 hours. This pattern occurs in only 17% of extrauterine pregnancies. However, 15% of normal pregnancies do exhibit a sub-normal hCG rise (Farquhar, 2005; Royal College of Obstetrics and Gynaecology, 2004). The discriminatory zone of *b*-hCG is also useful in diagnosing ectopic gestation. This refers to a serum hCG level beyond which an intrauterine gestational sac should be visible on transvaginal ultrasound scan. This level is about 2000 Miu/ml. However, in most countries of sub-Saharan Africa, hCG assay and transvaginal ultrasound are not readily available. Thus, most patients present with ruptured ectopic pregnancy that requires immediate surgical treatment (Farquhar, 2005; Royal College of Obstetrics and Gynaecology, 2004).

The main modalities of treatment employed are expectant, medical and surgical. Surgical treatment may be laparoscopic or laparotomy and may also be radical or conservative. Determinants of treatment options include size of the unruptured sac, serum beta HCG levels, and degree haemodynamic decompensation. For unruptured

gestation, medical treatment with methotrexate is effective and safe with positive cost-benefit differentials (Sivalingham et al., 2011). Indications for methotrexate therapy include haemodynamic stability with minimal symptoms, hCG less than 5,000 Miu/ML, mass less than 3-5cm, no evidence of rupture and availability for follow up (Sivalingham et al., 2011). Medical treatment is associated with reduced cost of care, does not require admission and therefore causes less social disruption. However, it is associated with a reported success rate of 88-93% (Farquhar, 2005; Sivalingham et al., 2011).

Laparoscopy though now not a mandatory tool for diagnosis, has become a safe and gold standard management option in haemodynamically-stable patients (Zovues et al., 1992). It is the preferred approach especially for an unruptured gestation and where diagnosis is in doubt. This allows for tubal conservation. Laparoscopy may also be used for ruptured tubal pregnancy when there is haemodynamic stability and minimal haemoperitoneum (Sivalingham et al., 2011). Laparotomy remains the commonest surgical approach in the management of ectopic pregnancy particularly in sub-Saharan Africa where operative laparoscopy is still rudimentary (Patrick, et al., 2002; Airede and Ekele, 2005; Rose et al., 2005; van Mello et al., 2009). It is the modality of choice when there are unstable vital signs, large haemoperitoneum, suspicion of adhesions, hCG is greater than 20,000 Miu/ml and mass is greater than 6cm (Royal College of Obstetrics and Gynaecology, 2004; Bajekel et al., 2000).

Conservative surgery for ectopic pregnancy may be employed either by laparoscopy or laparotomy and indications for it include contralateral tubal disease/absence, an unruptured tubal pregnancy and desire for future fertility (Royal College of Obstetrics and Gynaecology, 2004; Bajekel et al., 2000). The subsequent pregnancy rates after tubal conservative surgery is reported to be 45-70% and results are comparable between laparoscopy and laparotomy. However, laparoscopy is associated with a shorter hospital stay, lesser operative morbidity and lower overall cost (Bajekel et al., 2000; Zovues et al., 1992).

## METHODOLOGY

A retrospective study of women who were diagnosed and admitted with ectopic pregnancy at Aminu Kano Teaching Hospital between 1<sup>st</sup> September 2008 and 31<sup>st</sup> October 2011 was done. The ward admissions and theatre operation registers were searched for the identities of the patients and a list sent to the records department for retrieval of their case files. During the study period, 168 women were diagnosed with and operated for ectopic pregnancy and 101 case files were retrieved (60.12%). Data on demographics, pattern of presentation, modality

**Table 1.** Symptoms and signs of ectopic pregnancy

S/No	Symptom/Sign	Number (n)	Percentage (%)
1	Abdominal Pain	98	97.03
2	Amenorrhoea	74	73.27
3	Vaginal Bleeding	65	64.36
4	Dizziness	47	46.53
5	Prostration/Collapse	12	11.88
6	Shoulder Tip Pain	10	9.90
7	Abdominal Tenderness	94	93.07
8	Adnexal Tenderness	74	73.27
9	Shock	13	12.87

**Table 2.** Sites of ectopic pregnancy

S/No	Site	Number (n)	Percentage (%)
1	Tubal	90	89.11
2	Ovarian	7	6.93
3	Abdominal	1	0.99
4	Rudimentary Uterine Horn	2	1.98
5	Intrauterine	1	0.99

**Table 3.** Type of surgical treatment

S/No	Type of Surgery	Number (n)	Percentage (%)
1	Salpingectomy	90	89.11
2	Linear Salpingostomy	1	0.99
3	"Milking Out"	1	0.99
4	Excision of Ovarian Sac/Reconstruction	5	4.95
5	Ovarian Cystectomy/Oophorectomy	2	1.98
6	Uterine (Cornual) Reconstruction	1	0.99
7	Excision of Abdominal Gestational Sac	1	0.99

of treatment, cadre of surgeon were extracted Other information extracted from the case files includes previous treatment for PID/vaginal discharge, prior abdominal surgery, prior ectopic pregnancy, contraceptive usage, diagnosis-surgery interval, and cadre of surgeon. Variables were analysed and presented in simple frequencies and percentages. Similarly, data on the total gynaecological admissions and surgery as well as deliveries during the period was retrieved from the statistics unit of the hospital.

## RESULTS

The mean age of patients was 27.8years with a range of 15-41 years. Ectopic pregnancy occurred with the highest frequency in the 25-34 year age group. The commonest symptoms were abdominal pain, amenorrhoea and vaginal bleeding which were found in 98 (97.03%), 74(73.27%) and 65(64.36%) patients respectively. The most common clinical sign was abdominal tenderness in

94 (93.07%) Thirteen patients (12.87%) presented in shock and had prompt surgery with resuscitation with crystalloids and blood transfusion.

Most of the patients had no identifiable risk factors for ectopic pregnancy. Nonetheless, 37 (36.63%) had prior abortion of which 10 were induced. In addition, 32 (31.68%) had a prior treatment for vaginal discharge and/or pelvic inflammatory disease (PID) and 17 (16.83%) had used some form of contraception. A prior ectopic pregnancy and laparotomy were found in 5 (4.95%) and 7(6.93%) of patients respectively.

Tubal gestation was the commonest type occurring in 90 patients (89.11 %) and was commoner on the right side. Ovarian pregnancy was found in 7 (6.93%) of subjects. Two patient had a pregnancy in a rudimentary uterine horn (1.98%). One patient had abdominal pregnancy.

Eighty seven (86.14%) of the tubal pregnancies were ruptured while only one was unruptured and one patient had a fimbrial gestation. Four patients (percentage) had ovarian cysts while one patient (percentage) had

**Table 4.** Risk factors for ectopic pregnancy

S/No	Risk Factor	Number (n)	Percentage (%)
1	Age $\geq$ 35 years	11	10.89
2	Prior Laparotomy	7	6.93
3	Prior Ectopic	5	4.95
4	Prior Treatment of Vaginal Discharge	32	31.68
5	Prior Miscarriage (including TOP)	37	36.63
6	Contraception	17	16.83

intrauterine pregnancy.

Majority of the patients' [90] had total salpingectomy, while the remaining had various forms of treatment ranging from linear salpingostomy to excision of the extra-uterine pregnancy. None of the patients had methotrexate treatment as they were all ruptured ectopic pregnancies

Only two (1.99%) patients had a diagnostic laparoscopy followed by laparotomy and definitive treatment. Most (85.15%) of the operations were done during call hours. The majority (80.20%) of the surgeries were done within 24 hours of presentation.

## DISCUSSION

Advances in technology have allowed an explosion in management options in ectopic pregnancy and laparotomy is mainly indicated when there are unstable vital signs, large haemoperitoneum, suspicion of adhesions, hCG is greater than 20,000Miu/ml and mass is greater than 6cm (Farquhar, 2005; Royal College of Obstetrics and Gynaecology, 2004; Sivalingham et al., 2011; Bajekel et al., 2000). In this review, ectopic gestation was solely treated by laparotomy and salpingectomy as was found in most reports from sub Saharan Africa. This may be partly because of late presentation to the hospital often due to failure of making an early diagnosis at various level of the health care delivery system. It may partly be because of lack of expertise and equipments for operative laparoscopy as even unruptured tubal pregnancies are often treated by salpingectomy as shown by this review (Patrick, et al., 2002; Airede and Ekele, 2005; Rose et al., 2005; van Mello et al., 2009). Conservative tubal surgeries is seldom practiced as this review shows and medical management may still be a mirage based on the type of presentation. The latter two approaches constitute significant care pathways in the developed world as reported severally (Laiyemo and Etokowo, 2008; Cooray et al., 2002; Oyelese et al., 1999; Turhan et al., 2004). On the positive side, most of the surgeries in this study were done by residents exceeding the minimum of 40% required by an institution in the UK (Oyelese et al., 1999). However, most were done during call hours when all senior and experienced personnel are not on ground and

contravenes best practices (NCEPOD, 2003).

Similarly, diagnosis was based on a combination of clinical presentation, transabdominal ultrasound findings and a positive urine pregnancy test which may be unable to diagnose ectopic pregnancy early enough before rupture occurs. This may be because of lack of capacity for rapid serum hCG assay, lack of skills for the use of diagnostic laparoscopy especially after working hours and perceived poor social acceptability of vaginal ultrasound. This finding strongly calls for involvement of senior doctors in the treatment of ectopic pregnancy so that there can be knowledge transfer to junior doctors since these cases come as emergencies that cannot wait.

Conclusively, ectopic pregnancy is diagnosed clinically and managed solely by laparotomy and salpingectomy in Aminu Kano Teaching Hospital and diagnostic laparoscopy is rarely employed in the evaluation of suspected ectopic pregnancy.

## RECOMMENDATION

There is the need to create and adapt a protocol for the diagnosis and management of ectopic pregnancy in the hospital. There is also the need to develop/improve the laboratory capacity for rapid serum hCG assay and make diagnostic laparoscopy a routine tool in evaluating any acute pelvic pain. suspected ectopic pregnancy especially during call hours. There is also the need to research in to acceptability of vaginal ultrasound with the view to utilising it in assessing early pregnancy complications.

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