

## ECTOPIC PREGNANCY: AN 18-YEAR REVIEW OF MANAGEMENT AND OUTCOME

Anya, S.E, Anya, A.E.

Department of Obstetrics and Gynaecology, Federal Medical Centre, Umuahia, Abia State

**Correspondence: A. E. Anya**

P.O.Box 142 Umuahia, Abia State

### SUMMARY

**Background:** Technological advances have led to earlier diagnosis of ectopic pregnancy with a decline in morbidity and mortality in developed countries. The purpose of this study was to determine the pattern of presentation, management and outcome of ectopic pregnancy over an 18-year period.

**Methods:** A retrospective descriptive analysis of cases of ectopic pregnancy at a referral centre over the period 1981-1998 was undertaken.

**Results:** The incidence of ectopic pregnancy increased from 3.8 per 1000 births in 1981-1989 to 11.6 per 1000 births in 1990-1998. The average age at presentation was 27.1 years and 41.8% of patients were nulliparous. The commonest symptoms were lower abdominal pain (93.4%), amenorrhoea (89.3%) and vaginal bleeding (71.3%), while the commonest signs were pallor (92.6%), abdominal tenderness (75.4%) and tachycardia (64.8%). Presentation was characteristically late and there were no changes in the pattern of presentation, method of diagnosis and management throughout the period reviewed. Laparotomy and salpingectomy was done in 75% of cases and 91% required

blood transfusion. Four women died from 1981 to 1989 while only one woman died from 1990-1998.

**Conclusion:** Women with ectopic pregnancy continue to present late precluding early diagnosis and use of conservative modalities of management. Morbidity remains high but mortality has declined.

### INTRODUCTION

Ectopic pregnancy is defined as the implantation of a fertilized ovum in any tissue other than the endometrium of the uterine cavity.<sup>1</sup> It was first described by Abulcasis in 936 AD and the case fatality rate was about 70% in 1876.<sup>2</sup> Lawson Tait published the first series of surgically managed cases in 1884.<sup>2</sup>

Despite its long history, ectopic pregnancy remains potentially one of the most acute and dangerous emergencies that any doctor has to deal with and is a leading cause of preventable maternal mortality even in developed countries.<sup>3</sup> Although studies from different parts of the world have reported rising ectopic pregnancy rates,<sup>4,5</sup> reduction in associated morbidity and mortality has occurred

because of technological advances enabling earlier diagnosis and conservative management<sup>6,7</sup>.

In this study, an examination was made of the pattern of presentation and management of ectopic pregnancy over an 18-year period.

## **MATERIALS AND METHODS**

This was a retrospective descriptive analysis of cases of ectopic pregnancy at the Federal Medical Centre, Umuahia, Abia State, Nigeria.

Cases managed from January 1, 1981 to December, 31 1998, were reviewed. Of interest were incidence, age, parity, risk factors, clinical presentation, management, complications, duration of hospitalization and outcome. These are presented as figures and tables.

A retrospective case-control study was also done to evaluate the risk of ectopic pregnancy compared to intra-uterine pregnancy in women with previous induced abortion and other identifiable risk factors.

Statistical analysis was done using SPSS and EPI-INFO software. These are displayed as mean and standard deviation, percentages, and odds ratio with 95% confidence interval.

## **RESULTS**

### ***Incidence***

There were 154 cases of ectopic pregnancy, 6294 gynaecologic admissions and 25,986 deliveries. Thus, ectopic pregnancies constituted 2.4% of gynaecologic admissions

while the incidence of ectopic pregnancy was 5.9 per 1000 deliveries or 1 in 169 deliveries. The incidence rose from 3.8 per 1000 deliveries during the first nine years to 11.6 per 1000 deliveries over the last nine years reviewed.

Further analysis was based on findings in 122 case notes that were available for review.

### ***Age, parity and marital status***

Figure 1 displays the age distribution of women with ectopic pregnancy. The mean age was  $27.1 \pm 5.2$  years (range, 18-45). A large proportion of women (41.8%) was nulliparous (Figure 2). Ninety-seven women (79.5%) were married.

### ***Risk factors***

Patients records were evaluated for history of induced abortion and other risk factors for ectopic pregnancy. These were then compared to similar data from a control group of 1200 women who delivered in our hospital during the same period.

Table 1 shows that previous induced abortion was a significant risk factor for ectopic pregnancy. Women with ectopic pregnancy were more likely to have had an induced abortion compared to those who delivered within the hospital during the same period ( $X^2 = 20.15$ ;  $p = 0.000007$ ; Odds Ratio 2.74, 95% confidence interval, 1.76 – 4.25).

### ***Clinical features***

The main symptoms were abdominal pain, amenorrhoea and vaginal bleeding (Table 2). Important signs were pallor, abdominal tenderness and tachycardia (Table 3). The duration of symptoms (excluding amenorrhoea) prior to presentation ranged from one day to 6 weeks. Abdominal paracentesis was performed in 68 cases (55.7%) and was positive in 59 (86.8%). Culdocentesis was undertaken in another 9 cases (7.4%) with a positive tap in 7 (77.8%).

The diagnosis was missed at initial presentation in 23 women (18.9%). The diagnoses made were pelvic inflammatory disease in 13 women (56.5%), incomplete abortion in 5 (21.7%), acute appendicitis in 3 (13%) and dysmenorrhoea in 2 (8.7%).

Prior to presentation, 11 women (9%) had dilatation and curettage in private clinics. In 7 of these women, this was in an attempt to terminate a perceived intra-uterine pregnancy. Two of these women were found to have multiple uterine perforations at laparotomy.

Table 4 shows that anaemia was common pre-operatively (range, 3.3-10.3g/dl) and post-operatively (range, 7.0-10.7g/dl).

### ***Operative findings and treatment***

The right tube was involved in 58.2% of cases with the ampulla as the commonest site of implantation (Table 5). Tubo-ovarian masses were common probably because of the relatively long time interval between tubal rupture and

surgery. Pelvic adhesions were observed in 29 women (23.8%). One hundred and eight women (88.5%) had haemoperitoneum. The estimated quantity of blood in the peritoneal cavity ranged from 50 – 4,000mls with a mean of  $1243 \pm 1016$  mls.

Table 6 displays the therapeutic procedures performed. All women had laparotomy. Partial salpingectomy was the major surgical procedure undertaken. One hundred and eleven women (91%) received blood transfusion (Table 7). Seven women (5.7%) had intra-operative blood salvage and were auto-transfused.

### ***Complications***

The main post-operative complication was anaemia and was present in 75 (61.5%) women. The other complication was wound infection in 6 women (4.9%). There were five deaths representing 3.2% of all cases. All were due to haemorrhagic shock and were pre-operative. Four occurred between 1981 and 1989 while one occurred between 1990 and 1998. The mean duration of hospital stay in survivors was  $9.3 \pm 1.4$  days (range, 8-15).

### ***Trends***

With the exception of a decline in mortality, there was no change in presentation, method of diagnosis and treatment of ectopic pregnancy during the period reviewed.

Figure I: Age distribution of 122 patients with ectopic pregnancy.

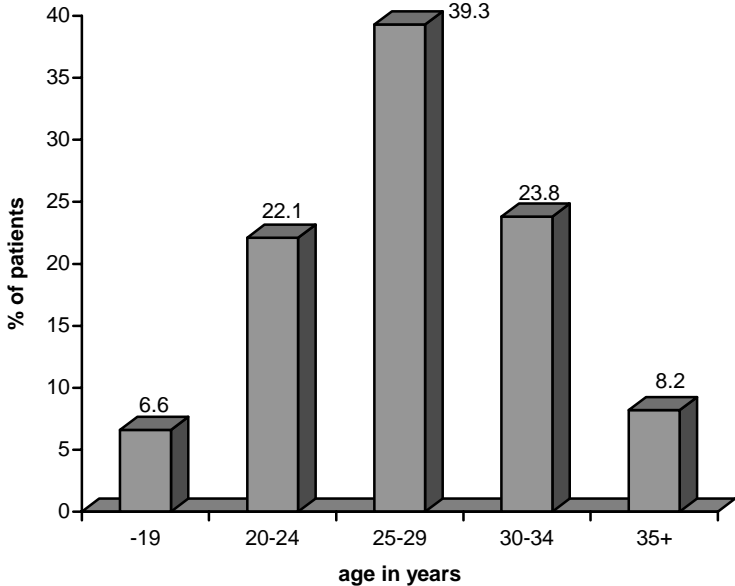


Figure II: Parity distribution of 122 patients with ectopic pregnancy.

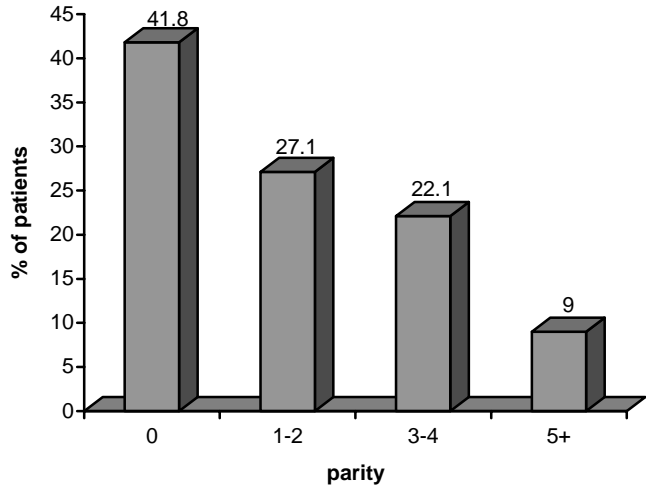


Table 1: Risk factors for ectopic pregnancy in women with ectopic and intra-uterine pregnancies.

Risk factor	Ectopic pregnancy (n = 122)	Intra-uterine pregnancy (n = 1200)
Previous induced abortion	32 (26.2%)	138 (11.5%)
Previous ectopic pregnancy	4 (3.3%)	1 (0.1%)
Previous tubal surgery	1 (0.8%)	-
Others	-	-

Table 2: Presenting symptoms in 122 patients with ectopic pregnancy.

Symptoms	Number	%
Abdominal pain	114	93.4
Amenorrhoea	109	89.3
Vaginal bleeding	87	71.3
Weakness/dizziness/fainting	41	33.6

Table 3: Signs on presentation with ectopic pregnancy in 122 patients.

Signs	Number	%
Pallor	113	92.6
Abdominal tenderness	92	75.4
Tachycardia	79	64.8
Hypotension	33	27.0

Table 4: Haemoglobin values pre- and post-operatively (n = 122).

Haemoglobin value (g/dl)	Pre-op (%)	Post-op (%)
< 6	27.0	0
6 – 7.9	34.4	17.2
8 – 9.9	27.9	44.3
≥ 10.0	10.7	38.5

**Table 5: Site of implantation of 122 ectopic pregnancies.**

Site of implantation	%
<b>Ampulla</b>	<b>43.4</b>
<b>Fimbrial</b>	<b>13.1</b>
<b>Isthmus</b>	<b>9.8</b>
<b>Cornu</b>	<b>5.7</b>
<b>Ovary</b>	<b>2.5</b>
<b>Tubo-ovarian mass</b>	<b>18.9</b>
<b>Not stated</b>	<b>6.6</b>

**Table 6: Surgical procedure undertaken in 122 cases of ectopic pregnancy.**

Surgical procedure	%
<b>Salpingectomy</b>	<b>75.3</b>
<b>Salpingo-oophorectomy</b>	<b>11.5</b>
<b>Conservative tubal surgery</b>	<b>7.4</b>
<b>Cornual resection</b>	<b>3.3</b>
<b>Oophorectomy/wedge resection</b>	<b>2.5</b>

**Table 7: Quantity of blood transfused in 122 cases of ectopic pregnancy.**

Pints of blood	%
<b>0</b>	<b>9</b>
<b>1</b>	<b>15.6</b>
<b>2</b>	<b>56.6</b>
<b>3</b>	<b>7.4</b>
<b>4</b>	<b>5.7</b>
<b>Auto-transfusion</b>	<b>5.7</b>

## **DISCUSSION**

The rising incidence of ectopic pregnancy in this series is in agreement with the general trend reported elsewhere.<sup>4,5</sup> Some authors have shown a significant correlation

between the incidence of ectopic pregnancy and the incidence of sexually transmitted infections.<sup>8,9</sup> In this review, no specific history of pelvic inflammatory disease or sexually transmitted infection was reported. A similar

observation has been made in another Nigerian study.<sup>10</sup> Ignorance of these conditions when they occur or a reluctance to disclose them may have been a factor. However, there was macroscopic evidence of pelvic infection at laparotomy in 23.8% of women. Other risk factors for ectopic pregnancy include previous tubal surgery, ectopic pregnancy; non-puerperal sterilization, assisted reproduction, and use of the progesterone intrauterine contraceptive device.<sup>11</sup>

Induced abortion is not described as a risk factor for ectopic pregnancy in standard texts and most articles. However, the results of this study suggest that previous induced abortion is a significant risk factor for ectopic pregnancy in our environment. This is in agreement with studies in Benin City, Nigeria and France.<sup>12,13</sup> Induced abortion remains illegal in Nigeria and thus, is frequently carried out under substandard conditions and often by unqualified personnel. One consequence of this is that post-abortals sepsis is common and in many cases fatal.<sup>14</sup> Appropriate treatment of sepsis is often delayed because of the secrecy associated with induced abortion, thus increasing the risk of permanent tubal damage. This is probably the process by which induced abortion constitutes a risk factor for ectopic pregnancy. The possibility that abortions in our population are more likely to be complicated by sepsis may account for the stronger association between induced abortion and ectopic pregnancy in this study compared to the French study.<sup>13</sup> It is also possible that

women with a history of induced abortion may be more likely to have acquired sexually transmissible infections, leading to pelvic infection and tubal damage, as a result of unprotected sexual intercourse.

An important feature was the relatively large proportion of nulliparous women compared to other studies.<sup>10,15,16</sup> It is possible that in those populations, tubal damage was mainly a consequence of puerperal pelvic infection while in our population it was mainly a consequence of non-puerperal pelvic infection such as sexually transmitted infections. In view of the negative impact of ectopic pregnancy on future fertility, affected nulliparous women are at increased risk of having no children with its psychological and emotional consequences particularly in our population where fertility and children are highly valued. The rising incidence of ectopic pregnancy associated with a preponderance of nulliparous women has also been observed in Ile-Ife.<sup>17</sup>

The symptoms and their frequencies were similar to those reported elsewhere with lower abdominal pain, amenorrhoea and vaginal bleeding being the commonest in that order.<sup>16,18</sup> However, pallor was the most frequent physical finding followed by abdominal tenderness in contrast with most studies, which report abdominal and adnexal tenderness as the commonest signs.<sup>16,18</sup> Vaginal examination was not necessary for the diagnosis.<sup>15</sup> Abdominal paracentesis was a common procedure but only served to reinforce the diagnosis when positive

and was not used to exclude ectopic pregnancy when negative. Culdocentesis was less common and also less contributory to diagnosis. They are associated with significant false positive and false negative results, which may be misleading.<sup>19</sup> The high rate of positive taps was not surprising considering the large proportion of women with haemoperitoneum.

Urine pregnancy test and ultrasonography were not used for the diagnosis of ectopic pregnancy in this study. This was because the diagnosis was usually clear on the basis of clinical presentation only. Serum  $\beta$ -hCG estimation and laparoscopy were not available throughout the period reviewed. However, their value in diagnosis may have been limited because presentation was usually late and diagnosis obvious clinically.

A high index of suspicion is required in order to limit the number of cases in which the diagnosis is missed. Ectopic pregnancy should be excluded in any woman of reproductive age presenting with abdominal pain with or without vaginal bleeding or amenorrhoea. Some patients had attempted induced abortions for the index pregnancy or had curettage on account of their symptoms. This contributed to delay in presentation in these patients and could be fatal,<sup>20</sup> although that was not the case in this series.

All patients had laparotomy, at variance with current trends. However, the newer modalities of treatment, especially medical management, require that the diagnosis of ectopic pregnancy be made before tubal

rupture.<sup>11</sup> As presentation usually followed tubal rupture with haemodynamic instability, laparotomy was the obvious option. Had the patients presented earlier, the absence of laparoscopy may also have made laparotomy inevitable.

Post-operative complications were limited to anaemia and wound infection. The high prevalence of anaemia was due to late presentation with tubal rupture and intra-peritoneal haemorrhage. In view of the relatively large volume of haemoperitoneum, auto-transfusion was probably under-utilized.<sup>21</sup> Patients were usually discharged after sutures were removed.

Technological advances have changed the pattern of diagnosis and treatment of ectopic pregnancy in developed countries. These have led to earlier diagnosis, reduced morbidity, medical management, laparoscopic surgery, shorter hospital stay and lower costs.<sup>24</sup> However, in our environment, the face of ectopic pregnancy remains unchanged. Diagnosis continues to be late with little room for the newer modalities of diagnosis and treatment.<sup>22,23</sup> Ectopic pregnancy should be considered a public health problem and women enlightened about the potential significance of abdominal pain even in the absence of amenorrhoea or vaginal bleeding. They should be encouraged to report for evaluation as soon as they develop such pain rather than wait till they become debilitated. In addition, hospitals should be equipped and staff trained to provide various



modalities of management so that when women do present early, accurate diagnosis and appropriate treatment can be instituted. Primary prevention should focus on preventing unwanted pregnancy and unsafe abortion as well as instituting infection-prevention programs.<sup>12</sup>

## REFERENCES

1. Howie PW. Abortion and ectopic pregnancy. In: Whitfield CR (ed) *Dewhurst's textbook of obstetrics and gynaecology for postgraduates*, 5th edn. Blackwell Science, Oxford 1995: 140-163.
2. Margara RA, Trew GH. Ectopic pregnancy. In: Shaw RW, Soutter WP, Stanton SL (eds) *Gynaecology*, 2nd edn. Churchill Livingstone, Edinburgh 1997: 329-341.
3. Lewis G, Drife J. *Why Mothers Die. Report on the Confidential Enquiries into Maternal Deaths in the United Kingdom 1994-1996*. The Stationery Office, London 1998.
4. Skjeldestad FE, Kendrick JS, Atrash HK, Daltveit AK. Increasing incidence of ectopic pregnancy in one Norwegian county – a population based study, 1970-1993. *Acta Obstetrica et Gynecologica Scandinavica* 1997; 76: 159-165.
5. Maymon R, Shulman A, Maymon BB, Bar-Levy F, Lotan M, Bahary C. Ectopic pregnancy, the new gynecological epidemic disease: review of the modern work-up and the nonsurgical treatment option. *International Journal of Fertility* 1992; 37: 146-164.
6. Krantz SG, Gray RH, Damewood MD, Wallach EE. Time trends in risk factors and clinical outcome of ectopic pregnancy. *Fertility and Sterility* 1990; 54: 42-46.
7. Brennan DF. Diagnosis of ectopic pregnancy. *Journal of the Florida Medical Association* 1997; 84: 549-556.
8. Kallenberger DA, Ronk DA, Jimerson GK. Ectopic pregnancy: a 15-year review of 160 cases. *Southern Medical Journal* 1978; 71: 758-763.
9. Egger M, Low N, Smith GD, Lindblom B, Herrmann B. Screening for chlamydia infections and the risk of ectopic pregnancy in a county in Sweden: ecological analysis. *British Medical Journal* 1998; 316: 1776-1780.
10. Egwuatu VE, Ozumba BC. Unexpectedly low ratio and falling incidence rate of ectopic pregnancy in Enugu, Nigeria, 1978-1981. *International Journal of Fertility* 1987; 32: 113-115, 119-121.
11. Mascarenhas L, Williamson J, Smith S. The changing face of ectopic pregnancy. *British Medical Journal* 1997; 3159: 141.
12. Orhue AA, Unuigbe JA, Ogbeide WE. The contribution of previous induced abortion to tubal ectopic pregnancy. *West African Journal of Medicine* 1989; 8: 257-263.
13. Tharaux-Deneux C, Boyer J, Job-Spira N, Coste J, Spira A. Risk of ectopic pregnancy and

- previous induced abortion. *American Journal of Public Health* 1998; 88:: 401-405.
14. Unuigbe JA, Oronsaye AU, Orhue AA. Abortion-related morbidity and mortality in Benin City, Nigeria. *International Journal of Gynaecology and Obstetrics* 1988; 26: 435-439.
  15. Jabbar FA, Al-Wakeel M. A study of 45 cases of ectopic pregnancy. *International Journal of Gynaecology and Obstetrics* 1980; 18: 214-217.
  16. Yoseph S. Ectopic pregnancy at Tikur Anbessa Hospital, Addis Ababa, Ethiopia, 1981-1987: a review of 176 cases. *Ethiopian Medical Journal* 1990; 28: 113-118.
  17. Makinde OO, Ogunniyi SO. Ectopic pregnancy in a defined Nigerian population. *International Journal of Gynaecology and Obstetrics* 1990; 33: 239-241.
  18. Aboud E, Chaliha C. Nine year survey of 138 ectopic pregnancies. *Archives of Gynaecology and Obstetrics* 1998; 261: 83-87.
  19. Vermesh M, Graczykowski JW, Sauer MV. Re-evaluation of the role of culdocentesis in the management of ectopic pregnancy. *American Journal of Obstetrics and Gynaecology* 1990; 162: 411-413.
  20. Rubin GL, Cates W Jr, Gold J, Rochat RW, Tyler CW Jr. Fatal ectopic pregnancy after attempted legally induced abortion. *Journal of the American Medical Association* 1980; 244: 1705-1708.
  21. Akinkugbe A. Autotransfusion as a life saving measure in ruptured ectopic pregnancy. *Nigerian Medical Journal* 1966; 3: 279-282.
  22. Oronsaye AU, Odiase GI. Incidence of ectopic pregnancy in Benin City, Nigeria. *Tropical Doctor* 1981; 11: 160-163.
  23. Olarenwaju RS, Ujah IAO, Otubu JAM. Trends of ectopic pregnancy at the Jos University Teaching Hospital. *Nigerian Medical Journal* 1994; 26: 57-60.
  24. Pisarska MD, Carson SA, Buster JE. Ectopic pregnancy. *Lancet* 1998; 351: 1115-1120.