

Ectopic pregnancy, A Prospective Study In Al-Batool Teaching Hospital In Mosul – Iraq

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Abstract

Background: Ectopic pregnancy (EP) is the implantation of pregnancy at an extra uterine site. EP accounts for approximately 2 % of reported pregnancy. The largest risk factors are upper genital tract infection due to sexually transmitted diseases (STDs), as well as other risk factors as smoking, the use of intrauterine device, previous tubal or pelvic surgery, history of infertility, and the risk of age and parity. It is difficult to diagnose EP clinically. However diagnostic aids like B-hCG assessment and ultrasound scan has proved to be of great help. The treatment trends for ectopic pregnancy have changed to more conservative procedures like salpingostomy, segmental resection and fimbrial expression.

Methods: From September 2000 to September 2002, a prospective study was conducted to forty patients who were admitted at Al-Batool teaching hospital, as proven or suspected cases of ectopic pregnancy.

Complete assessment of the patients through detailed history and clinical examination was carried out, and accordingly patients were classified into unstable and stable groups.

The investigations has included pregnancy test (PT), ultrasound scan (USS), and laparoscopy.

The operative procedures were either salpingectomy, or conservative surgery in the form of salpingostomy and milking of the tubes.

Histopathological examination confirmed EP in all surgically treated patients.

Results: Forty cases of ectopic pregnancies were collected. 67.5 % were in the age group 26 – 35 year.

Women with higher parity had the highest percent with EP (37.5 %).

Twenty - seven cases (67.5 %) were clinically unstable.

USS was performed for twenty – six (65 %) patients with positive results in all, where twenty – one patients (80.76 %) had an adnexial mass.

Diagnostic laparoscopy was carried out in four cases (10 %) only.

Among the forty cases of EP the findings at laparotomy were as follows:

Tubal abortion was evident in four cases (10 %). Intact ampullary pregnancy in fourteen patients (35 %), two isthmic gestations (5 %), two ovarian pregnancies (5 %), and one corneal pregnancy(2.5 %). In seventeen cases (42.5 %) there was ruptured ectopic pregnancy. There was accompanying ovarian cysts in five patients (12.5 %).

The operative procedures included: Salpingectomy in thirty one patients (77.5 %), salpingostomy in two cases (5 %), milking of the tube in four cases (10%), and conservative removal of the products of conception from the ovarian tissue with adequate haemostasis in the two cases of ovarian pregnancy (5 %).

The route of exploration and management was through opened laparotomy in all. Two cases that were treated through laparoscopy.

Conclusion: Early diagnosis of cases of ectopic pregnancy would reduce the morbidity and even the mortality of ectopic pregnancy. It allows more conservative form of treatment to be applied, and thus giving a better chance for the patient to preserve fertility.

Key word: Ectopic pregnancy, tubal pregnancy, risk factors in ectopic pregnancy

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Introduction

Ectopic pregnancy (EP) is the implantation of pregnancy at an extra uterine site including tubal which constitutes 95% of ectopic pregnancy, ovarian, and abdominal pregnancy^(1,2,3). Ectopic pregnancy remains the leading cause of pregnancy related death during the first trimester⁽¹⁻⁵⁾, where it is responsible for 9 – 10 % of all maternal deaths⁽¹⁾.

The incidence of EP has doubled or trebled over the last 20 years and has become a major public health problem. EP accounts for approximately 2 % of reported pregnancy^(1,2, 6 – 9).

The largest risk factors are upper genital tract infection due to sexually transmitted diseases (STDs), particularly *Chlamydia Trachomatis*, and as much as 20 % of EP can be attributed to smoking^(1,4, 10, 11).

Previous use of intrauterine device (IUD) appears to slightly increase the risk of EP^(1,7,11,12).

The potential etiological role of previous abdominal and pelvic surgery has been investigated. While caesarean section does not seem to increase the risk of EP, appendectomy and tubal surgery have each been reported to increase the risk of EP ; doubling , and five folds respectively^(1,13).

The incidence of EP is five times higher among women over thirty five than those under thirty^(1, 5, 9, 14,).

EP remains the great mimic of gynecology; no other pelvic condition gives rise to diagnostic errors⁽¹⁾. It is difficult to diagnose EP clinically. Indeed only 50 % of the patients with EP will be correctly diagnosed on the basis of clinical features alone^(1,6). Classically the presenting symptoms include abdominal pain,

irregular vaginal bleeding, or a period of amenorrhea usually seven weeks (2SD) ^(1, 5, 6, 15).

Measurement of B-hCG is the cornerstone in the diagnosis of early pregnancy. The false negative rates with modern urine B-hCG enzyme linked immunosorbent assays and radioimmunoassay is below 2 % (1). A cutoff point of 1500 IU/L is recommended for the diagnosis of EP in the presence of an EP mass or fluid in the pouch of Douglas. While in the absence of any ultrasound sign, the higher concentration of 2000 IU/L should be the cutoff point before an EP is diagnosed ^(5, 16)

The traditional role of transabdominal ultrasound scan (TAS) in the assessment of patients with suspected ectopic has been mainly to exclude intrauterine pregnancy in suspected cases ^(1,4). While better resolution transvaginal ultrasound (TVS) facilitates earlier diagnosis of ectopic pregnancy ^(1, 16). Laparoscopy is not the ideal diagnostic technique, and is seldom the first method of diagnosis of EP. Since besides requiring general anesthesia, it has potentially serious complications even if they are uncommon ^(1, 17).

The traditional treatment of EP is by salpingectomy through laparotomy ⁽²⁾. However ectopic pregnancy can be more effectively managed laparoscopically than on laparotomy in terms of future fertility rate, repeat EP rate, speed of surgery, length of hospital stay, analgesic requirements, return to work and hospital cost ^(1,2).

In the early 70s the trend in treating EP has changed from radical approach by doing salpingectomy, to conservative surgical or non surgical approach to unruptured EP, by linear salpingostomy, segmental resection or fimbrial expression or expectantly as an Ep may resolve spontaneously. Medical therapy is by using methotrexate ^(2, 5, and 18).

There are very few literatures regarding the rates of EP in Iraq. The aim of this study was to review the data of EP during two years at Al – Batool teaching hospital. The results are compared with similar studies from other.

Methods:

A prospective analysis of case history and pathological reports of patients admitted at Al-Batool teaching hospital from September 2000 to September 2002 was done. The patients were admitted at the emergency department from the hospital outpatient department or the private clinics. A provisional diagnosis of EP was made on high clinical suspicion or by an already performed investigation.

The total number of cases was forty two over the two year study.

Initial clinical assessment by detailed history including age, parity (which was classified into three

groups: nulliparous for those who have never given birth previously, low parity with 1 – 3 deliveries, and the high parity where more than four deliveries were reported) , the use of any contraceptive, previous history of abdominal , pelvic or tubal surgery, menstrual history including last menstrual period, as well as full enquiry about pain. Clinical examination of the vital signs and general condition as well as local abdominal and pelvic examination were done for all patients. Accordingly patients were classified into stable and unstable groups. In the stable group included the sub acute, the chronic ectopic pregnancy, and other odd way of presentation of EP. While in the unstable group all cases of acute abdomen and circulatory embarrassment were contained.

Relevant investigations included urinary pregnancy test (PT), ultrasound scan (USS), and laparoscopy.

The choice of the investigative method depended on the acuity at presentation and the availability of the method in relation to the time at which the patient admitted.

All USS were done through the abdominal route as the vaginal probe was not available at that time.

Diagnostic laparoscopy was preserved for cases in which the USS and PT were rather confusing or inconclusive.

The operative procedures were either salpingectomy, or conservative surgery in which the surgeon had chosen to preserve the tubes as salpingostomy and milking of the tubes. The choice between these procedures depended on the patient's general condition, the degree of the damage to the tube, hemostasis, reproductive history, and the experience and operative skills of the gynecologist involved in the management.

Only in one case, EP had an odd presentation, where laparotomy revealed corneal pregnancy in a previously diagnosed intrauterine pregnancy by USS, the woman had to have termination of pregnancy for sever mitral valve stenosis, approved and signed by a committee. During dilatation of the cervix, uterine perforation was suspected for which a laparotomy rather than a laparoscopy was the way to explore (being safer in that particular patient) .At laparotomy a corneal pregnancy was discovered with an almost normal sized uterus. The pregnancy was evacuated and the defect was sutured.

In cases where an ovarian ectopic was discovered, conservative approach of removing the products of conception with preservation of the ovaries was successful. In the two cases where no ectopic pregnancy was seen at laparotomy a complete examination of the pelvis and the other abdominal viscera was carried out.

Histopathological examination confirmed EP in all surgically treated patients.

Results:

Forty cases of ectopic pregnancy were collected over the two year study.

The majority twenty seven cases (67.5 %) were in the age group 26 – 35 year. while ten patients (25 %) were 15 – 25 year, and three cases (7.5%) were at the older age group (36 - 45). (Table 1)

Regarding parity: Among the forty cases thirteen (32.5 %) were nulliparous, twelve patients (30 %) were of low parity(1 – 3), and fifteen of them (37.5 %) were of higher parity (four and more)as shown in **(Table- 2)**.

Considering risk factors that usually associate ectopic pregnancy:

One patient (2.5 %) only was carrying an IUCD; the remaining 39 were using no contraceptive. None of them had history of previous ectopic pregnancy, nor a history of previous tubal or pelvic surgery. Furthermore, no patient had a history of infertility, and only two patients (5 %) admitted a positive history of smoking.

There was no significant seasonal variation in the cases of EP: eleven cases in autumn, nine cases in winter. In spring they were twelve, and in summer there were eight EPs.

The period of amenorrhea was 6 – 8 weeks in twenty nine of the patients (72.5 %). While longer period of amenorrhea (8 – 10 weeks) was found in only five patients (12.5 %). Irregular uterine bleeding with no special rhythm was found in six patients (15 %). (Table 3)

In sixteen patients (40 %) abdominal and pelvic pain was the only presenting symptom. While vaginal bleeding was the chief complaint in six patients (15 %), and seventeen patients (42.5 %) were having the two symptoms together (i.e. pain and vaginal bleeding). Fever was the dominant problem in one patient (2.5 %). (Table 4)

In the unstable group there were twenty - seven cases (67.5 %). Whereas the stable group included thirteen patients (32.5 %), of which three (23.07 %) were subacute cases, nine (69.24 %) were labeled as chronic ectopics and one patient (7.69 %) had corneal pregnancy with an exceptional presentation **(Table- 5)**.

PT was not done in thirty seven cases (92.5 %), and was positive in only three cases (7.5 %), there were no negative results.

USS was performed for twenty six (65 %) patients with positive results in all .But the USS was not done in fourteen cases (35 %).

For the positive USS results twenty one patients (80.76 %) had a mass on USS. Fluid was the only

positive finding in five of the cases (19.24%). While in six patients (23.07 %) both the mass and the fluid were present. **(Table -6)**.

Diagnostic laparoscopy was carried out in four cases (10 %) only, and was not done in thirty – six of the cases (90 %).

Findings at laparotomy: **(Table-7)**.

Forty patients had exploratory laparotomy where two of them (5 %) proved to be negative for tubal or ectopic pregnancy, but with other positive findings, where an ovarian cyst and salpingitis were found.

Of the four patients who had laparoscopy, two patients (50 %) had laparotomy immediately after laparoscopic evaluation that revealed hemoperitonium. While in other two cases (50 %)management was through laparoscopy.

However among the forty cases the findings at laparotomy were as follows:

Tubal abortion was evident in four cases (10 %). Intact ampullary pregnancy in fourteen patients (35 %), two isthmic gestations (5 %), two ovarian pregnancies (5 %) , and one corneal pregnancy(2.5 %). In seventeen cases (42.5%) there was ruptured ectopic pregnancy .There was accompanying ovarian cysts in five patients(12.5 %) ,

The pathology (whether tubal or ovarian) was more on the left than on the right, twenty two (55 %) and eighteen (45 %) were found respectively.

The operative procedures performed were three types as indicated in **(Table-8)**.

Salpingectomy was the dominant procedure where thirty one patients (77.5 %) underwent unilateral salpingectomy .However salpingostomy was done in two cases only (5 %), milking of the tube was the procedure in four cases (10%), and conservative removal of the products of conception from the ovarian tissue with adequate haemostasis was successful in the two cases of ovarian pregnancy 5

The route of exploration and management was through opened laparotomy forty cases. Only two cases that were approached through laparoscopy. There was no mortality in this series.

(Table- 1)

Ectopic pregnancy in different age groups

Age group	Number	Percent (%)
15 – 25	10	25
26 – 35	27	67.5
36 – 45	3	7.5
Total	40	100

(Table- 2)

Ectopic pregnancy in relation to parity

Parity	No.	(%)
Nulliparous	13	32.5
Low parity (1 – 3)	12	30
Higher parity (≥ 4)	15	37.5
Total	40	100

(Table-3) The patterns of amenorrhea in 40 cases of ectopic pregnancy

Pattern of menorrhhea	No.	(%)
6–8 weeks amenorrhea	29	72.5
8–10weeks amenorrhea	5	12.5
Irregular uterine bleeding	6	15
Total	40	100

(Table-4)The dominant clinical presentation in ectopic pregnancy.

The presenting symptom	No.	(%)
Pain	16	40
Vaginal bleeding	6	15
(pain + bleeding)	17	42.5
Fever	1	2.5
Total	40	100

(Table- 5) The relation between EP and the acuteness of presentation.

Classification of EP		No. of cases	(%)
Unstable cases (acute ectopic)		27	67.5
Stable EP *	Subacute EP	3	7.5
	Chronic EP	9	22.5
	Special case	1	2.5
total		13	100

Among 13 cases of stable EP, the percentages of subacute , chronic, and special case were found to be 23.1 % , 69.2 % , 7.7 % respectively.

(Table- 6) The findings on USS in the cases of ectopic pregnancies who had USS

Finding on USS *	No.	(%)
Mass	21	80.76
Fluid only	5	19.24
Total	26	100

* Only 6 patients showed both mass and fluid.

(Table- 7) The findings at laparotomy

Finding *	No.	(%)
Tubal abortion	4	10
Ampullary gestation	14	35
Isthmic gestation	2	5
Ruptured EP	17	42.5
Ovarian ectopic	2	5
cornual	1	2.5
Total	40	100

* Accompanying ovarian cyst was found in 5 cases (12.5 %)

(Table-8) Operative procedures performed in ectopic pregnancies.

Procedure	No.	(%)
Salpingectomy	31	77.5
Salpingostomy	2	5
Milking	4	10
Conservative resection of ovarian EP	2	5
Corneal	1	2.5
Total	40	100

Discussion:

Ectopic pregnancy is a potentially life – threatening condition in which the embryo implants itself elsewhere outside the endometrial cavity (1, 2, 4, 5).

The latter half of the last century has brought dramatic advances in the management of this potentially fatal condition. Sensitive B–hCG and transvaginal ultrasound scan have enabled the earlier diagnosis of EP .With this earlier detection, the prognosis of EP has shifted from a grave, life – threatening disease to a more benign condition. The treatment goal has also changed from preventing mortality to reducing morbidity and preserving fertility. Despite the technological advances and improved diagnostic capabilities, EP remains a major health problem. To reduce maternal mortality and morbidity, early recognition of EP is critical.

All over the world, the EP rates are increasing. (5, 6, 8, 9)

In the current study the incidence of EP was 1.4 / 1000 live birth, which is lower than other studies reported from various countries.

In Jordan Al-Barbarawi (19) reported an incidence of EP of 5.9 / 1000. However the incidence of EP in northern Europe has increased from 11.2 to 18.8 / 1000 pregnancy, and in the united states , admission to hospital for EP increased from 17800 in 1970 to 88400 in 1989 (5). In UK the incidence was found to be 11.5 / 1000 pregnancy (5). While in Greenland the yearly number has trebled from 26 in 1981 to 89 in 1990 (6). In France the incidence was recorded as 20.2 / 1000 live birth (7, 9, and 14). In Norwegian county the incidence increased fourfold from 1970 to 1993 (8).

The exact etiology of EP is not known but different risk factors have been implicated as contributing elements. The majority of EP cases were in the age group 26 – 35 year (67.5 %), which is in concordance with other similar studies which confirmed that the number of EP cases is greatest (up to eightfold) in women of 35 year and decreased then after (5,9,14,20,21). However in Benin city in Nigeria (62.5 %) were in their mid twenties (15).It seems that older women with presumably accumulated risk factors getting pregnant thus explain part of the increased rates of the disease (20).

In the present study 32.5 % of EP patients were nulliparous, 30 %, and 37.5 % of low and high parity respectively. While in the Nigerian study 49.3 % of EP patients were nulliparous (15). There seems to be no significant influence of parity on the incidence of Ep. However the relatively high incidence of EP among nulliparous may be explained by the increased use of fertility drugs (ovulation induction drugs) which are becoming a recognizable risk factor

for Ep (1, 5, 8, 9). On the other hand, the likely explanation of having the highest incidence of Ep among women with higher parity is the exposure to STDs and other pelvic infections, as well as the use of IUDs (1,11,12,16), although only 2.5 % of the cases reported the use of IUD in this study.

A positive current risk factor for EP was evident in 7.5 % of the cases, where 2.5 % had an IUD and 5 % were smokers. The IUD is known to cause slight increase in the incidence of EP probably due to higher incidence of pelvic infection associated with the device (1,7, 9,11,12). A very strong association between EP and smoking has been identified in a dose dependent effect, where the risk is doubled by smoking more than ten cigarettes a day, trebled by smoking more than twenty cigarettes a day due to the toxic effect of nicotine on tubal motility ,in addition to the anti-estrogenic effect exerted by nicotine . As much as 20 % of EP cases can be attributed to smoking (12), and in an Italian study the figure was as high as 40 % (10).

Many studies were concerned with the incidence of EP in relation to seasons, with different outcomes. In the current study there was no significant seasonal variation which is consistent with the findings of Romer *et al* in Germany⁽²²⁾, who did a monthly analysis that showed no statistically significant difference over ten year(1984 – 1993)retrospective study , and therefore concluded that climatic and meteorological factors do not seem to have influence on the incidence of EP. On the other hand Strolego *et al* from Italy⁽²³⁾ and Cagnacci *et al*⁽²⁴⁾ could confirm rhythmic variation in the rate of EP throughout the year, with a significant peak in summer and two peak values in June and December respectively.

The classical triad of abdominal pain , amenorrhea, and vaginal bleeding, or syncope with abdominal pain when present in any woman of reproductive age group, then EP must be excluded⁽²⁵⁾.The clinical presentation and physical examination can be misleading in pregnancy. The location of pain may be atypical. for the pathologic entity and the pain may be muted⁽²⁶⁾. However the difference in risk factors, presentation , and outcome may reflect diffuse trophoblastic activity or invasive potential⁽²⁷⁾.

In this study 67.5 % of the cases presented were in the unstable acute form while 32.5 % were stable cases, compared to 49.3 % by Charoro⁽¹⁵⁾, and 25 % acute versus 75 % subacute form by Stabil⁽¹⁾. It was reported that the clinical presentation of EP as an acute or chronic form represents a spectrum of disease and that women with EP can be categorized into two groups : acute and chronic⁽²⁷⁾. Because of the high morbidity and mortality that may follow EP accurate diagnosis should be established , and because of the difficulty in establishing clinical

diagnosis which does not usually exceed 50 % of patients with EP and the fact that EP may be diagnosed through screening asymptomatic high risk women, additional laboratory and radiological investigations are definitely needed^(1,5,17,25,26) PT was done only in three cases in this study, as it was not regularly available , despite the fact that it is simple cheap and highly specific. The same applies for USS which is operable only during the office working hours of the day. Gracia *et al*⁽²⁸⁾ using serum B-hCG only without an USS had no EP case missed. Dogra⁽²⁹⁾ states that the sonographic findings in a patient with first trimester bleeding should be correlated with serum B-hCG levels to arrive at an appropriate clinical diagnosis in patients with first trimester bleeding. Monnier⁽³⁰⁾ has found that the evaluation of serum quantitative B-hCG level is primordial and that repeated B-hCG level must allow to evaluate an early pregnancy in cases when TVS does not detect an IUGS. Sixty five percent of the women in this study had an USS. Positive findings on USS were evident in all of them (100 %). Wong (25) had 1 – 6 % cases of EP missed by USS. Sonographic characterization of adnexial masses may make a definitive diagnosis or form the differential which allows for prompt and appropriate treatment of patients (26).Naseem *et al*⁽³¹⁾ could have 100 % specificity and sensitivity using TAS and TVS or TAS alone on seventy one patients with Ep presenting with acute symptoms. Condous *et al*⁽³²⁾ could have 90.9 % of EP accurately diagnosed by USS, and he recommended that the diagnosis of an Ep is based on the positive visualization of an adnexial mass using TVS. Others declared that the combination of B-hCG and USS whether abdominal or vaginal can achieve the best results^(1, 5, 26, 27, 32, 33).In this study 67.5% had acute presentation with shock. Fernand (21) had a similar figure with 66 % of his patients with ruptured EP, Bouyer (3) had three quarters of EP as ampullary and 4.5 % were extra tubal, in our series there was 7.5 % extra tubal pregnancy. Gharoro et al's data (15) showed 80 % with ruptured EP, and 49.3 % in state of shock, while in this study there was 42.5 % with ruptured EP.

Laparoscopic surgery should aim towards as conservative a technique as possible. The procedure of milking an EP out of the distal end of the fallopian tube is not recommended in the view of the high incidence of persistent trophoblastic tissue (17) in up to 16 % in one series⁽¹⁾.

Salpingostomy for an Ep is a method to preserve a fallopian tube that is not too much damaged . Salpingectomy for an Ep is performed when there is an irreparably damaged , ruptured fallopian tube, when there is considerable bleeding after attempted conservative surgery, when it is felt that there is a

very significant chance of repeated tubal pregnancy or if future pregnancy is not desired^(1,2). Salpingectomy was the commonest surgical procedure performed in this series. The reasons behind , is that most cases were late at presentation with an already destructed tube. Beside that the high rate of pregnancies reported in our locality was considered to be a real risk factor for recurrence of EP , thus choosing radical surgery might help reducing the risk of recurrence . Advantages of laparoscopic approach are too many ; the fertility rate after laparoscopic surgery has been reviewed by Manhes et al (1) who concluded that intrauterine pregnancy rate after laparotomy was 61.5 % and repeated EP was 16 % . But after laparoscopic salpingostomy they were 59 % , and 11 % respectively, explained by more adhesion at operative site in the laparotomy group . Saleh (2) compared laparoscopic salpingostomy and salpingectomy treated patients and found significant reduction in the total blood loss , number of patients who needed blood transfusion and the total days

needed for hospital admission in the laparoscopy versus laparotomy. Intrauterine pregnancy was 74 % in the laparoscopy group versus 61 % in the laparotomy group. The repeated EP was 4 % and 10 % respectively. Rulin (18)claims that fertility after EP is affected much more by the status of the contralateral tube than by the procedure performed , with fertility rates exceeding 80 % after salpingectomy when the opposite tube is normal.

Conclusion:

In order to reduce morbidity of EP, there is a need for early diagnosis. which can be achieved by screening of high risk patients, leading to intervention before tubal integrity is beyond repair. Considering that keeping a woman fertile is an important issue in our locality, and thus preserving the tubes should be an important goal in the management of EP.

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