

**Ectopic Pregnancy Approach and Risk Factors, A Retrospective Study at King Abdulaziz University  
Hospital – Three Years' Experience**

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**Abstract :****Introduction**

Ectopic pregnancy is a major cause of maternal morbidity and mortality during the first trimester of pregnancy .The incidence of ectopic pregnancy is approximately 1-2% of all pregnancies.

**The aim**

This retrospective study aimed to characterize & identify the risk factors,clinical presentation, outcomes and the management of ectopic cases in King Abdulaziz University Hospital, Jeddah, Saudi Arabia over the past 3 years .

**Material and methods:**

All patients diagnosed with ectopic pregnancy and admitted to King Abdulaziz University Hospital from January 2012 to December 2014 were eligible for this study. Demographic, clinical characteristics, laboratory investigations, ultrasound findings, date and type of surgery, medical treatment or expectant management were collected from the patients files and the hospital registration book .

**Result**

120 patients were included in this study; their mean age was  $29.9 \pm 5.7$  years (range from 16 to 47 years). The mean of gravidity was  $3.5 \pm 2.7$  (range 1-3). Only 4 (3.30%) cases had 3 times abortion . 36 (30%) cases had History Of Pelvic Surgery and 21 (17.5%) had History of Caesarian Section. All the 120 cases admitted through emergency room, 109 (90.8%) of the cases complained from abdominal pain and 71 (60.7 %) had Vaginal Bleeding . Of the patients, 19 (15.8%) had expectant management, 42(35%) received Methotrexate, 40 (33.3%) had laparoscopy and 18 (15%) had Laparotomy.

**Conclusion**

The number of ectopic cases who were treated by laparoscopy was almost equal to those who were treated medically. The diagnoses of ectopic pregnancy is challenging , so all pregnant women in first trimester with a complain of abdominal pain plus or minus vaginal bleeding should be evaluated for ectopic pregnancy.

**Key word:**Ectopic pregnancy , symptoms , risk factor

**Introduction:**

Ectopic pregnancy (EP) is defined as an implantation of a fertilized ovum outside the endometrial cavity of the uterus [Anindita Sinha Babu, 2014]. It is a major cause of maternal morbidity and mortality during the first trimester of pregnancy [Stulberg DB, 2013]. The incidence of ectopic pregnancy is approximately 1-2% of all pregnancies [Li C, 2014]. Ectopic pregnancies can occur in many sites, but the fallopian tube is the commonest site overall [Banz. C, 2010]. Even that the etiology of ectopic pregnancy is unknown [Llawani. O, 2013], there are many risk factors like tubal injury due to pelvic infection (e.g. chlamydia trachomatis, CT) or previous adnexal surgery, smoking, intrauterine device (IUD), oral contraceptive pills (OCPs), an in vitro fertilization (IVF) and previous ectopic pregnancy [3, Aziz S, 2011]. The patients usually come with abdominal pain and vaginal bleeding about 7 weeks after amenorrhea [Alturky HA, 2013]. If ectopic pregnancy was ruptured, the patients may come with syncope and other signs of shock [Syndey F, 2015].

Transvaginal sonography (TVS) and serum human chorionic gonadotrophin (hCG) level are the mainly consistent diagnostic tool of ectopic pregnancy [Refaat B, 2015]. The management of ectopic pregnancy can be expectant, medical, or surgical. It depends on the clinical circumstances, site of ectopic pregnancy, and serum hCG levels [Agdi. M, 2009].

The aim of current study was to review all ectopic pregnancy cases during the years (2012-2014) admitted in King Abdul Aziz University Hospital (KAUH), Jeddah and to identify the risk factors, work up and outcomes of ectopic pregnancy cases.

**Methodology**

This retrospective study was approved by the Biomedical Ethics research committee of King Abdul-Aziz University (KAU), Jeddah. All patients diagnosed with ectopic pregnancy and admitted to KAUH from January 2012 to December 2014 were eligible for this study. Demographic, clinical characteristics, laboratory investigations, ultrasound findings, date and type of surgery, medical treatment or expectant management were reviewed by using the International Classification of Diseases (ICD-10) code & were collected from the patients files and the hospital registration book.

**Data collection sheet :**

Depending on the International Classification of Diseases (ICD-10) code, the following variables were collected & categorized as: 1- Demographic data & medical characteristics (age, nationality, parity, number of abortions, previous ectopic, Gestational Age, gravidity, O<sub>2</sub>%, temperature, respiratory rate, pulse, BP at presentation, weight, height, BMI, type of admission, date of admission, date of discharge, number of days in hospital, smoking, allergy, thyroid disease, & diabetes mellitus). 2- Risk factors (tubal sterilization, pelvic surgery, pregnancy with current IUCD, infertility, treatment of infertility, PID or tubal infection and Endometriosis). 3- Signs & complains (weeks of amenorrhea, loss of consciousness,

ipsilateral shoulder pain, abdominal tenderness or rigidity, abdominal mass, abdominal distension, adnexal tenderness and cervical motion tenderness).

4- Investigations (ultrasound findings , site of ectopic pregnancy, BHCG level,histological examination of tissue removed to confirm EP). 5- Treatment (date and type of surgery, medical treatment or expectant management , & blood transfusion)

### **Statistical analysis**

The data collected was analyzed using SPSS version 20 statistical software. Parametric data were expressed as mean and standard deviations (minimum and maximum) and non-parametric data were expressed as number (percentage).

### **Results**

120 women were admitted to the hospital as an ectopic pregnancy cases during the period from January 2012—December 2014, their mean age was  $29.9 \pm 5.7$  years (range from 16 to 47 years) and, The mean score of gravidity & parity were  $3.5 \pm 2.7$  (range 1-3) &  $1.7 \pm 1.4$  (range 0-8) respectively . Four (3.30%) cases had 3 times abortion & only 1 case had 4 times abortion. The respiratory rate mean score was  $20.7 \pm 2.7$  (0-28), 50(41.7%) had normal BMI index . ( Table 1)

Regarding the risk factors & main complain , 10 (8.3%) had previous ectopic experience & 36 (30%) had history of pelvic surgery, no tubal sterilization Or diabetes mellitus in all cases, only 9 ( 7.5%) cases had history of Infertility . all the 120 cases were admitted through ER, 71(60.7%) complained from vaginal bleeding , 109 (90.8%) complained from abdominal pain and from them 79 (%) had abdominal tenderness or rigidity.38 (31.7%) cervical motion tenderness . ( table2 )

Concerning the investigation results , In 90(73%) cases the uterus was seen empty on ultrasound, 51 (42.5%) cases had adnexal mass from 2.9cm or less and 49 (40.9%) had from 3 cm or more. Hundred and Ten cases (91.7%) had the tubal type of ectopic pregnancy. BHCG was done for 95 cases ( 79.2%) in the first day and only 59 cases ( 49.2%) followed up.

( table 3)

Regarding the treatment plan, 44 cases (36.7%) took Methotrexate, 40 ( 33.3%) had Laparoscopic surgery and only 18 (15%) had laparotomy surgery.

## Discussion

Several studies had shown an association between ectopic pregnancy rate and the age and gravidity.

Many studies had shown that increasing age is an important factor that could interfere with an increased opportunities to be exposed to other risk factors. Also, increasing age lead to changes in tubal function and tubal diverticula which increases the probability of having ectopic pregnancy. (Aziz S, 2011 & Alturky HA, 2013)

On the other side, there is a conflicting evidence between the results of studies on the impact of gravidity on ectopic pregnancy, while the study conduct in Yanbu Saudi Arabia indicate an increasing rate in EP among women whom are multigravida, another study done by (Manjhi et al) indicate an increasing in Ep chances in prim gravida. (Aziz S, 2011)

Study results showed the absence of the relationship between the pre-abortion and ectopic pregnancy and this was emphasized in some other studies (Parashi. S, 2014). In contrast, the study done by (Bouyer et al) showed a positive relationship between abortion and ectopic pregnancy, especially among women who have repeated abortion more than 2 times. (Alturky HA, 2013 & Parashi. S, 2014)

There are many risk factors that may increase the likelihood of ectopic pregnancy, Most risk factors are associated with risks of prior damage to the Fallopian tube. These factors include any previous pelvic or abdominal surgery, and pelvic infection (Aziz S, 2011 & Sivalingam .VN, 2011)

In this study, there were 9 cases had infertility treatment, 9 cases have a history of previous ectopic pregnancy and 21 cases of Caesarean section. Many studies have confirmed that the treatment of infertility and previous ectopic pregnancy are major risk factors (Alturky HA, 2013 . Refaat B, 2015 & Parashi. S, 2014) as well as different studies also confirmed the risk of cesarean section. (Aziz S, 2011)

Most of the patients presented to the hospital with symptoms ranging from abdominal pain (severe and continuing) and vaginal bleeding through shoulder pain, vomiting and dizziness down to syncope and shock.

Bimanual examination must be done with caution and kindness, there are variety of cases suffered from abdominal tenderness or rigidity, abdominal mass, abdominal distension, adnexal tenderness, cervical motion tenderness (Sivalingam .VN, 2011)

Awareness of atypical appearances of ectopic pregnancy should be taken and its ability to mimic other diseases like gynecological disorders and gastrointestinal or urinary tract diseases, many reports confirmed that the deaths in ectopic pregnancy were due to the absence of correct diagnosis (Sivalingam .VN, 2011). Several reports recommended that doctors need to put the possibility of ectopic

pregnancy in their mind even with atypical symptoms, especially when the patient had positive pregnancy test and presented with syncope and signs of shock including tachycardia and pallor . (Sivalingam .VN, 2011)

The diagnosis of EP is becoming more Accurate due the significant development in ultrasound techniques and to the increase in sensitivity of Hermon assay. The use of transvaginal ultrasound helped in determining early pregnancy problems; it allows to obtain a clear picture of normal or abnormal pregnancies (Refaat B , 2015 &Sivalingam .VN, 2011). In this study 75% of the cases had empty uterus and 74% of them had a mass seen by ultrasound and this was going with the study done in France confirming that the sensitivity of having empty uterus & with mass reach 84-90% and the specificity of having EP reached 94-99% (Refaat B , 2015 &Sivalingam .VN, 2011).

The second method for diagnosis is a measurement the changes in the concentration level for  $\beta$ -hCG hormone. This way was used for the first time by Kadar and Romero (Refaat B , 2015 &Sivalingam .VN, 2011)

The link between the imaging outputs and the concentrations of the hormone helped to get a precise diagnosis. In the cases of continuing rise in the hormone levels with the continued inability to locate the embryo, diagnosis of EP becomes more possible and starting a medical plan must be started as soon as possible (Sivalingam .VN, 2011) .

If the  $\beta$ -hCG level <1500 IU/L, the women can undergo for expectant management. So, she needs follow up with serial blood tests until the serum  $\beta$ -hCG declines to <20 IU/L or their urine pregnancy test becomes negative [Mavrelos. D, 2015].

Women with early diagnosis of EP are offered methotrexate (Mtx) as a medical management. It has been reported that the success rate of Mtx was 70.1% in probably selected cases [Avcioglu SN, 2014] .

Laparoscopy has many advantages compared with laparotomy such as less blood loss, shorter hospital stay, lower cost, and less adhesion formation. In women with intact tubal pregnancy who want to preserve their fertility, linear salpingectomy is the choice procedure; otherwise, salpingectomy is performed [Agdi. M , 2009].

### **Limitations**

This study depend only on ectopic pregnancy cases admitted to KAUH, thus excluding all others Health care centers in Jeddah . There was no control group to compare and the sample size was small (120 Cases only) .

**Conclusion**

in KAUH, the number of ectopic cases who were treated by laparoscopy was almost equal to those who were treated medically. The diagnoses of EP is challenging and so EP needs to be ruled out in all pregnant women mainly in first trimester with a complain of abdominal pain plus or minus vaginal bleeding and specifically in those with one or more risk factors for EP. Further studies need to be conducted to determine the exact causes & the best management to decrease ectopic pregnancy in the future.

**Tables****Table (1) Demographic data & medical characteristic :**

Variables	Mean $\pm$ SD	(Min-Max)
Age	29.9 $\pm$ 5.7	(16-47)
Gestational Age in days	40.5 $\pm$ 18.2	(0-91)
Temperature	36.0 $\pm$ 4.7	(35.4-36.5)
Variables	N (%)	
Number Of Abortion	0	45 (37.5%)
	1	45 (37.5%)
	2	25 (20.8%)
	3	4 (3.3%)
	4	1 (0.8%)
Number Of Previous Ectopic	0	106 (88.3%)
	1	7 (5.8%)
	2	6 (5%)
	3	1 (0.8%)

**Table (2) Risk factors & symptoms :**

Variables	N	%
Previous Ectopic	10	8.3
History Of Pelvic Surgery	36	30.0
History of CS	21	17.5
Pregnancy With Current IUCD	9	7.5
History Of Infertility	9	7.5
History Off Endometriosis	2	1.7
Vaginal Bleeding	71	60.7
Abdominal Pain	109	90.8
Loss Of Consciousness	4	3.3
Ipsilateral Shoulder Pain	8	6.7
Abdominal Tenderness Or Rigidity	79	65.8
Abdominal Mass	1	.8
Abdominal Distension	10	8.3
Adnexal Tenderness	33	27.5
Cervical Motion Tenderness	38	31.7



**Table (3) Investigation:**

Variables		N	%
Ultrasound Of Uterus	empty	90	75.0
	gestational sac	5	4.2
	pseudo sac	3	2.5
Type Of Ectopic Pregnancy	tubal	110	91.7
	ovarian	2	1.7
BHCG Day 1		95	79.2
BHCG Day 4		60	50.0
BHCG Day 7		49	40.8
Follow up of BHCG		59	49.2

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