

ORIGINAL ARTICLE

Correlation of Transvaginal Ultrasonographic and Laparotomy Finding in Ectopic Pregnancy: A study on 50 cases

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Abstract:

Ectopic pregnancy (EP) is a diagnosis that is challenging to make. Both the history and clinical examination being neither sensitive nor specific for the diagnosis. The advent of high resolution transvaginal scan (TVS) diagnosed the EP early and can reduce the mortality and morbidity by proper treatment. This was a cross sectional observational study and analysis of 50 patient was done with diagnosis of ectopic pregnancies in Holy Family Red Crescent Medical College Hospital Dhaka from August 2020 to December 2021. Diagnosis was made from clinical history, TVS, serum β -HCG and patient were managed surgically. The aim of this study was correlation of TVS findings of EP with laparotomy findings. 80% of the patients had EP in fallopean tube in TVS whereas it was more in laparotomy about 98% both ruptured and unruptured. On laparotomy, ruptured tubal pregnancy was more 86% than TVS findings 66%. Haemoperitoneum was present in 86% cases in TVS but it is more in laparotomy 90% cases. Tubo-ovarian mass was found in TVS 16% with slightly lower no of case 12% in laparotomy. 4% had ovarian pregnancy in both TVS and laparotomy finding. Exact site of tubal rupture were identified in surgery. Ampulla 48%, cornua 8%, fimbriae 4% were identified but the site can not identified by TVS. It can be concluded that high resolution of TVS is a diagnostic tool and laparotomy is the primary treatment approach for EP especially with massive hemorrhage.

Key words: Ectopic pregnancy (EP), Transvaginal sonography (TVS), Laparotomy.

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Introduction:

An ectopic pregnancy (EP) occurs when a fertilised ovum implants outside the normal uterine cavity. It is a common cause of morbidity and occasionally of mortality in women of reproductive age. The overall incidence has increased over the last decades and currently it affects 1-2% pregnancies¹⁻³. The risk is as high as 18% for first trimester pregnancies with bleeding⁴. There is an increased incidence associated with in vitro fertilized pregnancy. The classic presentation is with abdominal pain and bleeding. In practice, the symptoms are not always severe. The patient may present with mild pelvic pain and spotting in early pregnancy ie 5-9 weeks of amenorrhea. It has been estimated that 40% of EP go undiagnosed on initial presentation.

EP is a very difficult condition for diagnosis based on history and physical examination. Even experienced gynecologists are unable to detect more than half of the masses created by EP on physical examination⁵. The classic clinical presentation of EP is described as triad of amenorrhoea followed by vaginal bleeding and pelvic pain. Abdominal and cervical motion tenderness in women with positive pregnancy test should alert clinician to the possibility of EP⁶. Majority of cases, EP occur in fallopean tube (93-97%) Most common tubal site is ampulla 70% of tubal ectopics and 65% of all ectopic. 1-2% of tubal ectopics are in isthmus & 11% of tubal pregnancy is in fimbria and corunal ectopic are in 3-4%. Prior to 1970, more than 80% of EP were recognized after rupture and almost 50% cases presented with shock^{7,8}. Serum β -HCG is a

marker which increase at a slower rate in EP whereas the β -HCG level is double in early pregnancy in 48 hours. At levels <2000 IU, a normal early pregnancy may not be visible. The most reliable sign of EP is the visualization an extrauterine pregnancy but this is not seen in 15-35% EP9. High resolution transvaginal ultrasonogram (TVS) detect EP in more clinically stable women with pregnancy. TVUSG is important for diagnostic sensitivity. TVS findings are an empty uterus or no-evidence of gestational sac or pregnancy and pseudogestational sac or deciduas cyst may present in 10-20% of EP. These may be decidual cast and thick echogenic endometrium. TVS may show simple adnexal cyst, complex extra-adnexal mass. Tubal ring sign indicate 95% chance of a tubal ectopic ring of fire sign can be seen on color Doppler is a tubal ectopic. Free fluid or blood / hemoperitoneum in the pouch of Douglas in the context of a positive β -HCG and empty uterus is 70% specific & 63% sensitive for EP10. Early diagnosis by TVS is therefore life saving and can reduce surgical morbidity by allowing elective surgery or even non-surgical conservative treatment option Treatment strategies involve watchful waiting, surgery, medical treatment. Surgery is the primary treatment approach for EP with massive hemorrhage. This study showed laparotomy finding of EP with correlation of TVS finding.

Materials and method:

This is a cross sectional observational study performed in Holy Family Red Crescent Medical College Hospital from August 2020 to December 2021. The total number of case/patient were 50 presenting in their first trimester of pregnancy with a diagnosis of EP admitted in the hospital. Diagnosis was made from clinical history, transvaginal ultrasonography, serum B-HCG and urine for pregnancy test. Plan of management was laparotomy. TV-USG and laparotomy findings were analyzed for correlation.

Results:

The demographic characteristics showed that the majority of patients (68%) were within the age

group 27 - 35 years. A significant proportion (46%) of these were nulliparas, while 36% were single multipara (Table-I). The majority (96%) of the ectopic pregnancy were diagnosed through history taking and clinical examination, while others had a positive pregnancy test (74%). Serum β -HCG and TV-USG were done in 40% and 80% cases. Among them majority of patient 66% had ruptured EP and 43 (86%) patients had haemo-peritoneum. About 16% of patients had tubo- ovarian mass. only 14% cases showed dilated tube with decidual rection. Ovarian pregnancy was diagnosed in 2 of 50, 4% cases (Table-II, III).

Table I: Ectopic pregnancy and Demographic characteristics

	Number	Percentage
Age (in years)		
<26	12	24%
27-35	34	68%
36-40	4	8%
Parity		
0	23	46%
1	18	36%
2	5	10%
3	3	6%
4	1	2%
5 and above	-	-
Occupation		
Housewife	33	66%
Service holder	16	32%
Student	1	2%

Table II: Diagnostic Methods

Method	Number	Percentage
Clinical / Abdominal	48	96%
Pregnancy Test	37	74%
TVUSG	40	80%
Laparotomy	9	18%
Serum β -hCG	20	40%

Table III: Transvaginal Ultrasonographic finding of EP (n = 50)

Site	Number	Percentage
Ruptured EP	33	66%
Dilated Fallopan tube with decidual reaction	7	14%
Tubo-ovarian mass	8	16%
Ovarian pregnancy	2	4%
Haemoperitoneum	43	86%

The study showed ruptured EP in 43 (86%) cases while 6 of 50, 12% were unruptured. other operative findings revealed tubo- ovarian complex (12%), pelvic adhesion 2% and tubal abortion 2%. Haemoperitoneum was present in 90% cases (Table-IV). EP occurred more on left fallopian tube and the majority of EP occurred in the ampulla (48%) followed by isthmus, cornua and fimbria. other sites involved tubo-ovarian (12%), ovarian 4% region in patients. 45 of 50, 90% of cases revealed haemoperitoneum mild to major degree (Table-V).

Table IV: Operative findings

Finding	Number	Percentage
Ruptured	43	86%
Unruptured	6	12%
Tubo-ovarian complex	6	12%
Pelvic adhesion	1	2%
Tubal abortion	1	2%
Haemoperitoneum	45	90%

Table V: Site of ectopic pregnancy

Site	Number	Percentage
Right tube	21	48%
Left tube	20	40%
Ampulla	24	48%
Isthmus	5	10%
Fimbriae	2	4%
Corneal	4	8%
Tubo-ovarian	6	12%
Ovarian	2	4%
Heterotopic pregnancy	1	2%

Discussion:

The incidence of EP is 1% and 2% in the developed world¹¹. It is thought to be higher in developing countries. Diagnosis of EP relies on a combination of TVS and serial serum β -HCG measurements¹². An intrauterine pregnancy can be seen on TVS by 5 to 6 weeks when the β -hCG levels are around 1000 mIU/ml. Due to the increased availability of high resolution TVS in early first trimester abortion 80% of EP can be detected before rupture. (Fig:1, Fig:2)

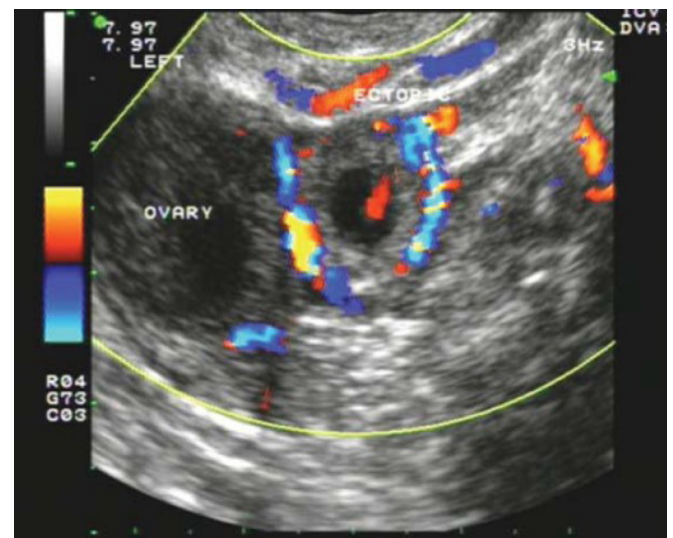


Fig: 1- Gestational sac with an embryonic pole and positive cardiac activity.

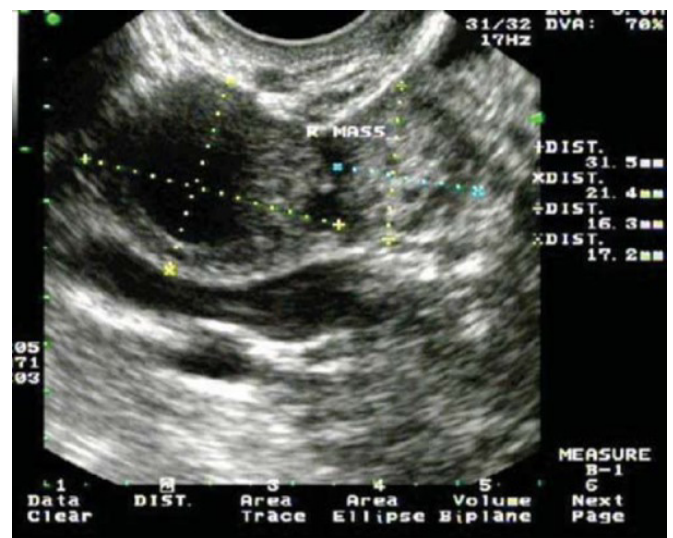


Fig: 1- Gestational sac with an embryonic pole and positive cardiac activity.

More than 50% are diagnosed in asymptomatic women by TVS alone. The presence of free fluid in the cul de sac strengthens diagnosis. In this study, the average maternal age was 27-35 years which is consistent with previous study¹³. In a study conducted by Marion Lletal, the highest incidence of EP was between the ages of 35 and 45 years of age which might be because of the cumulative effect of multiple risk factors over the time¹⁴. Our result showed the distribution of age and parity was comparable to other study¹⁵.

A high degree of suspicion from history and clinical examination are important. TV USG was done in all patient in our study. The diagnosis of ectopic pregnancy should be considered with elevated β -HCG levels with the absence of an intrauterine pregnancy on USG. 80% cases of patient diagnosed by TV USG in this study. Positive findings include by TV USG an empty uterine cavity, decidual cast, a thick echogenic endometrium, or a pseudo-gestational sac in the presence of β -HCG levels above the discriminatory zone¹⁶. A complex extra-adnexal cysts or mass has a 95% a chance of being a tubal ectopic¹⁷, 16% cases of tubo-ovarian mass are recognized in our study which correlate with the laparotomy findings. In TV USG-14% cases showed unruptured EC which was consistent with laparotomy findings. In TVS once EP has ruptured presence of mixed echogenicity in the pouch of Douglas indicates haemoperitoneum. Laparotomy is the gold standard of surgical treatment of EP. It is preferred in hemorrhagic shock⁵. In the study laparotomy showed 86% of the cases had ruptured EP & haemoperitoneum in 90% cases. In TV USG haemoperitoneum is present in 86% cases which correlate with the findings of laparotomy. However, the risk of bleeding varies according to the pregnancy site. Tubal pregnancy is the most common EP accounting for over 95% of the cases¹⁸. In one study 88% has tubal pregnancy. Although the ampulla & fimbrial pregnancy are the most common site of EP¹⁴. This study showed 48% cases of EP occurred in ampulla followed by isthmus, cornua and fimbria. There is a report that risk of ruptured EP was greater for cornua and isthmus

pregnancies compared to ampullary fimbrial pregnancies¹⁹. In this study period, efforts were made for early diagnosis, treatment of EP and to prevent the morbidity and mortality of patient.

Conclusion:

Role of TVS is important for early detection of EP. So quick intervention of surgery can reduce the morbidity and mortality of patient. Laparotomy is still the popular procedure in massive hemorrhage in developing country.

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