

A Cross-Sectional Study Comparing the Use of Trans-Abdominal Verses Trans-Vaginal Ultra-Sonography in the Diagnosis of Ectopic Pregnancy.

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ABSTRACT

Background: Ectopic pregnancy, also called as tubal pregnancy, is one of the complications of pregnancy in which the extra-uterine implantation of embryo occurs. The diagnosis of ectopic pregnancy is based mainly on ultrasonography (USG). The aim of the study is to decide which approach (trans vaginal or trans abdominal) is better to diagnose the ectopic pregnancy. **Methods:** The study was conducted on hundred patients in Santosh Medical College, Ghaziabad. The duration of study was two years. The transabdominal and transvaginal ultrasonographic findings were compared with the histopathology, which is considered as the gold standard. The data will be compared on the basis of sensitivity, specificity, positive predictive value and negative predictive value. **Results:** Mean age of the patient was found to be 33.33±10.4. The maximum number of patients having increased incidence of ectopic pregnancy are those having parity of 1-3. The most common risk factor of the ectopic pregnancy is irregular bleeding (74%), followed by lower abdominal pain (52%). The most common finding, which helps in making the diagnosis of ectopic pregnancy, is presence of extra-uterine gestational sac (96%). The trans vaginal route diagnosed 84 cases correctly whereas trans abdominal method diagnosed 80 cases. The false negative results were more in trans abdominal (14) as compared to trans vaginal (10). **Conclusion:** The diagnosis of the ectopic pregnancy can be made with TVS alone but TAS should always be used in conjunction with TVS.

Keywords: Ectopic pregnancy, transvaginal, transabdominal, ultrasound.

INTRODUCTION

Ectopic pregnancy, also called as tubal pregnancy, is one of the complications of pregnancy in which the extra-uterine implantation of embryo occurs. Less than fifty percent of females develop the symptoms like lower abdominal discomfort and bleeding per vaginally. The severe bleeding results in disturbances in vitals like tachycardia, hypotension and shock. This decreases the survival rate of the mother as well as foetus.^[1]

The diagnosis of ectopic pregnancy is based mainly on measurement of human chorionic gonadotropin (HCG) in blood and ultrasonography (USG). In the modern era, the improvement in the technology has declared the mortality rate from 72-90% in 1980 to 0.14% in 20015.^[2]

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The incidence of ectopic pregnancy is increasing in developing countries. The risk factors for disease are pelvic inflammatory disease, recurrent Chlamydia infection, chronic smoking, history of surgical intervention, infertility and assisted reproductive technology. In USA, the rate of ectopic pregnancy is 16.1 per 1000 pregnancies in 1992. In UK, the incidence of diseases has shown six times

rise in last five years due to increase in the assisted reproductive technologies. Ultrasonography plays an important role in early diagnosis of the disease. Besides this in developing countries like India, easy availability, high resolution, low cost and lack of exposure to ionizing radiations also makes it popular.^[1,3]

An accurate abdominal or vaginal scan can help the clinician to decide the appropriate treatment.

The different routes of performing ultrasound are trans-vaginal, trans-abdominal, trans-rectal and trans-peritoneal. The trans-vaginal route is mostly preferred in married females to diagnose the disease. But some patients are comfortable with only trans-abdominal route. According to some studies^[1-5], transabdominal sonography should be the initial sonographic technique for routine evaluation of female pelvis followed by transvaginal sonography.

In the present scenario, the demand of the patients and clinicians is the requirement of the investigation for the accurate and quick diagnosis, less invasive and cheaper test without requirement of the hospitalization of the patient.

The comparison of the trans-vaginal and trans-abdominal route to fulfil the above-mentioned requirements is essential to study. By the result of this study, we would be able to define which route is better in the evaluation of ectopic pregnancy and to make diagnosis of the disease.

MATERIALS AND METHODS

The study was conducted in hundred patients undergoing regular ante-natal check-ups in Santosh

Medical College, Ghaziabad. The duration of study was two years.

The inclusion criteria were:

- a) Past history of ectopic pregnancy
- b) Suspicion of presence of ectopic pregnancy
- c) Increased serum beta HCG level
- d) Positive history of pelvic or lower abdominal pain.

The exclusion criteria were:

- a) Age more than forty years.
- b) Positive history of congenital anomaly of reproductive organs.
- c) Recurrent urinary tract infections.

The history of the patient was recorded and general examination was done. Routine investigations were done. The consent of the patient was taken and explaining the whole procedure.

Transabdominal sonography was performed with full bladder using a 3.5 MHz convex probe. The presence of mass was confirmed and then further study was done. The anatomical parameters, image quality and differential diagnosis were considered. The patient then was asked to empty the bladder completely. In the presence of female attendant, the trans-vaginal scanning was done using the standard techniques. All the findings were recorded. After the confirmation of diagnosis, the surgical intervention was done accordingly. The histopathology of the tissue was done and findings were recorded. The findings were analyzed using SPSS version 11. The findings of the histopathology will be considered as the gold standard. The trans-abdominal and trans-vaginal sonographic findings will be compared with the histopathological results. The data will be compared on the basis of sensitivity, specificity, positive predictive value and negative predictive value.

RESULTS

With the recent advancement in the computer applications, softwares of ultrasound, different types of probes and improvement in resolution power, the ultrasound has become the investigation of choice for making the diagnosis of the ectopic pregnancy. In this study we have compared the two approaches of the ultrasonography i.e. trans abdominal and trans vaginal.

Table 1: Distribution of patients on the basis of age (years).

Age (years)	N (number of patients)
21-25	25
26-30	30
31-35	45

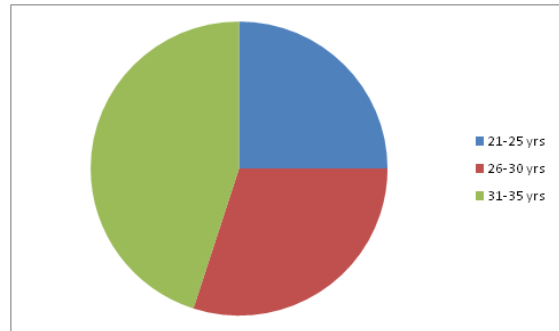


Figure 1: The graph depicting the distribution of patients on basis of age.

Mean age of the patient was found to be 33.33 ± 10.4 . The patients mostly involved were of the age group 31-35 years [Table 1, Figure 1].

Table 2: Distribution of patients on the basis of parity.

Parity	N (number of patients)
Nulliparity	35
1-3	40
>3	25

The patient distributed on the basis of parity has the mean of 33.33 ± 7.63 . In about 35 patients, the ectopic pregnancy was the cause of infertility. The maximum number of patients having increased incidence of ectopic pregnancy are those having parity of 1-3 [Table 2].

Table 3: Distribution of the patients of ectopic pregnancy on the basis of symptoms.

Symptom	N (number of patients)
Asymptomatic	35
Irregular bleeding	74
Lower abdominal discomfort	52
Shock	12

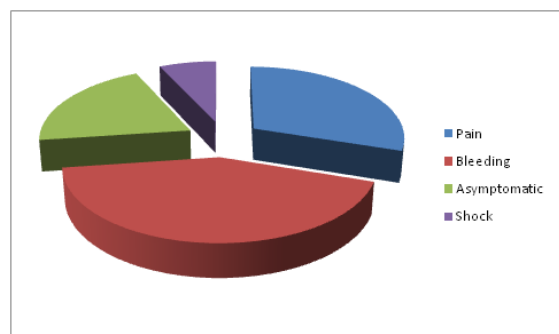


Figure 2: The graph depicting the distribution of patient on the basis of symptoms.

The most common risk factor of the ectopic pregnancy is irregular bleeding (74%), followed by lower abdominal pain (52%). In 35% subjects, the patient was asymptomatic. Only 12% patients present with shock [Table 3, Figure 2].

Table 4: The Common ultra-sonographic findings in the ectopic pregnancy

Ultrasonographic feature	N (Number of patients)
Presence of Extra-uterine gestational sac	96
Absence of Intra-uterine gestational sac	82
Presence of enlarged uterus	7
Fluid in pouch of Douglas	26
Thickening of endometrium	31

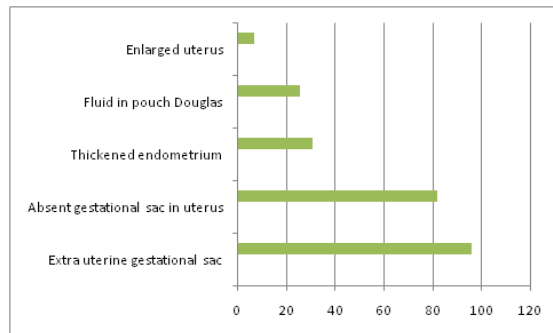


Figure 3: The graph depicting the ultrasonographic findings in the ectopic pregnancy.

The common findings of the ultrasound, which helps in making the diagnosis, are depicted in Table 4 and Figure 3. The most common finding, which helps in making the diagnosis of ectopic pregnancy, is presence of extra-uterine gestational sac (96%). The absence of gestational sac in uterus (82%) helps in confirmation of disease. Other common findings are Thickening of endometrium, fluid in pouch of Douglas and increased dimensions of uterus.

Table 5: Diagnosis by Trans-abdominal ultra-sonography.

Test Results	Ectopic pregnancy	Normal
Positive	True Positive (80)	False Positive (1)
Negative	False Negative (14)	True Negative (5)

Table 6: Diagnosis by Trans-vaginal ultra-sonography.

Test Result	Ectopic pregnancy	Normal
Positive	True Positive (84)	False Positive (1)
Negative	False Negative (10)	True Negative (5)

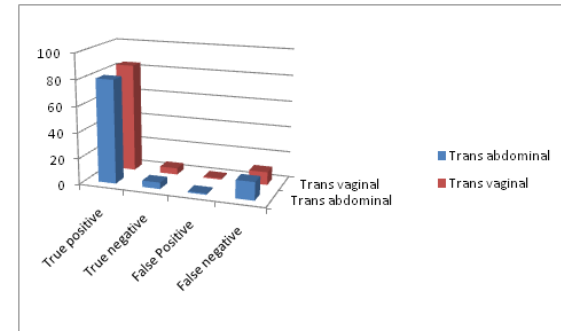


Figure 4: Comparison of the results of the Trans vaginal and Trans abdominal routes.

Both trans-vaginal and trans-abdominal ultra-sonography has proved to be important in making the diagnosis of ectopic pregnancy. The confirmation of the diagnosis is done by histopathology, which is the gold standard method and then compared with the results of ultra-sonography. The trans vaginal route diagnosed 84 cases correctly whereas trans abdominal method diagnosed 80 cases. The false negative results were more in trans abdominal (14) as compared to trans vaginal (10) [Table 5,6, Figure 4].

DISCUSSION

Ultra-sonography is considered as the gold standard for diagnosing the diseases of pelvic viscera and ectopic pregnancy.^[6,7] Both trans vaginal and trans abdominal routes are used in making the diagnosis. According to the studies^[9-12], the trans vaginal route is considered as better because of the improved resolution. The early detection of the ectopic pregnancy and the abortion is possible by this route. But the trans abdominal route was preferred due to the convenience of the patient. In addition, the lateral masses are more easily visualized by this method. Our study supports the previous literature^[8-13] that the findings are clearer and can be diagnosed early with trans vaginal ultra-sonography as compared to trans abdominal. The dimensions and texture of the ovaries and uterus are more elaborative with the trans vaginal ultra-sonography.^[5,7]

In this study, the age group commonly affected is more than 30 years. But in a study conducted in

India by Pal et al the patients of age group 26-30 years mostly suffer from ectopic pregnancy.^[14] The patients having ectopic pregnancy are usually nulliparous or low parity. This finding is supported by the study conducted by Afridi et al.,^[15] in which 56% of cases of ectopic pregnancy occurred in patient with low parity of 0-2.

The commonest symptom, which developed in majority of the patients, is irregular bleeding per vaginally followed by lower abdominal pain. Whereas in a similar study done in Pakistan, the chief complaint was the lower abdominal discomfort.

Our study reported that correct diagnosis was made in 84% patient by the trans-vaginal route and 80% by the trans-abdominal route. Diagnostic accuracy was 82% and 89% for Trans abdominal and Trans vaginal respectively in the same study of Nausheen F et al.^[16] Thus both the studies suggest that trans vaginal sonography is the better modality for making diagnosis.

Trans vaginal sonography helps in better identification of the non specific findings along with ectopic pregnancy.^[17] Fleischer et al reported the presence of ectopic tubal ring in about 50% of pregnancy and 68% of unruptured ectopic pregnancy.^[18]

CONCLUSION

We have concluded that ultrasound is the basic imaging modality used to evaluate ectopic pregnancy. Transabdominal ultrasound should be the initial technique employed for this purpose, whereas TVS is better in resolution as compared to the TAS. Diagnosis of the ectopic pregnancy can be made with TVS alone but TAS should always be used in conjunction with TVS.

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