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Comparison of Transabdominal and Transvaginal Sonography in the Diagnosis of Ectopic Pregnancy- 1yr Study

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Abstract
Introduction: *Sonography has become an important tool in the diagnosis of suspected ectopic pregnancy[1]. Ultrasonography is a cheap, widely available, simple, rapid and noninvasive diagnostic modality for fast detection, presence and location of pregnancy.*
Objective: *To compare transabdominal and transvaginal sonography in the diagnosis of ectopic pregnancy.*
Study Design: *Cross-sectional analytic study.*
Study Setting: *The study was conducted in VIMSAR, BURLA in the Department of Radiodiagnosis.*
Study Duration: *Study duration was from 1st September 2017 to 31st September 2018.*
Subjects and Methods: *50 patients were included in the study. All women with suspension of ectopic pregnancy were evaluated by both transabdominal and transvaginal sonography. Diagnosis made transabdominal and transvaginal sonography ultrasound was confirmed by histopathology.*
Results: *Ultrasonographic findings of ectopic pregnancy were seen, including presence of extra uterine gestational sac or complex mass 94 %, absence of gestational sac in uterus 86%, fluid in the pouch of douglus 66%, thick endometrial lining or pseudo gestational sac 34%, enlargement of uterus 8%. More than one finding was seen in several patients.Most common age group with pelvic masses was between 26-30 years.*
Conclusion: *This study shows that transvaginal ultrasonography is superior to transabdominal ultrasonography for early detection of ectopic pregnancy.*
Keywords: *Ectopic pregnancy, TAB (Transabdominal ultrasound), TVS (Transvaginal ultrasound).*

Introduction

Ectopic pregnancy is the leading cause of pregnancy related death during first trimester.[1] Sonography has become an important tool in the diagnosis of suspected ectopic pregnancy[2]. Ultrasonography is a cheap, widely available, simple, rapid and noninvasive diagnostic modality for fast detection, presence and location of pregnancy.

A scan should be seen as a part of the overall clinical assessment of the patient[3]. It should never be looked at in isolation.

Abdominal ultrasonographic accuracy can be affected by multiple factors such as obesity, insufficient filling of bladder and obscuration of pelvic structures by bowel gas.

All these problems can overcome by the use of vaginal ultrasonography because the transducer is closer to pelvic organs than it is with the abdominal method. In addition, improved resolution may be achieved by using higher frequency transducer[4].

Transabdominal sonography should still be the initial sonographic technique for routine evaluation of female pelvis followed by transvaginal sonography[3].

Aims and Objectives

To compare transabdominal with transvaginal sonography in the diagnosis of ectopic pregnancy.

Materials and Methods

Hospital based Cross-sectional analytic study in the Department of Radiodiagnosis, VIMSAR, Burla from 1st September 2017 to 31st September 2018. 50 patients were included in the study. All women with suspension of ectopic pregnancy were evaluated by both transabdominal and transvaginal sonography and was confirmed by histopathology.

Inclusion criteria were all clinically suspicion of ectopic pregnancy, pelvic or lower abdominal pain, vaginal bleeding, positive pregnancy test & Raised serum beta HCG level. Exclusion criteria were above 40 years of age, known gynecological malignancy & known urogenital anomalies.

Results

Ultrasonographic findings of ectopic pregnancy were seen, including presence of extra uterine gestational sac or complex mass 94 %, absence of gestational sac in uterus 86%, fluid in the pouch of douglus 66%, thick endometrial lining or pseudo gestational sac 34%, enlargement of uterus 8%. More than one finding was seen in several patients.

Most common age group with pelvic masses was between 26-30 years.

The study result revealed that sensitivity of transabdominal and transvaginal ultrasonography was 86% and 97% respectively. Specificity of transabdominal & transvaginal ultrasonography was 93% & 93%. Diagnostic accuracy of transabdominal ultrasonography was 88% and transvaginal ultrasonography was 96%.

There was a significant difference in the image quality, between two modalities.

Table 1 Distribution of cases by age (n=50)

AGE	=n	%age
21-25	16	32
26-30	27	54
31-35	8	16

Table 2 Distribution of cases by parity (n=50)

PARITY	=n	%age
nullipara	13	26
1-3	27	54
4-6	10	20

Table 3 Symptoms of ectopic pregnancy (n=50)

SYMTOMS	NO.	%age
Lower abdominal pain	43	86
Irregular vaginal bleeding	36	72
Amenorrhea	27	54
Shock	4	8
Syncopal attack	9	18
Asymtomatic	6	12

Table 4 USG findings (n=50)

FINDINGS	NO.	%age
Presence of extrauterine gestational sac or complex mass	47	94
Absence of gestational sac in uterus	43	86
Fluid in the pouch of Douglas	33	66
Thick endometrial lining or pseudogestational sac	17	34
Enlargement of uterus	4	8

Table 5 Results of transvaginal scan findings ((histopathology as gold standard) (n=50)

Test results	Ectopic pregnancy	Normal
Test positive	True positive (36)	False positive (1)
Test negative	False negative (1)	True negative (12)

Sensitivity-97% Specificity -93% Accuracy-96%

Table 6 Results of transabdominal scan findings ((histopathology as gold standard) (n=50)

Test results	Ectopic pregnancy	Normal
Test positive	True positive (32)	False positive (1)
Test negative	False negative (5)	True negative (12)

Sensitivity -86% Specificity -93% Accuracy-88%

1:A Case of Abdominal Pregnancy

Fig 1: TAS shows empty uterus with extra-uterine live pregnancy in right RIF .There is evidence placenta anterior to fetus & collection in POD.

2. A Case of Chronic Ectopic Pregnancy

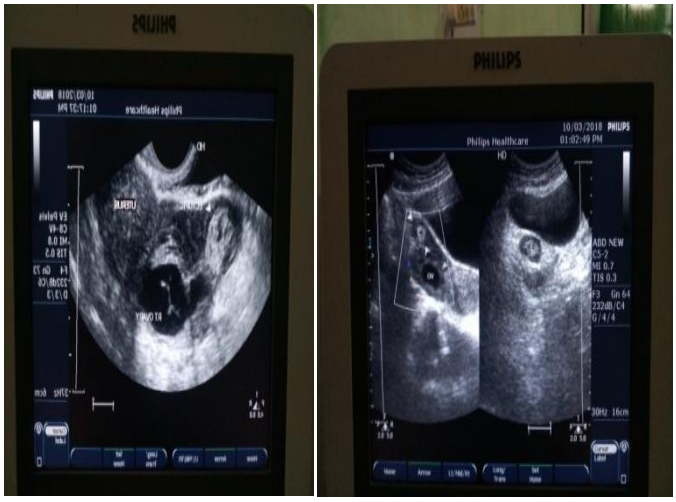
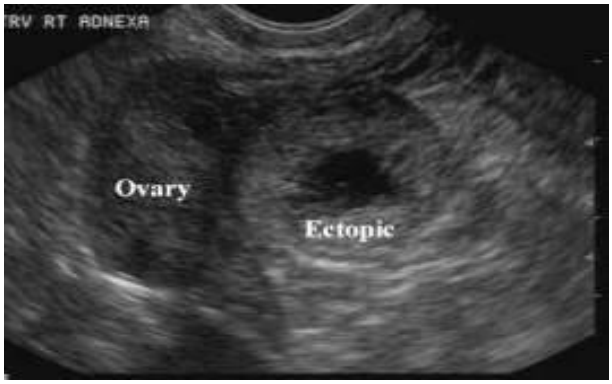
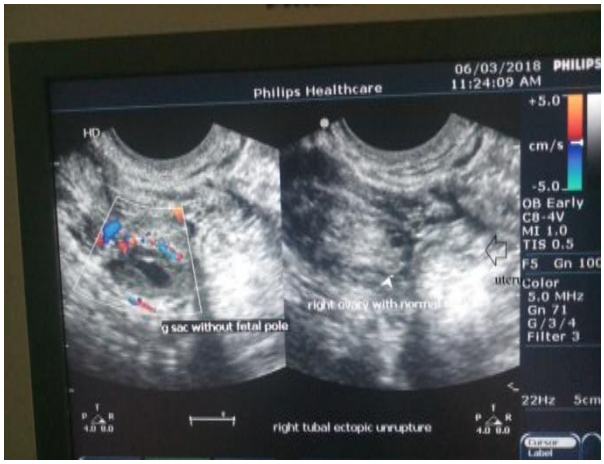


Fig 2 & 3: TAS & TVS BOTH shows empty uterus with a echogenic complex mass (chronic) not showing ring of fire on color Doppler. Normal right ovary seen adjacent to complex mass.

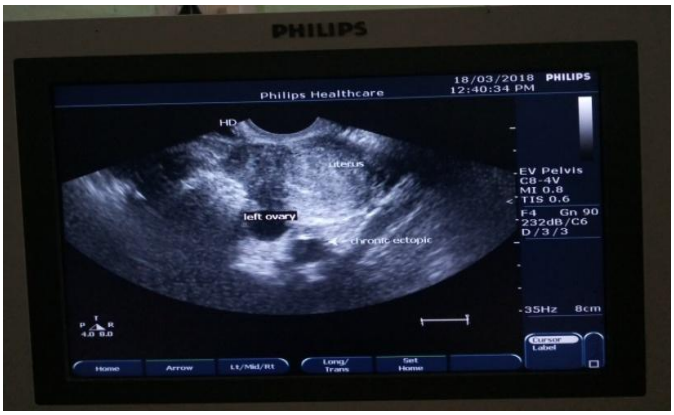
3: A Case of Right Tubal Ectopic Pregnancy





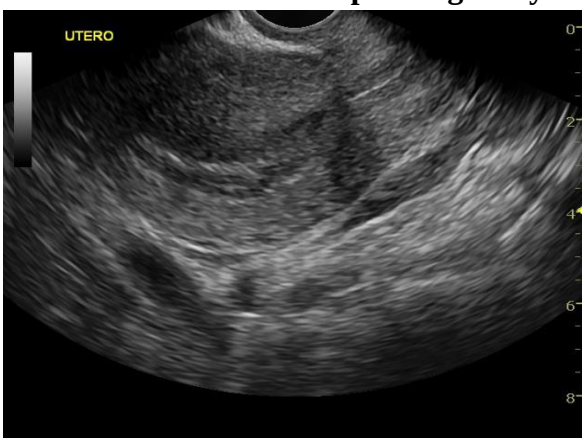
IMG 1 & 2 – TAS &TVS both shows empty uterus with a g sac without fetal pole in right adnexa (tubal). Right ovary appears normal .On color doppler, there is positive ring of fire.

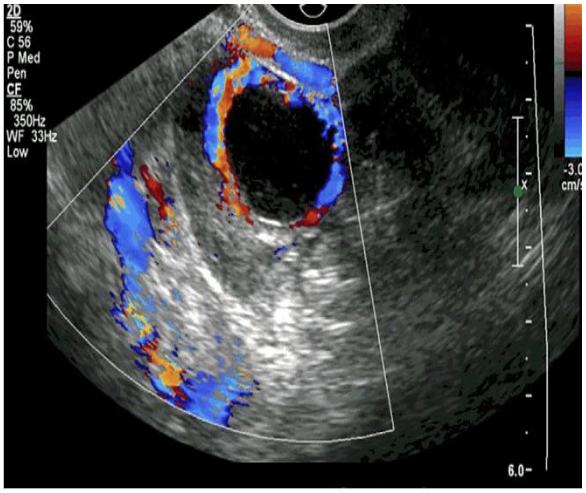
4: A Case of Left Tubal Chronic Ectopic Pregnancy



TVS shows left ovary appears normal. There is evidence of empty uterus with a ill-defined complex mass with internal cystic lesion (g sac).

5:A Case of RT Ovarian Ectopic Pregnancy





IMG 1 & 2 – TVS shows empty uterine sac with a right intraovarian cystic lesion showing ring of fire on color doppler.

Discussion

A total of 50 patients with suspected cases of ectopic pregnancy were included in this study.

In India Arup et al conducted a study in which maximum number of cases occurred with maximum incidence of ectopic pregnancy in age group of 26-30 years[5] as compared to our study26-30yrs (54%).

Most of patients had low parity i.e., 1-3 which is quite similar with study documented by Arup et al.

Pain was commonest symptom (86%) followed by vaginal bleeding in 72% of cases and amenorrhoea (27%). These results are quite similar with study of Pal A. et al[6].

In our study, most of the cases i.e 47 (94%) had an inhomogeneous mass same as compared to G. Condous et al[7]. & Adhikari et al[8] study.

Our study reported that correct diagnosis was 88% on TAS and 96 % on TVS quite similar but slightly higher than the Nausheen F et[9] al study i.e 82% and 89% for TAS & TVS respectively.

Arup et al[5] in their study, most common site for the ectopic pregnancy was tubal pregnancy i.e (81.9 %) which is comparable with our study i.e (94 %).

In 2002, Bouyer J[10] explored in his study that ovary is the second commonest site and the rate is 1.5%. Our study revealed that the rate of ovarian ectopic pregnancy is 3 %.

Shalev and colleagues[11] found that the use of TVS in the diagnosis of an ectopic pregnancy has a sensitivity of 87%, specificity of 94%. Another study[12] gave a sensitivity of 93%, specificity of 99% with TVS is compared with our study i.e sensitivity 97% & specificity 92%.

The earlier demonstration of an intrauterine pregnancy is the single most important contribution of TVS in the evaluation of patients presenting with suspected ectopic pregnancy. Dashefsky et al;[13] In a series of suspected ectopics found all 19 normal intrauterine pregnancies were identified by TVS compared to only 11 of 19 for TAS. In addition, TVS identifies 7 of 16 abnormal uterine pregnancies compare with 3 of 16 for TAS.

Dillon et al[14] added in his study that color-flow Doppler imaging may further help distinguish a gestational sac from decidual cast.

TVS has improved demonstration of nonspecific findings in patients with ectopic gestations[15]. Fleischer et al using TVS; reports an ectopic tubal ring in 49% of patients with ectopic pregnancy and in 68% of unruptured tubal pregnancies.

Conclusion

This study shows that transvaginal ultrasonography is superior to transabdominal ultrasonography for early detection of ectopic pregnancy, but to avoid misinterpretation both is required as transvaginal ultrasonography has limited field of view.TVS is better in resolution as compared to the TAS. Diagnosis of the ectopic pregnancy can be made with TVS alone.

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