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Gynaecology

"ACCURACY OF TRANSVAGINAL SONOGRAPHY IN GYNAECOLOGICAL DISORDERS"

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ABSTRACT

Introduction: Advances in ultrasound scanning technology have improved the noninvasive diagnosis of uterine pathology. TV U/S was first introduced in the mid 1980s. A Transvaginal USG is done in most cases, because it minimizes patient discomfort due to a full bladder and shorter distance between the transducer and target organs. Transvaginal ultrasound (TVS) has had a major impact on many areas of gynaecological practice, and in particular as the investigative tool of choice prior to surgery. We undertook this study to study the use and accuracy of TVS in diagnosing gynaecological disorders.

Material and method: A total of 100 patients attending the OPDs with complaint of menstrual irregularities, pain abdomen, mass per abdomen, infertility were selected for the study. A thorough clinical examination including general, systemic and pelvic examination was conducted after taking a detailed history. Complete blood and urine investigations were done. TVS was done in all cases.

Result: On history and clinical examination 35 cases were diagnosed as cases of dysfunctional uterine bleeding but on trans vaginal ultrasonography only 29 were found to be the cases of DUB and rest 07 cases were found to be fibroid. Clinically 21 cases were diagnosed as fibroid and proved to be same on TVS. On the other hand 22 cases were diagnosed as cases of pelvic inflammatory disease on history and clinical examination but on TVS only 19 cases were found to be the cases of PID and rest 3 cases were found to be ovarian cysts. Clinically by per vaginal examination16 cases were diagnosed as ovarian cysts and were diagnosed of having the same on TVS.

Conclusion: TVS has higher diagnostic accuracy than clinical examination and it should be considered as an excellent approach for the initial evaluation of uterine and its adnexal pathologies.

KEYWORDS :

Introduction:

Transvaginal sonography(TVS) was first introduced in the mid 1980s. It uses higher frequency transducers in closer proximity to the structure being studied. This yields a degree of image magnification that has been termed "sonomicroscopy," in which structures that could not be appreciated previously with a naked eye can be discerned. TV U/S has been studied as an inexpensive noninvasive way to directly visualize the endometrial cavity. The first publication on this was by Nasri and Coast.[1] Transvaginal sonography (TVS) provides a valuable tool for the diagnosis of a wide range of gynecological disorders including those of the uterus and endometrium. A Transvaginal USG is done in most cases, because it minimizes patient discomfort due to a full bladder and shorter distance between the transducer and target organs. Transvaginal ultrasound (TVS) has had a major impact on many areas of gynaecological practice, and in particular as the investigative tool of choice prior to surgery. TVS plays a pivotal role in the assessment of early pregnancy complications. Early fetal demise diagnosed on TVS can be managed expectantly of medically. An ectopic pregnancy can be visualized on TVS in >90% of cases, making medical and expectant management possible without the need for surgical intervention. Its use is limited in distinguishing between polyp and diffuse lesions and may miss small intracavitory lesions.

Objective:

Our study aims at discussing the utility of transvaginal ultrasonography in different gynaecological disorders.

Material and method:

SETTINGS: Teerthanker Mahaveer Medical College & Research Center, Moradabad.

DURATION OF STUDY: 1st November 2016 to 30th October 2017.

SAMPLE SIZE: 100 patients.

METHOD: A total of 100 patients attending the OPDs with complaint of menstrual irregularities, pain abdomen, mass per abdomen, infertility were selected for the study. A thorough clinical examination including general, systemic and pelvic examination was conducted after taking a detailed history. Complete blood and urine investigations were done. TVS was done in all cases.

Inclusion criteria : Patients with menstrual irregularities, uterine and adnexal masses, pelvic inflammatory diseases, chronic vaginal discharge, ovarian masses and infertility problems.

Exclusion criteria: Unmarried women, Menstruating women, pregnant women and patients with large pelvic masses.

The adequate explanation of the procedure of TVS to the patient is essential. The patient was asked to empty the bladder before the procedure and then placed in dorsal position with legs flexed. The doctor will cover the probe with a new and sterile latex sheath that looks like a condom. She will apply gel on the probe to ease its passage into your vagina and to get better clarity of the images. She will then insert about two to three inches of the probe into your vagina and perform the scan. A baseline transvaginal ultrasound was performed first using endovaginal probe of 7.5MHz (covered by a condom) the appearance of the endometrium, myometrium, and adnexae was noted

The accuracy of transvaginal sonography in diagnosing DUB, fibroid, ovarian cyst, endometrial polyps, carcinoma endometrium, pelvic inflammatory diseases was calculated by comparing its findings with clinical diagnosis with sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

There are virtually no risks associated with a transvaginal ultrasound, although you might experience some discomfort. The entire test takes about 30 to 60 minutes, and the results are typically ready in about 24 hours.

Result and observation:

Age distribution:

Age	No. of patients
20-30	14
31-40	42
41-50	31
51-60	13

Out of total100 patients, majority of females belonged to age group 31-40 years.

Presenting complaint:

S.No.	Symptoms	No. of patients

1	Pain in abdomen	30
2	Menstrual irregularities	57
3	Menorrhagia	33
A	Polymennorhoea	24
B	Infertility	05
4	Mass per abdomen	05
5	Post menopausal bleeding	03

Most common presenting symptom among 100 females was pain in abdomen followed by irregular menstrual cycles.

Diagnosis:

Diagnosis	Positive on Clinical finding	Positive on TVS finding
DUB	36	28
Fibroid	21	30
PID	22	19
Ovarian cyst	16	19
Endometrial polyp	0	04
Endometrial carcinoma	03	03

On history and clinical examination 35 cases were diagnosed as cases of dysfunctional uterine bleeding but on trans vaginal ultrasonography only 29 were found to be the cases of DUB and rest 07 cases were found to be fibroid. Clinically 21 cases were diagnosed as fibroid and proved to be same on TVS. On the other hand 22 cases were diagnosed as cases of pelvic inflammatory disease on history and clinical examination but on TVS only 19 cases were found to be the cases of PID and rest 3 cases were found to be ovarian cysts. Clinically by per vaginal examination16 cases were diagnosed as ovarian cysts and were diagnosed of having the same on TVS.

Senstivity, Specificity, PPV and NPV:

Diagnosis	Clinical finding	TVS finding	TVS				Senstivity	Specificity	PPV	NPV
			True		False					
			+ve	-ve	+ve	-ve				
PID	22	19	19	03	0	78	100	96.29	86.36	100
Fibroid	21	30	21	0	9	71	76.92	100	100	88.75
DUB	35	28	28	08	0	65	100	91.54	80.00	100
Ovarian cyst	16	19	16	0	3	81	84.21	100	100	96.42

As the above table shows, in the current study TVS was found to have 100% senstivity in diagnosing cases of PID and DUB while 100% specificity in diagnosing cases of fibroid and ovarian cysts.

Discussion:

Transvaginal ultrasound (TVS) has been considered as a relatively safe, noninvasive and simple procedure that gives a clear view of most uterine conditions. Though most commonly it has been used for the evaluation of the ovulation, in oocyte recovery in infertile females, it has now proved itself a powerful tool in diagnosing gynaecological disorders.

In our study majority of females were of age group 31-40 years and presented with the chief complaint of menstrual irregularity, similar to the study of Mise PJ et al.[2] 63.15% (36/57) cases with menstrual irregularity in our study were diagnosed as DUB clinically and 36.84% (21/57) as having fibroid which is not in accordance with the studies of Bhosle et al[3] and Mise PJ et al[2], Bhosle et al[3] diagnosed 49.1% cases as that of fibroid and 43.8% cases as that of DUB.

In our study sensitivity of TVS had a tremendous sensitivity of 100% in predicting DUB and PID and specificity of 100% in predicting fibroid and ovarian cysts. In our study,on clinical examination 35 cases were diagnosed as cases of dysfunctional uterine bleeding but on trans vaginal ultrasonography only 29 were found to be the cases of DUB and rest 07 cases were found to be fibroid, so 7 cases were misdiagnosed as DUB on clinical examination. Quiet similar results were obtained in the study by Bhosle et al[3], who diagnosed clinically 55 (49.1%) as fibroid uterus, 49 (43.8%) as DUB and 8 (7.6%) as adenomyosis while on TVS, 53 (47.3%) diagnosed as fibroid, 40 (35.7%) as DUB, and 19 (16.8%) cases were diagnosed as adenomyosis.[3]

The sensitivity of TVS in predicting DUB is 100%, but specificity is 91.54%, which is well correlated with the study conducted by Mise PJ et al.[2] The sensitivity of TVS in predicting fibroid uterus was 76.92% that was similar with the findings of Subhankar et al [4] i.e. 65.9%.13 TVS helps to categorize patients with abnormal uterine bleeding so as to identify patients who require further evaluation; however several concerns have been raised regarding its accuracy [5,6]. Also Herman et al.[7] recommended the transvaginal ultrasound to be the first step in imaging tests and other diagnostic tests should only be performed when indicated.

Now we will discuss the role of TVS in diagnosing the PID. According to a study by Cicatore et al[8] in 1992, its sensitivity depends on the image described, estimated between 32 and 85%, with 58-100% specificity and is operator dependent.14 In our study, 22 cases were diagnosed as cases of pelvic inflammatory disease on history and clinical examination but on TVS only 19 cases were found to be the cases of PID and rest 3 cases were found to be ovarian cysts which were misdiagnosed on clinical examination. The sensitivity, specificity, PPV and NPV of TVS in determining PID was found to be 100%, 96.29%, 86.36% and 100% respectively and it is higher than the study of Gaiten et al[9] which has the sensitivity (87%) and specificity (50%) .

In our study, accuracy of TVS in diagnosing ovarian cyst is 84.21%, which was similar to the other studies of Tongsong et al[10], in which the accuracy of TVS in diagnosis of ovarian mass was about 89.7%. The overall accuracy of clinical diagnosis in our study was less than that of TVS which is similar to the findings of Batra et al [11] in which clinical diagnostic accuracy was 69.1% and TVS diagnostic accuracy was 85.45%.

Conclusion:

Advances in ultrasound scanning technology have improved the noninvasive diagnosis of uterine pathology [12]. TVS is advised when a better look at pelvic structures is required. In our study we concluded that the diagnostic accuracy of TVS in diagnosing the uterine and its adnexal pathology is more than the clinical examination and history. Thus the main conclusion is that, (TVS) is considered as an excellent approach for the initial evaluation of uterine and its adnexal pathologies.

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