

## TO CORRELATE THE MRI FINDINGS WITH THAT OF TRANSVAGINAL ULTRASOUND

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### Abstract

This Study was done in the Department of Radio diagnosis of Amaltas Institute of Medical Sciences, Dewas, Madhya Pradesh, A total of 65 patients who were referred to our department with clinical suspicion of endometrial lesions and incidentally detected endometrial lesions on ultrasonography underwent transvaginal ultrasound.

**Result:** On TVS 29% cases were diagnosed as endometrial hyperplasia. 25% cases were diagnosed as malignant etiology. Overall benign lesions predominated comprising of 75% of total lesions.

Other benign lesions identified on TVS were endometrial polyp, endometritis, submucosal fibroid, adenomyosis and synechiae.

**Conclusion:** TVS should be used as the primary imaging modality in endometrial lesions as it is dynamic, widely available and less expensive. But it is less sensitive in diagnosing malignant endometrial lesions and there extend. Accuracy of TVS is 82% in detecting malignant endometrial lesions. All patients with even slight suspicion of malignancy based on clinical features, age and TVS findings should be subjected to pelvic MRI.

**Keywords:** MRI, Transvaginal, Ultrasound & Endometrial lesions

### Introduction:

MRI is now widely accepted and used as the most reliable imaging modality in the evaluation of tumor volume, parametrial invasion, and metastases to regional lymph nodes and adjacent pelvic organs.

The role of ultrasound (US) in the staging of cervical cancer has been studied in recent years. US offers the advantages over MRI of being relatively less expensive, noninvasive, and widely available. There have been many new technologic developments in the field of US over the last decade, with subsequent greatly improved image quality. Given these great advances and considering its many potential advantages over MRI, it is important to consider the role of US as a potentially useful tool in the local staging of cervical cancer.<sup>[1]</sup>

Both transrectal US and transvaginal US (TVS) have been reported to be of use in the local staging of cervical cancer. Transrectal US has been shown to be comparable to MRI in the estimation of tumor volume and parametrial invasion.<sup>[2]</sup> Studies have reported TVS to be superior to MRI in the detection of residual tumor after biopsy and in the assessment of parametrial invasion.<sup>[3]</sup>

### Material & Method

This prospective study was done in the Department of Radio diagnosis of Amaltas Institute of Medical Sciences, Dewas, Madhya Pradesh, A total of 65 patients who were referred to our department with clinical suspicion of endometrial lesions and incidentally detected endometrial lesions on ultrasonography underwent transvaginal ultrasound and subsequent Imaging evaluation of pelvis using 3 T MRI scanner from Oct. 2018 to Sep. 2019. Diagnosis was confirmed by Histopathology. The data was analyzed by calculating the sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of the techniques.

### INCLUSION CRITERIA

1. Patients referred to the department of Radiodiagnosis AIMS, Dewas for radiological evaluation of abnormal uterine bleeding .
2. All Patients detected to have endometrial lesions on transabdominal ultrasound.
3. Patients of above the age of 18 years

**EXCLUSION CRITERIA**

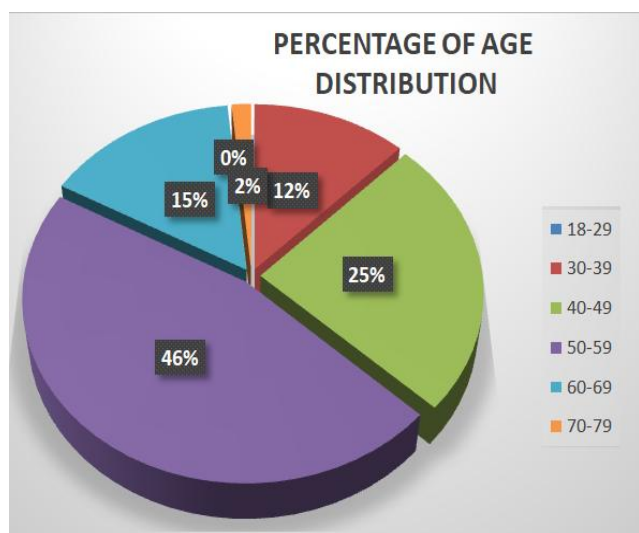
1. Patients who have previously undergone endometrial resection/ ablation
2. Patients with intrauterine contraceptive devices
3. Patients with pregnancy and related causes of vaginal bleeding
4. Patients with active genital infections
5. Unmarried female patients.
6. Severe medical conditions precluding study like uncontrolled Hypertension, Diabetes mellitus, bleeding disease.
7. General contraindications to MRI

**STATISTICAL ANALYSIS:**

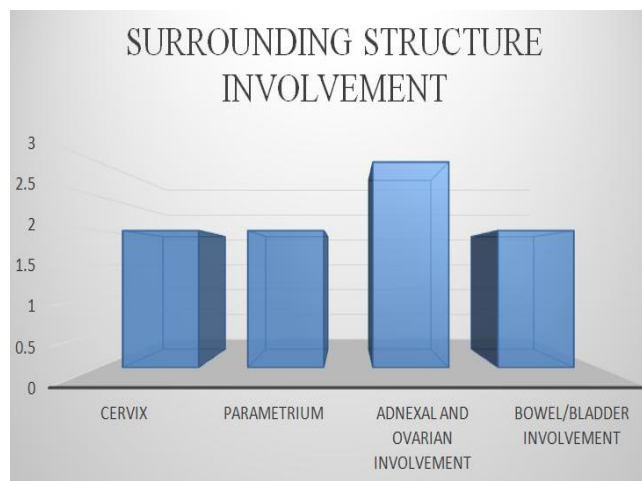
- Data was depicted in the form of tables and charts.
- Microsoft Excel was used for data analysis

**Results****AGEDISTRIBUTION****Table 1: Age Distribution**

AGE (in years) DISTRIBUTION	NUMBER OF CASES	PERCENTAGE (%)
18-29	0	0
30-39	8	12
40-49	16	25
50-59	30	46
60-69	10	15
70-79	1	2
Total	65	100

**Chart 1: AGE Distribution****SURROUNDING STRUCTURE INVOLVEMENT IN TVS****Table 2: Surrounding Structure Involvement in TVS**

SURROUNDING STRUCTURE INVOLVEMENT	NUMBER OF CASES OF PATIENTS	PERCENTAGE (%)
CERVIX	2	3
PARAMETRIUM	2	3
ADNEXAL AND OVARIAN INVOLVEMENT	3	5
BOWEL/BLADDER INVOLVEMENT	2	3

**Chart 2 - Surrounding Structure Involvement in TVS**

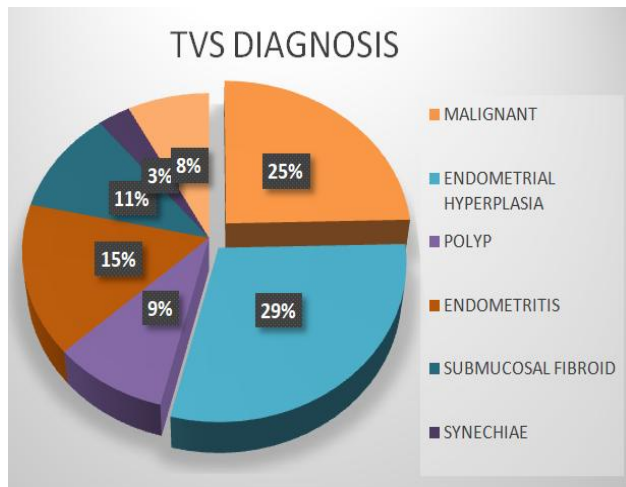
Most common adjacent organ involved was adnexa and ovary. They were found to be involved in 3 patients.

Bowel and urinary bladder was involved in 2 patients.

Cervix and parametrium was involved in 2 patients each.

**TVS DIAGNOSIS****Table 3: TVS Diagnosis**

TVS DIAGNOSIS	NUMBER OF CASES	PERCENTAGE (%)
MALIGNANT	16	25
ENDOMETRIAL HYPERPLASIA	19	29
POLYP	6	9
ENDOMETRITIS	10	15
SUBMUCOSAL FIBROID	7	11
SYNECHIAE	2	3
ADENOMYOSIS	5	8
TOTAL	65	100



**Chart 3: TVS Diagnosis**

On TVS 29% cases were diagnosed as endometrial hyperplasia. 25% cases were diagnosed as malignant etiology

Overall benign lesions predominated comprising of 75% of total lesions.

Other benign lesions identified on TVS were endometrial polyp, endometritis, submucosal fibroid, adenomyosis and synechiae.

#### Discussion

Use of TVS along with Colour Doppler provides diagnostic accuracy for endometrial lesions. However limited field of view, obscuration of pelvic organs by bowel gas or position of the uterus, operator dependence and limited capability for soft tissue delineation are the drawbacks of ultrasound.

MRI, is now being widely used as an optimal imaging modality as it is non-invasive, has no risk of radiation, and is less operator dependent. MRI excels in delineating the anatomy and characterization of the pelvic lesions. In this study diffusion-weighted imaging (DWI) with ADC has been applied to pelvic MRI protocol.<sup>[4]</sup>

With this background, we have attempted to evaluate endometrial lesions by TVS and MRI for better tissue delineation and the same was confirmed by histopathological correlation. Our study was conducted in the Department of Radiodiagnosis of Amaltes Institute of Medical Sciences, Dewas involving a total of 65 patients.

On MRI T1WI 17 cases (26%) were hypointense, 3 cases (5%) were hyperintense, 23 cases (35%) were heterogeneous and 22 cases (34%) were isointense. On T2WI, 26 cases (40%) were hypointense, 5 cases (8%) were hyperintense, 23 cases (35%) were

heterogeneous and 11 cases (17%) were isointense. This is in accordance with the study of Ahmed Elsamak et al. in 2008<sup>[5]</sup> which showed lesions with hypointense signals at T1WI, heterogeneous signals at T2WI were probably malignant, while those that displayed hypointense signals on T1W images, hyperintense signals on T2W images were probably benign.

On TVS, 28 cases (43%) had endometrial thickness between 11 to 15 mm, 39% had endometrial thickness less than 10 mm and 18% cases had ET above 15 mm. MRI did not show considerable variation in terms of measured endometrial thickness.<sup>[6,7]</sup>

A diffuse thickening of endometrium was found in 38 cases (58%), while 22 patients (34%) had focal thickening. 8% cases showed atrophic endometrium.

#### Conclusion

TVS and MRI, both hold unique role in the imaging workup of endometrial lesions.

TVS should be used as the primary imaging modality in endometrial lesions as it is dynamic, widely available and less expensive. But it is less sensitive in diagnosing malignant endometrial lesions and there extend. Accuracy of TVS is 82% in detecting malignant endometrial lesions. All patients with even slight suspicion of malignancy based on clinical features, age and TVS findings should be subjected to pelvic MRI.

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