



A COMPARATIVE STUDY TO EVALUATE THE ACCURACY OF 2D TRANSVAGINAL ULTRASONOGRAPHY (TVS) COMPARED TO HYSTEROSCOPY IN THE DIAGNOSIS OF INTRAUTERINE PATHOLOGY IN INFERTILE WOMEN.

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ABSTRACT

Introduction: Infertility is defined as inability to conceive after one or more years of unprotected intercourse. This study was taken up to evaluate the correlation of transvaginal ultrasound with hysteroscopy in the evaluation of infertile patients. **Material and methods:** A prospective study was carried out in the department of Obstetrics and Gynaecology, Muzaffarnagar Medical College and Hospital, Muzaffarnagar, India for a period of 6 months from October 2021 to March 2022 conducted on 50 subjects. **Results:** 50 patients were evaluated with diagnosis of primary and secondary infertility. TVS (Transvaginal scan) showed abnormal findings correctly in 38% of cases, and 62% cases were undiagnosed. Hysteroscopy showed alterations in 58% cases, predominantly uterine synechiae and endometrial polyp. There were no complications during hysteroscopy. **Conclusion:** Hysteroscopy is better than TVS alone for the diagnosis of infertility pathology as its diagnosis is more precise and we can treat them simultaneously, but still TVS remains the best non-invasive method for study of uterine as well as adnexal pathology in infertility.

KEYWORDS

Infertility is defined as regular unprotected intercourse for at least one year without any conception. It affects approx 10- 15% of couples [1]. The uterine cavity evaluation is an important part of an examination of infertile women as Intrauterine pathologies are found to be present in around 25% of infertile patients [2]

The main causes of infertility include the Male factor 20%-30%, both male and female factors 10%-40%, female factors 40%- 55%, and unexplained infertility 10%-20%.3.The common factors responsible for infertility in females are tubal factors, anovulatory disorder, endometriosis, uterine and cervical factors.4 Evaluation of infertility should be considered in any couple that has failed to conceive in 1 year. Investigations of infertile couples include a variety of tests. Transvaginal ultrasonography (TVS) is an excellent method for the study of internal genitalia.[5]

Hysteroscopy is considered the gold standard for uterine cavity evaluation because it allows for direct visualization[6]

Hysteroscopy was performed under modified general anesthesia. Medications commonly used included Propofol or Fentanyl.[7]

It shows uterine cavity abnormalities, such as polyps, Myomas, adhesions & differences in endometrial thickness[8,9,10]

The most commonly used distension medium used is normal saline when diagnostic hysteroscopy was performed, while glycine 1.5% was used if both diagnostic and operative hysteroscopy were performed. The pressure of fluid distension ranges between 100 and 120 mmHg [7]

Thus, hysteroscopy is performed as a definitive diagnostic tool to evaluate any abnormality suspected on HSG, or TVS. [8,9,10]

This is a comparative study that aimed to evaluate the accuracy of 2D transvaginal ultrasonography (TVS) compared to hysteroscopy in the diagnosis of intrauterine pathology in infertile women.

PATIENTS AND METHODS

This comparative prospective cohort study includes 50 infertile women who had undergone transvaginal ultrasonography (TVS) compared with hysteroscopy in the diagnosis of intrauterine pathology. This study was conducted at Muzaffarnagar medical college & Hospital. Cases were included in the study during the period between Jan 2021 - June 2021. Informed consent of patients to be taken. The study was approved by the hospital's ethical committee.

Inclusion Criteria:

Patients having the infertility age group (20-40 years) with normal levels of LH, FSH, prolactin, and normal semen analysis of their husbands or who had unexplained infertility.

Exclusion Criteria:

Patients with age less than 20 years or more than 40 years, pregnancy, active pelvic infections, and couples with male factor infertility.

TVS was done for all enrolled patients on 2nd or 3rd day of menses and the diagnostic hysteroscopy was done postmenstrual. Both were carried out during the same cycle.

RESULTS

Table 1: Demographic characteristics

AGE (years)	Primary infertility		Secondary Infertility	
	Number	% age	Number	% age
21-25	8	16	1	2
26-30	17	34	4	8
31-35	11	22	3	6
>35	1	2	5	10
Married(years)				
<5	12	24	1	2
5-10	14	28	6	12
11-15	11	22	3	6
>15	2	4	1	2

Table 2: TVS findings in patients of Infertility

Findings	Primary infertility		Secondary Infertility	
	Number	% age	Number	% age
1. Normal study	25	50	6	12
2. Enlarged uterus	-			
2. Small uterus	1	2		
3. Uterine anomaly	3	6		
4. Endometriotic cyst	2	4	1	2
5. PCOS	5	10	1	2
7. PID	2	4	2	4
8. Fibroid	2	4	2	4
9. Hydrosalpinx	1	2	-	-
10. Ovarian cyst	2	4	1	2
11. Polyp	1	2		

Table 3: Hysteroscopy findings in patients of Infertility

	Primary infertility		Secondary Infertility	
	Number	% age	Number	% age
1. Normal study	18	36	3	6

2. Polyp	2	4	2	4
3. Atrophic endometrium	6	12	2	4
4. Adhesions	7	14	3	6
5. Blocked Ostia	3	6	-	-
6. Septum	3	6	1	2
7. Fibroid	2	4	2	4

Infertility is a worldwide problem affecting 10 to 15 percent of reproductive-aged couples. The mean age in our study for primary infertility was 26-30 years and >35 years for secondary infertility. In a similar study by Chaitra K et al., the mean age at presentation was 21-25 years in primary infertility and 26-30 years in secondary infertility. The difference may be due to the rise in the mean age at which women present with infertility due to late marriages.[11]

These are three methods that can evaluate the uterine cavity differently, the TVS and HSG indirectly and hysteroscopy under direct vision. The accuracy of these methods has been widely studied by several international authors. TVS remains the best non-invasive and the initial method of assessment of primary infertility. Many specialists feel that among invasive methods, hysteroscopy is a more accurate tool because of the high false-positive and false-negative rates of intrauterine abnormality with HSG.[12] While comparing the results between hysteroscopy and TVS, later showed abnormal findings correctly in 38% of cases, and 62% of cases were undiagnosed.

Similar to this was found by Shukla P et al. where 35% of cases showed abnormal findings, and 65% of cases were undiagnosed.[13] TVs showed that 7 cases (14%) had intrauterine pathology including fibroids, anomalous uterus (arcuate uterus, septum), polyps, and small uterus. Via hysteroscopy 29 patients (58%) were diagnosed. The most frequent findings are adhesions, polyps, submucosal fibroid, atrophic endometrium, blocked Ostia, and septate uterus. But TVS also diagnosed ovarian and tubal pathology which could not be assessed with hysteroscopy.

Similarly Shukla P et al., study diagnosed uterine cavity abnormalities in 66.67% of cases of infertility by hysteroscopy and 35% by TVs. Hence, hysteroscopy is better than TVS for the diagnosis of intra-uterine pathology but still, TVS remains the best non-invasive method for the study of uterine as well as adnexal pathology in infertility.

Lawrenz et al. observed that 2D and 3D serial TVS correctly predicted uterine cavity in nearly 98% of cases demonstrating high sensitivity and specificity of TVS for detecting intracavitary pathology.[14] This dissimilarity with recent study could be because TVS was conducted only in 2D mode and not performed serially.

Hysteroscopy is the most accurate technique to visualize the endometrial cavity and diagnose relevant pathologies. Despite the further evolvement of ultrasonography, hysteroscopy provides not only diagnosis but also treatment, when needed. Based on fine hysteroscopy produced recently, hysteroscopy can be easily performed in an office-based environment, not only for diagnosis but also for the treatment of minor pathologies. The more attractive office environment compared with the conventional operating theater, the no need for general anesthesia, and the reduced cost compared to the classic hysteroscopy are the main advantages that characterize office hysteroscopy and that made it more popular during the last year.

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