



Original Article

Comparison of Transvaginal Sonography and Hysteroscopy in diagnosis of intrauterine pathologies in infertile women

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Introduction

Infertility is a problem as old as mankind itself. Approximately 10% to 15% of all married couple are infertile with female factors accounting for approximately 40% of these cases which include uterine tubal, ovarian and other factors. Uterine factors are responsible for 5% to 10% of etiologies¹. Uterine conditions causing infertility consists of Mullerian anomalies, fibroids, polyps, synechiae. TVS is an imaging modality of choice for monitoring follicular development² and can also demonstrate congenital uterine anomalies.

Modern hysteroscopy has two major applications: First diagnosis and second management of intrauterine defects. Investigators showed that 34% to 62% of infertile patients have uterine abnormality recognized by hysteroscopy that could explain infertility³.

Materials and Methods

The study was a controlled prospective trial conducted on 50 infertile women in tertiary care

hospital in department of Obstetrics and gynaecology. All patients were subjected to detail history general physical examination and local examination. Routine investigation CBC, TSH, serum prolactin, CXR, husbands semen analysis, urine analysis, endometrial biopsy in premenstrual phase, TVS was performed in follicular phase to evaluate the size and shape of uterus, any congenital anomaly, presence of submucous myomas and polyps and thickness of endometrial strip. All findings were recorded.

Hysteroscopy was planned subsequently on all patients on day 6th or 7th of menstrual cycle. Karl Storz hysteroscope was used and uterine cavity was distended with normal saline. Uterine cavity was examined systematically covering the entire cervical canal, uterine cavity and both ostia. All results were recorded. Patients were discharged the same day.

Results

Table showing number of infertile women with individual intrauterine pathologies detected by TVS

Intra Uterine Abnormality By TVS	Total No. of Infertile Women (n=13)
Endometrial Polyps	3
Intrauterine Adhesions	3
Submucous Myomas	2
Congenital Septum	2
Retained products of conception	1
Thickened Endometrium	2
Cornual Block	0

Table showing incidence of individual intrauterine pathologies detected by Hysteroscopy

Intra Uterine abnormality detected by Hysteroscopy	Total No. Of Infertile Women (n=15)
Endometrial Polyps	4
Intrauterine Adhesions	4
Submucous Myomas	2
Congenital Septum	2
Retained products of conception	1
Cornual Block	2

Statistical Analysis of TVS relative to Hysteroscopy (Gold Standard)

Statistical Analysis of TVS with respect to Hysteroscopy (Gold Standard)	Percentage
Sensitivity	80%
Specificity	97.22%
Positive Predictive Value	92.30%
Negative Predictive Value	92.11%

Statistical Analysis of TVs with respect to Hysteroscopy (Gold Standard)	Value
Likelihood Ratio Positive	26.66
Likelihood Ratio Negative	0.206

Diagnostic accuracy of TVS relative to Hysteroscopy for individual intrauterine pathologies

Diagnostic accuracy of TVS relative to Hysteroscopy	Percentage
Endometrial Polyps	75
Intrauterine Adhesions	75
Submucous Myomas	100
Congenital Septum	100
Retained products of conception	100
Cornual Block	0

Discussion

This prospective controlled study was performed on 50 infertile women to compare the diagnostic accuracy of transvaginal sonography with hysteroscopy (considering hysteroscopy as gold standard) in evaluation of intra-uterine pathologies.

In our study 15 patients had one or other uterine abnormality on hysteroscopy (30%). Our results were similar to study by La Sala which found the 31% rate of uterine pathology in 100 infertile women.

Endometrial polyps detected in four of our patients by hysteroscopy i.e. 8% of our infertile women. These findings was similar to findings by Sergio Soares et al ⁶ who evaluated 65 patients by hysteroscopy and showed endometrial polyps to be present in 7 patients(i.e. 10.76%). In our study polyps were diagnosed in 3 patients by transvaginal sonography. Considering hysteroscopy as old standard accuracy of transvaginal sonography in diagnosing polyps were 75%.

Synechiae were diagnosed in 4 of our patients by hysteroscopy i.e. in 8% of our patients. According to study by Josef Shalev et al⁷, intrauterine adhesions were seen in 13.8% of infertile women by hysteroscopy. On TVS one patient with synechiae was missed but was later found to have adhesions on hysteroscopy i.e. transvaginal sonography has accuracy of 75% in our study.

Two of our patients were found to have submucosal fibroids by hysteroscopy i.e. prevalence of 4%. According to study by Rafael Valle⁸, submucous fibroid were seen in 7.8% of the patients. Both these patients were diagnosed to have fibroids on TVS i.e. TVS has an accuracy of 100% in diagnosis submucous fibroids.

Both TVS and Hysteroscopy were 100% sensitive and specific in diagnosis of retained products of conception our study.

Congenital Septum were seen in two of 50 patients on hysteroscopy. Taylor and Cumming⁹ found 1 Septum on study of 68 women. At this time, MRI is study of choice for diagnosis of congenital uterine septum. TVS in our study

accurately diagnosed the cases of congenital septum.

Two of our patients were found to have cornual block on hysteroscopy both the patients had normal TVS scans. i.e. TVS is not modality of choice to diagnose the cornual blocks. According to study by Finikoitis¹⁰, Hysteroscopy was performed on 126 infertile women and on 73 fertile women revealed a significant association between abnormal uterine cornual ostia and infertility.

In our study 15 patients were found to intrauterine abnormality on hysteroscopy. TVS demonstrated intrauterine pathology in twelve of the cases while it yielded 3 false negative results. It also yielded one false case of false positive result (thickened irregular endometrium) which was later found to be normal hysteroscopy. The accuracy TVS for individual diagnosis of polyps, synechiae, fibroid, congenital septum, retained product of conception and cornual blocks was 75% , 75%, 100% , 100%, 100% and 0% respectively.

Conclusion

Hysteroscopy has been the gold standard investigation for evaluation of uterine cavity, but this is invasive procedure, that requires expertise. TVS is a cost-effective modality that has high sensitivity and specificity in diagnosing various intrauterine pathologies except cornual blocks. It can be concluded that TVS should be the first line of investigation in all infertile women to rule out any uterine abnormality while hysteroscopy should be reserved for limited number of patients where operative procedure is contemplated.

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