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EVALUATION OF HYSTEROSCOPIC FINDINGS IN INFERTILE WOMEN AND ITS CORRELATION WITH SUBSEQUENT IMPLANTATION RATE: A RETROSPECTIVE STUDY AT TERTIARY CARE HOSPITAL

Obstetrics & Gynaecology

Meena Bhati Salvi* Assistant Professor, Department of Gynaecology & Obstetrics at NIMS Medical College, Jaipur, Rajasthan *Corresponding Author

Vidya V Bhat Consultant Obstetrician & Gynaecologist, Director Radhakrishna Multispeciality Hospital and IVF Centre Bangalore, Karnataka

ABSTRACT

Background: Hysteroscopy offers diagnostic accuracy and the ability to treat uterine pathology simultaneously. Our aim is to evaluate the hysteroscopic findings in women with primary or secondary infertility and to assess their subsequent implantation rate after correction in one year of follow up period. **Methods:** A retrospective and descriptive study was conducted on 153 women with history of primary or secondary infertility over a period of one year from January to December 2019 and follow up was done till next 1 year at Radhakrishna multispeciality hospital and IVF Centre, Bangalore, Karnataka. All 153 women underwent hysteroscopy either diagnostic or operative wherever indicated, to evaluate the cervical and uterine pathologies. Normal and abnormal findings were noted and analysed. Incidence of normal and abnormal hysteroscopic findings and subsequent implantation rate were assessed till next one year. Reproductive outcome were evaluated in the forms of spontaneous pregnancy, ovulation induction, IUI or IVF pregnancy. **Results:** Out of 153 patients, 87 (56.86 %) patients had abnormal findings. The majority of which was identified as endometrial polyps. Others were hyperplastic endometrium, myoma, septum, adhesions and endometritis. Total 34 (22.22 %) out of 153 women became pregnant following hysteroscopy. 22 pregnancies, (25.28%) occurred in women with corrected endometrial pathology after abnormal findings. Out of 22 pregnancies, 12 women conceived spontaneously, 9 women after ovulation induction, 1 after IUI . **Conclusions:** hysteroscopy improved the implantation rate. Hysteroscopy and appropriate therapy significantly increased the chances of achieving a subsequent pregnancy.

KEYWORDS

Hysteroscopy, Infertility, Endometrial Polyp, myoma, ovulation induction, intrauterine insemination (IUI).

INTRODUCTION

Approximately 15% of couples are affected with subfertility, of which up to 20% remain unexplained. Uterine cavity abnormalities can be a contributing cause of subfertility and recurrent implantation failure.[1] Intrauterine pathologies are present in 25% of infertile patients.[2] Transvaginal ultrasonography, hysterosalpingography, saline infusion sonography and hysteroscopy could be used as tools to evaluate the uterine cavity.[3]

Transvaginal ultrasound is a first line diagnostic tool in infertile patients but it is demonstrated that in normal ultrasound findings still pathology of possibly importance for the reproduction is detected at hysteroscopy.[4] Filling defects and partial failure of mullerian ducts can be suspected, but not always proven by hysterosalpingography. Hysteroscopy can diagnose much more precisely, compared with HSG and even transvaginal ultrasonography, small intrauterine lesions that might affect fertility.[5]

Diagnostic hysteroscopy is currently considered to be the gold standard for the evaluation of the endometrial cavity. Hysteroscopy allows direct visualization of the cervical canal, shape of uterine cavity, vascular pattern and endometrial lining. It detects multiple lesions and subtle uterine abnormalities that cannot be identified by the previous techniques.

It can detect fibroids, endometrial polyps, Asherman's syndrome, foreign bodies, uterine anomalies like septate uterus, bicornuate uterus, arcuate uterus, unicornuate uterus contributing to infertility.

It also helps in detecting abnormalities of cervix like cervical stenosis or polyps and aids in the visualization of tubal ostia thereby detecting lesions of uterotubal junction.[6]

The major advantage of the hysteroscopic evaluation is the information on the accessibility of the cavity, important for insemination or embryo transfer and the direct visualization of the endometrium and the cavity form.[7]

So the hysteroscopy can be considered gold standard in modern techniques with advantage of patient compliance, safety, time saving and effective in older couples. It provides complete and accurate uterine diagnosis in one step and simultaneously allows endometrial tissue sampling under direct view with major advantage of therapeutic correction of any abnormality detected in same setting as a one time approach.

Our aim is to evaluate the unrecognized major or subtle uterine abnormalities with use of diagnostic hysteroscopy which can contribute to infertility or recurrent IVF failures and after correction their subsequent pregnancy outcome in primary or secondary infertile patients.

METHODS

This retrospective study was based on the analysis of the medical records of all patients that underwent hysteroscopy by the same operator due to a history of infertility. This study was conducted at Radhakrishna Multispeciality hospital and IVF Centre, Bangalore, a tertiary care hospital from January 2019 to December 2019. Patients who came to our outpatient department with complains of infertility were included in this study. Patients characteristics i.e. age, parity, type of infertility were noted. One hundred and fifty-seven patients with history of primary or secondary Infertility underwent hysteroscopy. Diagnostic hysteroscopy carried out after written informed consent including minimal therapeutic interventions if required. Hysteroscopy was performed with 5 mm hysteroscope using vaginoscopy technique to evaluate the endometrial cavity and surgical corrections were done wherever needed. Normal and abnormal hysteroscopic findings were noted and Incidence of subsequent implantation rates were assessed.

Inclusion criteria

Women with primary or secondary infertility who gave consent for hysteroscopy.

Exclusion criteria

- Active pelvic infections
- Medical disorders which are contraindication for anaesthesia.

A detailed clinical history was taken from the patients i.e. age, parity, type of infertility, menstrual history, other symptoms, previous treatment and husband semen analysis. Following a complete general examination, per abdomen, pelvic examination and transvaginal ultrasound was performed. Before hysteroscopy routine infertility investigations were performed. After hysteroscopy, results were analysed and follow up of patients was done for subsequent pregnancy till one year.

RESULTS

Out of 153 patients included in the study, 119 (77.77%) presented with primary infertility and 34 (22.22%) presented with secondary infertility (Table 1).

Table 1: Distribution of patients according to type of infertility

Type of infertility	No.	(%)
Primary	119	77.77
Secondary	34	22.22
Total	153	100

In our study the highest number of overall infertility cases were found to be in 26-30 years of age group (37.90%) followed by 31-35 years (32.67%) , and <25 years (16.99%). Lowest number of cases belonged to age group >35 years (12.41%). We found in our observation that in <25 years age group, primary infertility cases (21%) were significantly more than secondary infertility (2.94%) while in older age group of >35 years secondary infertility cases (26.47%) were more than primary infertility cases (8.40%) (Table 2).

Table 2: Distribution of patients according to age and type of infertility

Age groups (in years)	Primary Infertility	Secondary Infertility	Total (%)
<25	25 (21%)	1 (2.94%)	26 (16.99)
26-30	46 (38.65%)	12 (35.29%)	58 (37.90)
31-35	38 (31.93%)	12 (35.29%)	50 (32.67)
>35	10 (8.40%)	9 (26.47%)	19 (12.41)
Total	119	34	153 (100)

Abnormal hysteroscopic findings, including cervical, uterine, endometrial and ostial abnormalities were observed in 87 of 153 patients (56.86%). 66 patients (43.13%) did not have any uterine pathology on hysteroscopy. On analysis of abnormal findings, 20 (13%) patients had abnormal findings in more than one parameter on hysteroscopy. Summing up, 56.86% patients had abnormalities on hysteroscopy (Table 3).

Table 3: Distribution of hysteroscopic findings in infertile patients

Hysteroscopic Findings	Number of cases	Percentage
Normal	66	43.13%
Abnormal	87	56.86%
Total	153	100%

Out of 87 patients who had abnormal findings, 7 patients had cervical abnormalities on hysteroscopy. 5 (5.74%) patients presented with cervical stenosis, 1 (1.14%) patient with endocervical adhesion and 1 (1.14%) patient with cervical pedunculated polyp (Table 4).

Table 4: Hysteroscopic findings of infertile patients in endocervical canal

Cervix	Number of cases	Percentage (N=87)
Cervical stenosis	5	5.74%
Cervical adhesions	1	1.14%
Cervical polyp	1	1.14%

Uterine cavity was examined by hysteroscopy in all the patients and findings were tabulated. Most common abnormality found in the uterine cavity was endometrial polyp (20.68%) followed by submucous myoma (12.64%). Other findings were partial or complete septum (10.34%), intrauterine adhesions (8.04%), small cavity uterus (4.59%), arcuate (4.59%), unicornuate (2.29%), bicornuate (1.14%) and T shaped uterus (1.14%) (Table 5).

Table 5: Hysteroscopic findings of infertile patients in uterine cavity

Uterine cavity	Number of cases	Percentage (N=87)
Polyp	18	20.68%
Myoma	11	12.64%
Septum	9	10.34%
Adhesions	7	8.04%
Hypoplastic Uterus	4	4.59%
Arcuate Uterus	4	4.59%
Unicornuate Uterus	2	2.29%
Bicornuate Uterus	1	1.14%
T shaped Uterus	1	1.14%

Uterine cavity followed by endometrial abnormalities were the most common hysteroscopic abnormalities in our study (Table 5, 6). 12.64% patients had hyperplastic endometrium on hysteroscopy. Polypoid endometrium was found in 6.89% patients, Hypoplastic endometrium was found in 4.59% patients. 8.04% patients had chronic endometritis (Table 6).

Table 6: Hysteroscopic findings of infertile patients in endometrium

Endometrium	Number of cases	Percentage (N=87)
Hyperplastic	11	12.64%
Polypoid	6	6.89%
Hypoplastic	4	4.59%
Endometritis	7	8.04%

Both the ostia were examined during hysteroscopy. 1 (1.14%) patient had unilateral ostial block and 4 (4.59%) patients had bilateral ostial block (Table 7).

Table 7: Hysteroscopic findings of infertile patients in ostia

Ostia	Number of cases	Percentage (N=87)
U/L Block	1	1.14%
B/L Block	4	4.59%

After 1 year follow up 12 patients conceived out of 66 patients who had normal findings on hysteroscopy. Out of 87 patients who had abnormal findings 22 patients conceived after correction of abnormality. Overall percentage of conception rate (25.28%) was more in those patients who had some pathologies and hysteroscopic correction was done (Table 8).

Table 8: Conception rate after Hysteroscopy

Hysteroscopic finding	Number of cases	Conception	Percentage
Normal	66	12	18 %
Abnormal	87	22	25.28%
Total	153	34	22.22%

When we analysed the type of conception in patients of normal hysteroscopic findings, 10 patients had spontaneous, 1 patient after ovulation induction & timed intercourse and 1 patient conceived after IUI while in abnormal findings 12, 9 and 1 patient respectively (Table 9).

Table 9: Types of conception in normal and abnormal hysteroscopic findings

Hysteroscopic finding	Spontaneous Conception	OITI conception	IUI conception	Total
Normal	10	1	1	12
Abnormal	12	9	1	22

(Table 10) shows pregnancy rate in various abnormal hysteroscopic findings after intervention. Maximum no of patients got pregnant (4.59%) after correction of endometrial pathology (hyperplastic) followed by myoma & polyp removal (3.44%), followed by septum resection, cavity enhancement & adhesiolysis treatment. Patients also conceived after tubal cannulation in U/L tubal block, small cavity correction, removal of polypoidal endometrium and correction of unicornuate uterus & treatment of endometritis.

Table 10 : Conception in women of abnormal hysteroscopic findings after intervention

Hysteroscopic Abnormality	Pregnancy	Percentage (N= 87)
U/L block	1	1.14
Hyperplastic endometrium	4	4.59
Polypoidal Endometrium	1	1.14
Endometritis	1	1.14
Pedunculated Polyp	1	1.14
Myoma	3	3.44
Septum	2	2.29
Polyp	3	3.44
Small cavity	1	1.14
Adhesions	2	2.29
Arcuate uterus	2	2.29
Unicornuate uterus	1	1.14

DISCUSSION

Hysteroscopy should be a part of the basic routine investigation of women to evaluate uterine cavity and correct uterine cavity abnormalities to potentially improve pregnancy rates. A prospective randomized study demonstrated that hysteroscopy should be a basic tool for first line infertility investigation to evaluate uterine cavity abnormalities, because detection and treatment of intrauterine lesions by office hysteroscopy can improve the pregnancy outcome.[8]

In Present study, out of 153 infertile patients, 77.77% (119) presented

with primary infertility and 22.22% (34) presented with secondary infertility. It was comparable with studies conducted by Nayak KP et al [9], Nikita G [10] and Nayana D.H.et al.[11] The highest number of overall infertility cases were found to be in 26-30 years of age group (37.90%). Primary infertility was prevalent in less than 30 years and secondary infertility between 26 to 35 years similar to other studies.[11,12]

During hysteroscopy, first the endocervical canal was examined. Cervix was primed by tablet misoprostol 400 mg given 3 hours prior to the procedure. Cervix was visualized and entered through vaginoscopy approach without cervical dilatation. The endocervical canal followed by uterine cavity; endometrium and finally bilateral ostia were examined. All the findings were then tabulated. 56.86% patients had abnormal and 43.13% had normal findings on hysteroscopy. Our findings were similar to other studies done by Nikita et al.[10] and pinar et al.[13] in which abnormal findings were 47% and 44.9% respectively.

On hysteroscopy endometrial polyp was the commonest abnormal finding (20.68%) followed by myoma (12.64%), septum (10.34%), Intrauterine adhesions (8.04%), endometritis (8.04%), polypoid endometrium (6.89%), cervical stenosis (5.74%) and hypoplastic uterus, arcuate uterus, B/L tubal block (4.59%).

Similar to our study endometrial polyp was the commonest abnormality found in study by Zhang E et al (39.9%)[14], Pinar et al (25%)[13], Nayana et al (11.1%)[11] and Elbareg AM et al (10%)[15].

The second most common abnormality in present study was myoma (12.64%) which is similar to other studies done by Puri S et al (8%)[16] and Nikita et al (8%).[10] In studies done by Nikita et al myoma (8%), followed by endometrial polyp (7%), hyperplastic endometrium and cervical stenosis (6%) was abnormal finding. These findings are almost similar to our findings.

In our study total 34 patients conceived after hysteroscopy. 12 (18%) in normal hysteroscopic findings and 22 women (25.28%) became pregnant following hysteroscopic correction of pathology. Overall pregnancy rate was more in women with abnormal findings which was similar to study done by Evangelos et al.[17] and Pinaar et al.[13] In study done by Pinaar et el. 45.34% and 51.4% patients became pregnant in normal and abnormal findings respectively. Evangelos et al. found in study that Hysteroscopy and appropriate therapy significantly increased the chances of achieving a subsequent clinical and ongoing pregnancy.[17]

After one year of follow up we found that spontaneous, OITI and IUI conception were more common in abnormal findings which were corrected compared to normal findings which is similar to other studies.[18,19] In the study done by Aisha et al. the overall pregnancy rate in the treated women within one year of follow up was 46%. Several studies have reported the success of treatment of subtle uterine abnormalities on the chance of natural conception as well as after IVF cycles.[18]

Reproductive outcomes of 87 patients affected by one or more uterine pathologies were evaluated. Maximum no. of patients got pregnant (4.59%) after correction of endometrial pathology (hyperplastic) followed by myoma & polyp removal (3.44%), followed by septum resection, cavity enhancement & adhesiolysis treatment. Our findings were similar to other studies done by Aisha et al.,[18] Benito et al.[19] and Emaduldin et al.[20] It has been suggested that intrauterine abnormalities such as fibroid ,synechia or polyps, may have a negative impact on uterine receptivity and thereby the likelihood of achieving an ongoing pregnancy.[18] Several studies demonstrated that Hysteroscopic correction of the uterine abnormality including endometrial polyps, submucous fibroids, intrauterine adhesions and uterine septum improves the spontaneous pregnancy rates.

CONCLUSION:

Hysteroscopy is a one stop new approach for ensuring normal intrauterine cavity, diagnosing pathology and correcting obvious and subtle abnormality. With appropriate surgical intervention in case of intrauterine abnormality it can improve the implantation rate. So it should be recommended in all infertility patients to achieve good pregnancy outcome.

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