



## THE ROLE OF HYSTEROSCOPY IN INFERTILITY - AN OBSERVATIONAL STUDY AT A TERTIARY HEALTH CARE SET UP

### Obstetrics & Gynaecology

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|---------------------------|-----------------------------------------------------------------------------------------------------------------------------|
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### ABSTRACT

**Background:** Infertility is a disease defined by the failure to achieve a pregnancy after 12 months or more of regular, unprotected sexual intercourse. Infertility affects millions of couples worldwide. As there is rise thus there has been a constant effort to redefine our diagnostic and treatment modality for these patients. Most clinicians believe that initial infertility workup must include evaluation of the uterine cavity and many investigators consider hysteroscopy as gold standard for the same. It is however a fact that it is not widely used for initial workup of infertile women by majority of the care givers. We want to evaluate the role of hysteroscopy in detection of uterine factors associated with infertility. **Material and methods:** A prospective observational study carried out in the Department of Obstetrics and Gynaecology of KEM Hospital. 90 infertile women were selected as study sample after considering the inclusion and exclusion criteria. **Results:** It was possible to get a panoramic and magnified view of endocervical canal, uterine cavity, cornu and ostia. Several uterine factors could be seen in many primary and secondary infertility cases. Most common pathologies detected were polyps, sub-mucous myomas, septum, cornual fibrosis and intrauterine adhesions. **Conclusions:** The initial evaluation of any infertile women should include diagnostic hysteroscopy which will accurately find out the intrauterine factors causing infertility and subsequently can improve the results of treatment

### KEYWORDS

Infertility, Initial Workup, Uterine Factors, Hysteroscopy

### INTRODUCTION

Infertility is defined as the failure to establish a clinical pregnancy after 12 months of regular, unprotected sexual intercourse, due to an impairment of an individual's capacity to reproduce either alone or with his or her partner (1). According to a recent paper describing the prevalence of infertility in 195 countries from 1990 to 2017, there is an increase of 14.962% (2). Infertility is a condition with great psychological and emotional impacts. It is looked upon as a life crisis which makes couple feel helpless and depressed

To evaluate the correct diagnosis is the aim for the gynaecologist. Though we are very much aware of the factors leading to inability to conceive and they are female factors (60 %), male factors (25%) and about 15 % are unexplained factors. We have various investigations like semen analysis, follicular study, serum progesterone, ultrasonography and laparoscopy for tubal patency. However these methods are not able to evaluate the uterine cavity. Uterine factors associated with infertility include endometrial polyps, leiomyomas, Müllerian anomalies or synechiae (3). Intrauterine lesions can interfere with spontaneous fertility, being common in infertile women (40–50%). Furthermore, these lesions can compromise pregnancy rates in assisted reproduction. Traditionally hysterosalpingography was done to evaluate uterine cavity, in last two decades, hysteroscopy is emerging as a novel and promising tool for uterine pathologies (4). Even hysteroscopy helps to detect various intrauterine pathologies that were missed in sonography. It has various benefits like direct evaluation of inside of the uterine cavity, availability and safety. As a result it is gaining acceptability. Hysteroscopy is a quick, safe and well-tolerated procedure which permits direct visualization of the cervical canal and the uterine cavity, enabling accurate localization of pathologies, targeted sampling of lesions and precise correction of intrauterine defects. The advent of hysteroscopy in Gynaecological practice has revolutionised the approach towards management of intrauterine disease especially in patients with infertility, which constitute a major proportion of patients attending the outpatient department (OPD). Since early 1990s, hysteroscopy has evolved into a procedure which is technically less painful and invasive, with more and more procedures now performed in an ambulatory setting (office hysteroscopy). It can be combined with laparoscopy as a single procedure as a diagnostic modality.

This study aims to evaluate the role of diagnostic hysteroscopy as a basic tool for investigation for cases of primary and secondary infertility

### MATERIAL AND METHODS:

#### Study population:

Included in this retrospective study were 90 women who had undergone hysteroscopy as part of their infertility workup in our outpatient clinic between March 2018 and March 2019. Of these 57 women were diagnosed with primary and 33 with secondary infertility. Medical records were used for all relevant data.

#### Hysteroscopy:

Hysteroscopy was performed to evaluate the presence of intrauterine pathologies. A detailed explanation of the procedure was given by the operating surgeon and all women signed an informed consent before undergoing the procedure. Diagnostic hysteroscopy was performed as an OT procedure using a 2.3 mm diameter continuous flow endoscopy. Distension of the uterine cavity was accomplished with normal saline solution. The procedure was considered complete only when the entire uterine cavity and both tubal ostia were visualised. Uterine anomalies were diagnosed according to American society of reproductive medicine classification.

#### Sample size:

Sample size was calculated by using software epiinfo in which stat calc was used. It was performed using the Fisher's exact test. Any result of  $p < 0.05$  was considered significant.

### OBSERVATIONS & RESULTS

Hysteroscopy was performed on 90 infertile women, 57 were cases of primary infertility and 33 were cases of secondary infertility. Findings of infertility workup were documented.

**Table No. 1-** Indication of hysteroscopy in 90 infertile women

| Primary infertility<br>no (%) | Secondary infertility<br>no (%) | Indication                    |
|-------------------------------|---------------------------------|-------------------------------|
| 46                            | 21                              | As part of infertility workup |
| 11                            | 12                              | Before IVF cycle              |
| 0                             | 0                               | After > 6 failed IVF cycle    |
| 57                            | 33                              |                               |

**Table No. 2-** Distribution of cases according to age

| Age in years | Primary | Percentage | Secondary | Percentage |
|--------------|---------|------------|-----------|------------|
| 20-24        | 18      | 31.58      | 4         | 12.12      |
| 25-29        | 15      | 26.31      | 8         | 24.24      |

|       |    |       |    |       |
|-------|----|-------|----|-------|
| 30-34 | 14 | 24.56 | 15 | 45.46 |
| 35-40 | 10 | 17.55 | 6  | 18.18 |
| Total | 57 | 100   | 33 | 100   |

Out of 90 cases 57 cases were cases of primary infertility and 33 cases were cases of secondary infertility. Majority of cases with primary infertility belonged to the age group of 20-24 years and that of secondary infertility belonged to 30-34 years age group.

**Table No. 3** Distribution of cases according to type of infertility

| Type of Infertility   | Number | Percentage |
|-----------------------|--------|------------|
| Primary infertility   | 58     | 64.45      |
| Secondary infertility | 32     | 35.95      |
| Total                 | 90     | 100        |

**Table No 4-Hysteroscopic findings vs type of infertility**

| Hysteroscopic findings          | Primary infertility | Secondary infertility | Total |
|---------------------------------|---------------------|-----------------------|-------|
| Normal hysteroscopic findings   | 14                  | 2                     | 16    |
| Abnormal hysteroscopic findings | 45                  | 30                    | 75    |
| Total                           | 58                  | 32                    | 90    |

On correlating hysteroscopic findings with type of infertility,  $p = 0.048$ , found to be significant on applying chi square test.

There exists a statistically significant relationship between hysteroscopic findings and type of infertility.

**Table No 5-Hysteroscopic findings in 90 infertile women**

| Findings                      | Primary Infertility | Secondary infertility | P value |
|-------------------------------|---------------------|-----------------------|---------|
| Normal uterine cavity         | 41                  | 22                    | NS      |
| Abnormal intrauterine finding | 16                  | 11                    | NS      |
| Acquired finding              | 9                   | 6                     | NS      |
| Submucous fibroid             | 0                   | 5                     | <0.01   |
| Endometrial polyp             | 6                   | 1                     | NS      |
| Intrauterine adhesions        | 2                   | 0                     | NS      |
| Cervical polyp                | 1                   | 0                     | NS      |
| Congenital malformation       | 6                   | 7                     | NS      |
| Arcuate uterus                | 1                   | 6                     | <0.02   |
| T-shape uterus                | 0                   | 0                     | NS      |
| Unicornuate uterus            | 2                   | 1                     | NS      |
| Bicornuate /Septate uterus    | 2                   | 1                     | NS      |
| Uterus didelphys              | 1                   | 0                     | NS      |
| Total                         | 57                  | 33                    |         |

In the current study, 90 infertile women undergoing infertility evaluation 33 % had Abnormal uterine finding on hysteroscopy. Most common hysteroscopic finding encountered was endometrial polyp at 7.77%, followed by arcuate uterus at 6.6 % On correlating hysteroscopic findings with type of infertility, p value was found to be significant on applying chi square test for endometrial polyp and arcuate uterus.

There exists a statistically significant relationship between hysteroscopic findings and type of infertility.

**Table No 6 -Type of infertility vs cause of infertility**

| Type of infertility          | Uterine cause | Non – uterine cause | Total |
|------------------------------|---------------|---------------------|-------|
| Primary infertility (N=58)   | 16(59.26%)    | 41 (65.08%)         | 57    |
| Secondary infertility (n=32) | 11 (40.74%)   | 22(34.92%)          | 33    |
| Total                        | 27(100)       | 63(100)             | 90    |

Uterine cause was the most common cause of infertility amongst the patients with primary infertility at 59.26% complications during and after the procedure

| Complications      | Total Number | Percentage |
|--------------------|--------------|------------|
| Pain lower abdomen | 11           | 12.22      |

|                         |    |       |
|-------------------------|----|-------|
| Bleeding PV             | 3  | 3.33  |
| Pyrexia                 | 1  | 1.11  |
| Backache                | -  | -     |
| Nausea and Vomiting     | 1  | 1.11  |
| Fainting attack         | -  | -     |
| Parietal emphysema      | -  | -     |
| Injury to bowel         | -  | -     |
| Uterine perforation     | -  | -     |
| Anesthesia complication | -  | -     |
| Total                   | 16 | 17.77 |

There was no major complication in any of the women who underwent the procedure. Minor complication like mild bleeding PV, lower abdominal pain, transient fever and nausea and vomiting were seen in 17 cases. Difficulties encountered were minimal which included one case with rigid cervix, three cases were negotiation of scope was difficult due to acute anteversion of uterus, four cases with secondary infertility with cervical tear resulting in back flow of normal saline, two cases of poor visualization issues due to adhesions and one case of false passage due to undiagnosed deviated uterus.

## DISCUSSION

One of the important steps to evaluate in infertility is to assess the shape and regularity of the uterine cavity. All acquired lesions hampers infertility by interfering with proper embryo implantation and growth. Similarly congenital uterine malformation delays natural conception. The most commonly accepted definition of infertility is that of the International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of assisted reproductive technology (ART), which describes infertility as 'a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.

A multitude of tools are available in our armamentarium for diagnosing cases and determining cause of infertility in women. Of these, hysteroscopy is considered the gold standard in diagnosing intrauterine pathology, including endometrial polyps, submucous myomas, intrauterine adhesions and uterine septa. Hysteroscopy can diagnose much more precisely, compared with HSG and even transvaginal ultrasonography, small intrauterine lesions that might affect fertility.

The most common age group encountered was <30 years old at 63%. This was similar to observation seen in study of Ahmed K et al(5).

33 percent of infertile women had abnormal uterine findings on hysteroscopy. This result is similar to those of the other studies stating 43% to 69 % of infertile patients have a normal uterine cavity. No significant difference in the rate of uterine pathology was found between women of primary and secondary infertility which was 28 % and 31 % respectively.(6-8)

In our study, mostly cases of secondary infertility had cases of arcuate uterus ( $p<0.02$ ) and submucous fibroid ( $p<0.04$ ). It is similar to study done by Moty et al.(9)

In our study the rate of complication was 17.7 % which was comparable to the study done by Nayak CR et al. There are no serious complications noted in the study. Majority of cases with primary infertility belonged to the age group of 20-24 years and that of secondary infertility belonged to 30-34 years age group. This observation is comparable to a study done by C R Nayak et al.(10)

While debating the need for routine diagnostic hysteroscopy in the evaluation of the infertile woman, one must keep in mind that this procedure today is no longer a complicated "in-patient-general-anaesthesia one," but rather a simple, fast, outpatient procedure, requiring short training with high success rates.

## CONCLUSION

In our study it is quite obvious that uterine pathologies are quite common in infertile women. These pathologies are easily and accurately diagnosed by hysteroscope. The procedure is with minimal invasion. The greatest advantage is the direct visualisation and magnification of cervical canal, uterine cavity, cornu and ostia. Two decades back endoscopy was not included in the initial workup of

infertile women. Today no investigation profile for infertility is complete without endoscopy.(11)Diagnostic hysteroscopy allows complete, accurate identification of intrauterine abnormalities that might negatively affect endometrial receptivity and implantation. It is superior to hysterosalpingography (12).It can be preformed in combination with laparoscopy. besides, it has also got the therapeutic benefit because many intrauterine lesions can be treated simultaneously in the same sitting(13,14).

It should be offered as first-line diagnostic tool for evaluating uterine abnormalities in patients infertility. Hence ,we conclude that the initial workup of infertile women should include hysteroscopy along with other basic investigations like semen analysis, ovulation study and tubal patency test. The usefulness of this novel diagnostic procedure must be accepted so that we can pass it on to the next generation at large. We strongly recommend to practice hysteroscopy in all cases of primary and secondary infertility.

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