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ORIGINAL RESEARCH

Hysteroscopy as a tool for detection of uterine factors in fertility therapy

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ABSTRACT

Introduction: Infertility contributes to a major social burden resulting in divorce, loss of economic resources and even annulment to burial rights in some cultures. Uterine factors contribute to a part of causal factors for female infertility. Hysteroscopy is considered as gold standard for detection of intrauterine pathology as it can detect abnormalities missed by the conventional methods. **Methods**: Study was done at SMGS Hospital after obtaining ethical clearance over a period of one year on 50 infertile patients who gave consent to participate and fulfilled the inclusion criteria. Diagnostic and therapeutic Hysteroscopy was done and suitable data was collected. **Results**: Primary infertility was found in most of the patients and the mean age was 25to 29 years. Majority of the patients with secondary infertility had previous LSCS(37.5%).Most common hysteroscopic finding was endometrial polyp (14%) followed by septum(8%).Therapeutic procedure was done in 24% of subjects with polypectomy as the most common procedure in 14% subjects. **Conclusion**: Hysterosalphingography has been used as the initial screening tool for evaluation of uterine factors of female infertility. Because of high false positive yield, it has been superseded by hysteroscopy which acts as diagnostic and therapeutic method at the same time in many conditions affecting implantation such as submucus fibroids, endometrial polyps, adhesions, uterineseptae and sometimes even cornual fallopian tube adhesions.

Keywords: Infertility, Hysteroscopy

INTRODUCTION

Infertility contributes to a major social burden resulting in divorce, loss of economic resources and even annulment of rights to burial grounds in some cultures [1]. Female factors contribute to 40-45% in etiology of causal factors. Anovulatory disorders, tubal factors, endometriosis, uterine factors and cervical factors are the most common factors responsible for female infertility [3].

Conventional way to assess uterine cavity, tubal structure and tubal patency was hysterosalphingography but it has now been largely superseded by laparoscopy and hysteroscopy.

For evaluation of uterine cavity, basic work up consists of TVS (transvaginal sonography) with or without use of saline or gel as contrast media, followed by hysterosalphingography or hysteroscopy. TVS or SIS(saline infusion sonography) diagnose subtle intrauterine abnormalities [4].TVS can't detect endometritis, synechiae and differentiate polyp from fibroid. HSG reveals congenital and acquired uterine abnormalities but all intrauterine pathologies like polyp, myoma, synechiae or septae appear as same lining defect on HSG.SIS shows somewhat similar diagnosis. Hysteroscopy detects multiple lesions that cannot be detected by previous methods and enables treatment in the same sitting. Thus, hysteroscopy is considered as gold standard for diagnosis of intrauterine pathology. Office hysteroscopy is recommended by WHO when USG or HSG suggest intrauterine anomaly or there is IVF failure [5]. Even when no abnormality was revealed on TVS, SIS or HSG, still hysteroscopy revealed pathologies in 18-25% patients undergoing IVF [6,7]. ESHRE indicated that endometrial scratchings appear to increase chance of pregnancy in couples trying to conceive [8,9]. Indications of hysteroscopy for infertility include abnormal hysterosalphingograpghy, abnormal transvaginal sonography, abnormal saline infusion sonography, abnormal uterine bleeding, suspected intrauterine pathology, uterine anomalies, unexplained infertility and recurrent pregnancy loss.

MATERIALS AND METHODS

The prospective observational study was conducted in the department of Obs and Gynae at SMGS hospital, GMC Jammu over a period of one year from October

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2019 to October 2020 after obtaining clearance from the ethical committee.

INCLUSION CRITERIA

1. Women with primary or secondary infertility
2. Women with failed ovulation induction
3. Abnormal findings in HSG

EXCLUSION CRITERIA

1. Active pelvic infections
2. Couples with male infertility

Relevant parameters were recorded in a set proforma. Detailed clinical history was taken and complete clinical investigations and examination were done.

History of age at menarche, regularity and duration of cycles, dysmenorrhea, history of prior contraception use, previous endometriosis, leiomyomas, STD's or Pelvic Inflammatory Disease was asked for. All pre anesthetic check up investigations were sent along with serum AMH, FSH, ESR, Mantoux and TVS. The procedure was done in follicular phase of menstrual cycle post menstruation (ACOG and AAGL guidelines).

All the patients in the inclusion criteria were kept nil per oral 24 hours prior to the procedure after obtaining informed consent. They were given pre operative antibiotics and asked to prepare part and bowel by proctolyticenema. Misoprostol 600 microgram was administered per vaginally 6 hours prior to the procedure.

PROCEDURE

Patient was put in lithotomy position. Perineum was cleaned, painted and draped. Sim's speculum was introduced to visualize cervix. Anterior lip of cervix was held with vulsellum. Hysteroscope was assembled and checked for clarity of image. Hysteroscope was introduced into the cervix. Cervix was serially dilated with Hegar's dilator if the cervix didn't negotiate. Once hysteroscope got fixed at the os, distension media flow in the form of normal saline at pressure less than 1200 mm Hg was started. Uterine cavity was visualized in systematic manner. Panoramic view of two ostia was visualized. Then anterior, posterior and lateral walls were visualized. Any abnormal finding was documented. Operative procedure was performed if needed. Finally the instruments were removed under direct vision.

RESULTS

Table 1 Distribution of patients as per type of infertility

Type of infertility	Number	Percentage
Primary Infertility	34	68
Secondary Infertility	16	32
Total	50	100

68% were primary infertility and 32% were secondary infertility.

Table 2 Age distribution of study patients

Age in years	Number	Percentage
20-24	12	24
25-29	16	32
30-34	15	30
>35	7	14
Total	50	100

Mean age in years was 28.9+-4.96(22-43years).Majority of the patients belonged to the age group of 25 to 29 years.

Table 3 Menstrual history of study patients

Menstrual history	Number	Percentage
Regular cycles	36	72
Irregular cycles	7	14
Heavy cycles	7	14
Total	50	100

Majority of the patients had regular cycles(72%).

Table 4 Obstetric History in secondary infertility

Obstetric History	Number	Percentage
Previous LSCS	6	37.5
Vaginal delivery	5	31.3
Previous miscarriage	5	31.3
Total	16	100

In present study, majority of the patients with secondary infertility had history of previous LSCS(37.5%)

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Table 4 Hysteroscopic findings of study patients

Hysteroscopic findings	Number	Percentage
Partial septum	2	4
Septate uterus	2	4
Endometriosis	2	4
Endometrial polyp	7	14
Submucus fibroid	3	6
Fibrosed cavity	3	6
Cervical stenosis	1	2
Fluffy endometrium	1	2
Normal findings	29	58
Total	50	100

Most common intrauterine finding on hysteroscopy was endometrial polyp seen in 14% of the study subjects, followed by septum in 8 % of the patients. No finding was detected in 58% of the subjects. Hysteroscopy detected findings in 42% of the subjects.

Table 5 Operative procedure performed in study subjects

Procedure	Number	Percentage
Diagnostic	38	76
Septal resection	4	8
Polypectomy	7	14
Cervical dilatation	1	2
Total	50	100

Majority of the patients underwent diagnostic hysteroscopy (76%) followed by polypectomy in 14% of the patients.

DISCUSSION

In our study, hysteroscopy was done in follicular phase which is consistent with ACOG Committee opinion [10]. False tubal blocks are less likely in post menstrual phase as valve like action of endometrial growth at the cornual end does not occur. But usual time for endoscopy is one week post ovulatory so that tubal patency and ovulation status can be checked at the same time. Office hysteroscopy is always done in follicular phase to obtain maximum visualization and therapeutic hysteroscopy is better done in luteal phase when vascularity is somewhat decreased[10].

In our study, it was found that primary infertility (68%) is more common than secondary infertility (32%). These findings are consistent with findings by Kavitha G (2019) which stated that primary infertility was present in 83% and secondary infertility was present in 17% of study patients [11]. Nagareshi et al.,(2016) supported primary infertility in 70%and secondary infertility in 30%.[12]

Age is an important factor in infertility. Majority of the patients (32%) lie in the age group of 26-30 years which is consistent with Sharma et al (2016)which was 61% followed by 31-35 years which is 33% in our study and 25 % in study by Sharma et al [13]. There is a relationship between female age and infertility. As per ASRM 2014a,8% cases of infertility are found in age of 20-29 years,14.6% in 30-34 years, 21.9% in 35-39 years,28.7% in 40-44 years of age. This loss is due to decrease in quantity and quality of oocyte as non dominant follicles undergo atresia throughout woman's reproductive lifespan. Also, the risk of genetic abnormaities in oocyte increases as woman ages.

In our study, 72% of the patients had regular menses followed by irregular menses in 14% and heavy menstrual bleed in 14%. These results are in accordance with Godinjak Z et al where 60% patients had regular cycles followed by irregular cycles in 36% and heavy menstrual bleed in 14% [14]. As far as obstetric history is concerned, 37.5% of the patients had history of previous lscs, 6 had history of vaginal delivery (31.3%) and 31.3% had history of previous abortion. These results are totally in agreement with Jirange et al where 83.34% had previous LSCS, 31.3% had previous vaginal delivery and 31.3% had previous miscarriage. Prior conception indicates ovulation and patent tube in past.

In the present study, endometrial polyp was found to be the most common finding on hysteroscopy (14%) followed by septum which was seen in 8% of the study patients. This was in accordance to Zhang et al, where 39.39% had endometrial polyp followed by septum in 9.09% of the study subjects[15].

The incidence of asymptomatic endometrial polyp in women with infertility has been reported in range from 10% to 32% as per Shalev J et al. Symptoms include intermenstrual or post coital bleeding. A prospective study of 224 infertile women who underwent hysteroscopy showed 50% pregnancy rate after polypectomy [17] .Hysteroscopic removal of polyps in women with unexplained infertility may increase their chance of becoming pregnant [18].One study suggests that removal of small polyp less than 1 cm improves pregnancy rates following IUI[19].

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Most experts suggest removal of endometrial fibroids if endometrial cavity is significantly distorted. Complications include pelvic adhesion formation and Asherman syndrome if large submucus fibroid is removed. Also cesarean delivery is recommended if full thickness is cut. Treatment of Asherman syndrome is lysis of scar tissue on hysteroscopy.

Sidky I concluded that routine hysteroscopy does not improve live birth rates in infertile women with a normal TVS of uterine cavity. Women with normal TVS should not be offered routine hysteroscopy [20].

CONCLUSION

Hysterosalphingography remains the initial screening tool for evaluation of uterine factors of female infertility. Because of high false positive yield, it has been superseded by hysteroscopy which acts as diagnostic and therapeutic method at the same time in many conditions affecting implantation such as submucus fibroids, endometrial polyps, adhesions, uterine septae and sometimes even proximal cornual blocks. Performed with hysterosalphingography, it adds to precision of evaluation of uterine cavity for factors affecting fertility along with their treatment.

ABBREVIATIONS

ACOG: American College of obstetrics and gynecology
AAGL: American Association of Gynecologic Laparoscopists
ASRM: American Society for reproductive medicine
ART: Artificial Reproductive Technology
IUI: Intrauterine insemination
IVF: In vitro fertilization

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