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Original Research Article

Role of hysteroscopy for diagnosis and treatment of uterine factors affecting subfertility

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ABSTRACT

Background: Hysteroscopy has become the gold standard for diagnosis of intrauterine abnormalities. Intrauterine lesions such as adhesions, uterine septum polyps or submucous myomas are diagnosed much more precisely by hysteroscopy and are detectable in 10-15% of women seeking treatment for subfertility. The present study analyses various etiological factors in infertility diagnosed by hysteroscopy and to evaluate therapeutic interventions done during hysteroscopy.
Methods: The cases for the study will include all women with primary or secondary infertility admitted in tertiary health centre from April 2016 to May 2018 for hysteroscopy.
Results: Out of 90 subjects 66 (73.3%) were primary infertility and 24 (26.7%) were secondary infertility. Out of 90 cases studied, 68 (75.6%) had normal findings, 10 (11.1%) had endometrial polyps, 01 (1.1%) had submucous fibroid, 5 (5.6%) had septate uterus, hyperplastic endometrium in 3 (3.3%) and atropic endometrium in 1 (1.1%), intrauterine adhesions and hypoplastic uterus in 1 each. Hysteroscopic interventions were performed in the form of curettage in 08 (33.3%), hysteroscopic cannulation in 2 (8.3%), polypectomy and septal resection in 5 (20.8%) cases each, submucosal fibroid resection in 1 (4.2%) cases, tubal block released in 2 (8.3%).
Conclusions: Hysteroscopy was found the best method in evaluation of intrauterine conditions for subfertility and also the type and location of uterine abnormalities can be precisely noted. The removal of those changes during operative hysteroscopy increases the fertility rate in women treated during this procedure.

Keywords: Endometrial polyps, Hysteroscopy, Infertility, Subfertility

INTRODUCTION

One of the most important and underappreciated reproductive health problems in developing countries is the high rate of infertility. The inability to procreate is frequently considered a personal tragedy and a curse for the couple, impacting severely on the entire family.

Infertility affects about 10-15% of reproductive age couples. Although the prevalence of infertility is believed to have remained relatively stable during past 40 years, the demand for evaluation and infertility treatment has increased.[1,2] Majority of pelvic pathology is frequently not well appreciated by routine pelvic examinations and the usual diagnostic procedures. Hysteroscopy becomes the "third eye" of the gynaecologist in diagnosis of infertility. visualising the uterine cavity and identifying the possible pathology has made hysteroscopy an equally important tool in infertility evaluation. Hysteroscopy has become the gold standard for diagnosis of intrauterine abnormalities. Small intrauterine lesions such as adhesions, polyps or submucous myomas are diagnosed much more precisely by hysteroscopy. Hysteroscopy is considered a minimally invasive approach which can be used for analysis and treatment of numerous intrauterine and endocervical problems. The advantage of this method

is the direct view and simultaneous intervention. Hence, Hysteroscopy is an effective and safe tool in comprehensive evaluation of infertility.

METHODS

This cross-sectional study was done for period of two years in department of Obstetrics and Gynecology in tertiary care hospital from April 2016 to May 2018.

Study design: diagnostic study; sample size: 90.

Inclusion criteria

- Women with primary or secondary infertility admitted in hospital for hysteroscopy.

Exclusion criteria

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

Prior to commencement of the study, ethical clearance was obtained from Human Ethics Committee. A total of 90 women aged between 18-40 years with primary or secondary infertility willing for the infertility workup were included in study. A detailed medical history was taken in all cases. This was followed by a detailed medical examination and relevant examination of the husband.

Patients satisfying the selection criteria were informed in detail about the nature of study and a written informed consent was obtained prior to procedure. After admission demographic data such as age, religion, education, socio-economic status was obtained. A detailed history and clinical examination were done.

The schedule of investigations done to determine fitness for surgery. Patient was admitted one day prior to the procedure and pre-anaesthetic checkup was done. Hysteroscopy was scheduled in pre-ovulatory period between day 5 to day 10 of cycle for infertility evaluation after informed consent.

Hysteroscopy was done under general anaesthesia after the opinion of the anaesthetist. In hysteroscopy, uterine cavity was examined for the presence of septum, any congenital malformation, fibrotic bands, polyps, myomas, endometrial appearance, thickness and color. Endocervical canal was visualized for any growth or polyps. Both the tubal ostia were visualized.

Surgical interventions were carried out whenever required during the procedure such as hysteroscopic interventions such as intrauterine adhesiolysis, hysteroscopic polypectomy, hysteroscopic septal resection, endometrial curettage, cannulation, hysteroscopic submucosal fibroid resection etc. was carried out. Patient was kept for a period of 24 hours in the hospital post-operatively.

RESULTS

Out of 90 subjects 66 (73.3%) were primary infertility and 24 (26.7%) were secondary infertility.

Table 1: Distribution according to age and type of infertility in the study subjects.

Age group (in years)	Primary infertility (%)	Secondary infertility (%)	Total
≤25	29 (78.4)	08 (21.6)	37 (41.1)
26-30	23 (67.6)	11 (32.4)	34 (37.8)
31-35	10 (66.7)	05 (33.3)	15 (16.7)
>35	04 (4.4)	0	04 (4.4)
Total	66 (73.3)	24 (26.7)	90 (100)

In 68 (75.6%) cases, the duration of infertility was less than 5 years. Amongst 68 cases primary infertility were 58 (85.3%) and secondary infertility were 10 (14.7%). In 18 (20.0%) cases, the duration of infertility was from 6 to 10 years. Amongst 18 cases primary infertility were 06 (33.3%) and 12 (66.7%) were with secondary infertility. In 04 (4.4%) case, the duration of infertility was from 10 to 15 years where 02 (50.0%) was with primary infertility 02 (50.0%) was with secondary infertility. Mean duration of infertility in primary infertility group is 3.77±2.52 years and in secondary infertility group is 6.17±2.51 years.

Findings on hysteroscopy

Out of 90 cases studied, 68 (75.6%) had normal findings, 10 (11.1%) had endometrial polyps, 01 (1.1%) had submucous fibroid, 5 (5.6%) had septate uterus, hyperplastic endometrium in 3 (3.3%) and atropic endometrium in 1 (1.1%), intrauterine adhesions and hypoplastic uterus in 1 each.

Table 2: Distribution according to hysteroscopy in the study subjects.

Hysteroscopy	Number	Percentage
Normal	68	82.2
Endometrial polyps	10	11.1
Endometrium hyperplastic	03	03.3
Atropic endometrium	01	01.1
Hypoplastic uterus	01	01.1
Partial septum present	05	05.6
Submucous fibroid	01	01.1
Intrauterine adhesions	01	01.1
Total	90	100.0

Hysteroscopic interventions were performed in the form of curretage in 08 (33.3%), hysterocopic cannulation in 2 (8.3%), polypectomy and septal resection in 5 (20.8%) cases each, submucosal fibroid resection in 1 (4.2%) cases, tubal block released in 2 (8.3%).

Table 3: Distribution according to hysteroscopic interventions in the study subjects.

Hysteroscopic interventions	Number	Percentage
Diagnostic	66	66.6
Curettage	08	8.8
Hysteroscopic cannulation	02	2.2
Polpectomy	05	5.5
Septal resection	05	5.5
Submucosal fibroid resection	01	1.1
Tubal block released	02	2.2
Adhesiolysis	01	1.1
Total	90	100.0

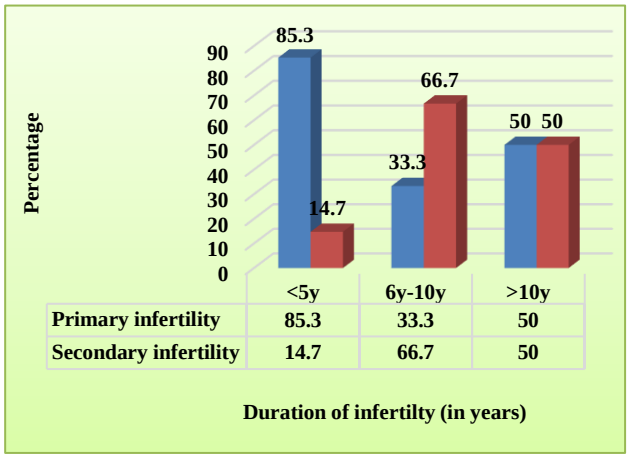

Figure 1: Bar diagram showing the distribution according to hysteroscopic interventions in the study subjects.

DISCUSSION

Present study was cross-sectional study done for period of two years in department of Obstetrics and Gynecology in a tertiary care centre from April 2016 to May 2018. Following conclusions are derived from hysteroscopy study of 90 cases of infertility were drawn:

Table 4: Type and duration of infertility and mean age of infertility.

Type of infertility	Primary	Secondary
Puri S et al[3]	24 (48%)	26 (52%)
Zhang E et al[4]	71 (53.8%)	61 (46.2%)
Elbareg AM[5]	130 (65%)	70(35%)
Present study	66 (73.3%)	24 (26.7%)

In present study out of 90 subjects 66 (73.3%) were primary infertility and 24 (26.7%) were secondary infertility which is comparable to study by Elbareg AM et al.[5] Boricha YG et al, primary infertility was prevalent between the age group of 21 to 25 years, 15 cases (42.85%) and secondary infertility between age group 26 to 35 years, 6 cases (40%) respectively.[6]

Present study showed mean age of primary infertility is 27.00±5.31 years, and that of secondary infertility was 27.79±3.38years which is comparable to study by Kore S et al where most of the women were between 25-30 years. Mean duration of infertility in primary infertility group is 3.77±2.52 years and in secondary infertility group is 6.17±2.51 years. This shows increased incidence of diagnostic methods leading to increased incidence and also awareness of infertility problem.

In Zhang E et al study the patients in secondary infertility group were elder compared to primary infertility group (30.15±4.54 vs 32.84±5.25 years) when compared to present study the subjects were younger compared to other studies.[4]

Obstetric history in secondary infertility

In study by Dhont N 13% of women in secondary infertile relationships were nulliparous, 70% had not more than one pregnancy and 44% had no living children.[7] In present study out of 24 cases of secondary infertility, more than half the secondary infertility group had previous history of miscarriage.

Table 5: Hysteroscopic findings.

Study (hysteroscopic findings)	Nayak PK et al[8]	Zhang E et al[4]	Elbareg et al[5]	Vaid K et al[9]	Present study
Intrauterine adhesions	1 (<01%)	3.79%	14%	23 (11.91)	1 (1.1%)
Polyps	16 (05%)	39.9%	10%	8 (4.14%)	10 (11.1)
Submucous fibroid	8 (03%)	0.76%	4%	4 (2.07%)	1 (1.1%)
Septum	29 (10%)	9.09%	-	5 (2.59%)	5 (5.6%)
Endometrial abnormality	6 (02%)	-	3%	7 (3.62%)	4 (4.4%)
Small uterus	0	0	-	3 (1.55%)	1 (1.1%)

The commonest hysteroscopic uterine cavity abnormality was endometrial polyp seen in 10%. The same is observed in studies done by Zhang E et al, Nayak PK et al and Elbareg AM et al. The second most common hysteroscopic uterine cavity abnormality in present study was septate uterus which was similar to study by Nayak

PK et al where septate uterus was found at higher incidence of 10% in their study.

In study by Elbareg AM et al significant hysteroscopy findings were noted in 50% of cases, in present study significant findings were noted in 24.4 %. In present study diagnostic hysteroscopy was performed in 66 patients (73.3%) and operative hysteroscopy in 24 patients. Various interventions were done as follows:

Table 6: Hysteroscopic interventions.

	Singh R et al[13]	Vaid K et al[9]	Present study
Curettage	17%	-	8 (8.8%)
Hysteroscopic cannulation	06%	8 (4.14%)	2 (2.2%)
Polpectomy	07%	10 (5.18%)	5 (5.6%)
Septal resection	-	4 (2.07%)	5 (5.6%)
Submucosal fibroid resection	-	-	1 (1.1%)
Tubal hydrotubation	-	-	2 (2.2%)
Adhesiolysis	08%	20 (10.36%)	1 (1.1%)
Metroplasty	-	1 (0.51%)	-

Endometrial polyps and infertility: polypectomy

Śpiewankiewicz et al conducted a retrospective study of 78 patients, a pregnancy rate of 78.3% was noted after polypectomy compared to a pregnancy rate 42.1% in patients with normal uterine cavities. Similarly, El-Shafei et al reported natural conception rates 50% after resection of endometrial polyps.[10-12] It has been associated with increased miscarriage rates, but there is no evidence of lower pregnancy rates (Bozdag et al, Pundir and Toukhy).[13]

A recent Cochrane review tried to assess the effect of hysteroscopic polypectomy on the results of intrauterine insemination (IUI). Apparently, the hysteroscopic removal of polyps prior to IUI increases the odds of clinical pregnancy compared to diagnostic hysteroscopy and polyp biopsy only.[14] In present study polypectomy was done in 5.55% cases which is comparable to study by Vaid K et al.

Uterine anomalies and infertility: resection of septum and metroplasty

Similar to present study, studies conducted by Godinjak Z et al, Puri S et al, Jasmina et al showed that most common uterine pathology found in hysteroscopy was septate uterus and many of times uterine anomalies which are undiagnosed by prior ultrasonography is picked up by hysterolaproscopy.[3,15]

De Franciscis et al enrolled 44 women with uterine septae and otherwise unexplained infertility. In the 12 months of follow-up, 38.6% of septal resection patients spontaneously conceived.[16]

Homer et al compares reproductive performance before and after hysteroscopic metroplasty; the overall results show an impressive improvement in fertility after surgery. However, in present study septal resection was done in 5.5 % and metroplasty was not done in any case.[15-17]

Fibroids and infertility: myomectomy

Bosteels et al performed review in order to examine efficacy of hysteroscopic removal of submucous fibroids. For a fibroid of 4 cm, there was a marginally benefit from myomectomy when compared with expectant management.[18] In present study hysteroscopic submucosal fibroid removal was done in 1.1% for a fibroid of 2-3 cm.

Tubal block and infertility: tubal cannulation and hydrotubation

Tubal cannulation: Hou Y et al included 168 women of which 107 (63.7%) had bilateral proximal obstruction and 61 (36.3%) had unilateral obstruction. The successful recanalization rate was 54.2% per tube and 61.9% per patient. Also, there was significant improvement in the pregnancy rate later.[19]

In present study tubal cannulation was performed hysteroscopically in 2 (2.2%) cases out of 90 cases, compared to Keya et al where hysteroscopic cannulation was performed in 8%.[9]

Hydrotubation: Another method for tubal block release is hydrotubation. In study conducted by Adesiyun AG they analyzed that 250 patients had hydrotubation. Over 7.5 years they found that with good case selection, therapeutic hydrotubation may be beneficial in resource poor countries.[20] In present study tubal block was released by hydrotubation in 2.22 %.

CONCLUSION

Hysteroscopy was found the best method in evaluation of intrauterine conditions for subfertility and also the type and location of uterine abnormalities can be precisely noted. Performing hysteroscopy as "one time approach" in the assessment of female infertility caused due to uterine pathology, helps in diagnosing of certain factors causing infertility, which cannot be diagnosed by any other method such as by USG, HSG and reveals whether surgery is possible and if so the nature of surgery most suited for the patient also sometimes corrective surgery can be performed simultaneously at same time . At first glance, hysteroscopy may appear to be costlier, invasive, but in the long run, it will become more beneficial.

The removal of those changes during operative hysteroscopy increases the fertility rate in women treated during this procedure.

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