

# Hysteroscopic evaluation of uterine pathology in women with infertility in a tertiary care hospital

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## ABSTRACT

**Objectives:** To evaluate the efficacy of hysteroscopy in relation to histopathological examination in women with infertility in diagnosing intrauterine pathology. **Methods:** This hospital based cross sectional study was carried out at department of Obstetrics and Gynaecology, JMCH, Jorhat over a period of one year. 60 infertile women with either primary or secondary infertility were taken up for study. Hysteroscopy was performed by using 2.9mm 30<sup>0</sup> Volksman hysteroscope. Data was collected from the medical records department of the hospital and infertility register of Gynaecology OPD. **Results:** Among 60 infertile women 41 had primary amenorrhea and 19 had secondary amenorrhea. Majority of primary infertility group (41.5%) belonged to 20-25 years of age and 31.6% of secondary infertility cases presented in 31-35 years of age. 51.2% of primary infertility patients presented with 1-5 years duration and 84.2% of secondary infertility cases with 6-10 years duration of infertility. Majority (51.7%) has normal menstrual cycle and rest has irregular cycle. 18.3% has low FSH, LH, E2 which implies ovulatory dysfunction and 13.3% has hypothyroidism. Diagnostic hysteroscopy shows abnormal findings in 18 cases. Fibroid was presented in 16.7%, endometrial polyp in 5%, intrauterine adhesion in 3.3% of infertility patients. Uterine anomalies were presented in 5% cases. Among the patients, where tissue was sent for HPE after hysteroscopic diagnosis 94.1% had similar findings in HPE compared to hysteroscopy. **Conclusion:** Diagnostic hysteroscopy is a definitive daycare procedure in evaluation of infertility. It helps in the diagnosis of specific causes of infertility, which is not diagnosed by other investigations like hormonal study, USG and HSG.

**Keywords:** Infertility, hysteroscopy, Histopathological examination, fibroid, polyp.

Infertility is the inability of a couple to achieve pregnancy over an average period of one year despite adequate, regular unprotected sexual intercourse. Female infertility affects estimated 48.5 million women in the world with the highest prevalence of infertility affecting people in South-Asia, Sub-Saharan Africa, North Africa/Middle East, Central or Eastern Europe or central Asia<sup>1</sup>. According to WHO, 60-80 million couples are infertile worldwide and 10 to 15% of couple in the reproductive age are infertile<sup>2</sup>. 10% to 15% of the couples seeking treatment for infertility has aetiology related to acquired or congenital uterine abnormalities<sup>3</sup>. Therefore, one of the fundamental steps of an infertility evaluation is to assess the morphology and

regularity of the uterine cavity<sup>4</sup>. Initial investigations for female infertility include assessment of cervical, uterine, tubal and ovulatory factors.

Traditionally, uterine shape and fallopian tubes were assessed by hysterosalpingogram (HSG). However, hysteroscopy is being increasingly used for direct visualization of uterine cavity and is considered superior to HSG. Hysteroscopy is used to diagnose or treat problems of the uterus<sup>5</sup>.

Hysteroscopy indications for infertile women include intra-cavitary abnormalities, such as submucous fibroids, endometrial polyps, uterine septum, adhesions, and retained products of conception. Hysteroscopy is a valuable

Received: 3<sup>rd</sup> December 2021, Peer review completed: 30<sup>th</sup> March 2022, Accepted: 10<sup>th</sup> April 2022.

Borah SI, Sarma HK, Deka T, Chaliha B, Das S. Hysteroscopic evaluation of uterine pathology in women with infertility in a tertiary care hospital. The New Indian Journal of OBGYN. 2023; 10(1): 172-77.

diagnostic and therapeutic modality in the management of infertility. Hysteroscopy is the gold standard procedure for uterine cavity exploration. It is widely accepted that a complete infertility workup should include an evaluation of the uterine cavity also. Uterine abnormalities, congenital or acquired are implicated as one of the factors of infertility<sup>6</sup>.

**Objectives** - To evaluate the role of hysteroscopy in women with infertility to find out the intrauterine pathology. Tissue biopsy will be sent for HPE in suspected intrauterine lesion and will be followed by operative procedures, which will be carried out in case of uterine synechiae, small submucosal polyp etc.

**Materials and methods**

This hospital based observational cross sectional study was carried out in the department of Obstetrics and Gynaecology, Jorhat Medical College from June 2020 to May 2021.

**Inclusion criterias**

1. Married women in a reproductive age group coming to gynaecology OPD of JMCH with history of primary or secondary infertility will be included.
2. Women with primary and secondary infertility with normal semen analysis of husband.
3. Patient giving consent for the procedure.

**Exclusion criterias**

1. Unmarried women.
2. Recent or existing uterine infection. Cervical or uterine infection must be ruled out prior to hysteroscopy. Patients with a history of recent uterine or adnexal infection should not undergo the procedure, which could exacerbate an infection.
3. Profuse uterine bleeding. In patients with excessive uterine bleeding, dilatation and curettage are often more appropriate diagnostic and therapeutic procedures than hysteroscopy.
4. Cervical malignancy. Hysteroscopy is contraindicated for patients with cervical malignancy and is currently used only selectively for staging of adenocarcinoma of the endometrium.

After taking thorough history, clinical examination, initial assessment and all necessary investigations, patients were advised to report postmenstrually in the proliferative phase for hysteroscopy.

Diagnostic hysteroscopy performed in operation theatre by using 2.9mm Volksman hysteroscope with 30° angle and

HD camera. No prior cervical dilatation was done. All procedures were done under general anaesthesia by same surgeon. Distension of uterine cavity was achieved with normal saline by pressure bag. Three liters normal saline used as distension media. Endocervical canal followed by whole uterine cavity with all four walls and bilateral ostias were visualised. Endometrial biopsy was taken for histopathological examination under direct vision in selected cases. If any pathology like intrauterine adhesions, polyp, myoma or septa were diagnosed, operative procedure were done at the same sitting.

Data collected from the medical records department of the hospital and the Gynaecology infertility register. Statistical analysis was done by using MS Excel software. Proper statistical analysis was done wherever applicable. P value <0.01 was significant. Comparison between hysteroscopic findings and HPE reports are carried out using sensitivity, specificity, PPV and NPV values.

**Results**

Hysteroscopy was performed in 60 patients were 41 cases (68.3%) were primary infertility and 19 cases (31.7%) belong to secondary infertility (table 1).

**Table 1: Showing distribution of cases according to the type of infertility**

Type of Infertility	Number of Patients	Percentage
Primary	41	68.3%
Secondary	19	31.7%
Total	100	100%

In this study maximum patients with primary infertility are in the age group of 20-25 years. And maximum of patients with secondary infertility are in the age group of 31-35 years.

**Table 2: Showing distribution of cases according to the age group**

Age in years	Primary infertility		Secondary infertility		Total	
	Number of patients	%	Number of patients	%	Number of patients	%
20-25	17	41.5%	2	10.5%	19	31.7%
26-30	12	29.3%	2	10.5%	14	23.3%
31-35	8	19.5%	6	31.6%	14	23.3%
36-40	3	7.3%	5	26.3%	8	13.3%
>40	1	2.4%	4	21.1%	5	8.4%
Total	41	100%	19	100%	60	100%

Totally 23(38.3%) cases with 1-5 years, 35(58.3%) cases 6-10 years, 2(3.3%) cases >10 years came with infertility. Majority of the patients in primary infertility presented with the duration of 1-5 years (21) and in secondary infertility (16) cases belongs to 6-10 years.

In the study, 30(73.2%) of primary infertility group found to have normal BMI, 6(14.7%) have obesity, and 5(12.2%) are underweight. 10(52.7%) of secondary infertility group have normal BMI (table 3). (21.7%) have obesity and 2(11.6%) are underweight.

**Table 3: Showing the distribution of cases according to BMI**

BMI	Primary infertility		Secondary infertility		Total	
	Number of patients	%	Number of patients	%	Number of patients	%
Normal	30	73.2%	10	52.7%	40	66.7%
Overweight	6	14.7%	7	36.9%	13	21.7%
Underweight	5	12.2%	2	13.3%	7	11.6%
Total	41	100%	19	100%	60	100%

In the study, majority of the patients in primary infertility (24) group found to have regular menstrual cycle and majority of the patients with secondary infertility (12) has irregular menstrual cycle. 51.7% of all patients in this study have regular menstrual cycle. Out of 41 primary infertility patients 30 has normal per vaginal findings and out of 19 secondary infertility 10 has normal PV findings, 8 patients of both primary and secondary infertility has bulky uterus, 3 patients with primary infertility has adnexal mass and 1 patient with secondary infertility has adnexal mass (table 5).

**Table 4: Showing distribution of cases according to obstetric history**

Obstetric history	Number of patients	%
Vaginal delivery	7	36.9%
Caesarean delivery	3	15.7%
Previous one miscarriage	1	5.3%
More than one miscarriage	8	42.1%
Total	19	100%

**Table 5: Showing the distribution of cases according to per vaginal findings**

PV findings	Primary infertility		Secondary infertility		Total	
	Number of patients	%	Number of patients	%	Number of patients	%
Normal	30	73.2%	10	52.7%	40	66.7%
Bulky uterus	8	19.5%	8	42.1%	16	26.6%
Adnexal mass	3	7.3%	1	5.3%	4	6.7%
Total	41	100%	19	100%	60	100%

Majority of patients in both primary and secondary infertility group have normal blood investigation 27 and 14

**Table 6: Showing distribution of cases according to the USG findings**

USG findings	Primary infertility		Secondary infertility		Total	
	Number of patients	%	Number of patients	%	Number of patients	%
Normal	21	51.2%	10	52.6%	31	51.7%
PCOS	10	24.4%			10	16.6%
Ovarian cyst	3	7.3%	1	5.3%	4	6.7%
Fibroid uterus	4	9.8%	8	42.1%	12	20%
Endometrial polyp	3	7.3%	0		3	5%
Total	41	100%	19	100%	60	100%

**Table 7: Showing distribution of cases according to the hysteroscopic findings of uterus**

Uterus in hysteroscopy	Primary infertility		Secondary infertility		Total	
	Number of patients	%	Number of patients	%	Number of patients	%
Normal	32	78%	8	42.1%	40	66.7%
Fibroid	4	9.8%	8	42.1%	12	20%
Endometrial polyp	3	7.3%			3	5%
Intrauterine adhesions			2	10.9%	2	3.3%
Septate uterus	2	4.9%	1	5.3%	3	5%
Total	41	100%	19	100%	60	100%

respectively. 9 patients in primary infertility group and 2 in secondary infertility group has low FSH, LH, E2.5 patients in primary and 3 patients in secondary infertility group has hypothyroidism.

Among the primary infertility group the most common abnormal USG finding is PCOS 10 (24.4%), and in secondary infertility group, fibroid is most common 8 (42.1%) (table 6). Abnormal hysteroscopic findings, fibroid uterus is most common in both primary and secondary infertility patients. 3 patients with primary infertility has endometrial polyp. 2 patients with secondary infertility have intrauterine adhesions. A total of 3 patients has septate uterus (15%) (table 7). In selected cases where hisptopathological examination was done and results were compared with hysteroscopic findings. 8 patients of both primary and secondary infertility had similar results in both hysteroscopy an HPE , and one patient with seconday infertility hysteroscopic finding varied with HPE. In case of majority of the patients (60%) time taken for procedure was 5-10 minutes.

The table 9 explains hysteroscopic findings were comparable with the gold standard HPE findings.

## Discussion

There may be differences between the findings of various studies which could be explained by the type of hysteroscopic distension medium and/or hysteroscopic technique used, modifying the surgeon's perception of

**Table 8: Showing final diagnosis of patients after hysteroscopy and HPE examination**

Final diagnosis	Primary infertility		Secondary infertility		Total	
	Number of patients	%	Number of patients	%	Number of patients	%
PCOS	10	24.3%	0		10	16.7%
B/L tubal block	8	19.5%	0		8	13.3%
U/L tubal block	1	2.4%	1	5.3%	2	3.3%
Fibroid	5	12.2%	6	31.6%	11	18.3%
Endometrial polyp	3	7.3%	1	5.3%	4	6.7%
Ovarian cyst	3	7.3%	1	5.3%	4	6.7%
Uterine synechiae	0		2	10.6%	2	3.3%
Septate uterus	2	4.9%	1	5.3%	3	5%
Unexplained	3	7.3%	7	36.8%	10	16.7%
Ovulatory dysfunction	6	14.6%	0		6	10%
Total	41%	100%	19	100%	60	100%

**Table 9: Comparison of hysteroscopic findings with the HPE findings**

True positive	3
False negative	1
False positive	1
True negative	10
Sensitivity	75%
Specificity	91%
PPV	75%
NPV	91%

intrauterine filling defects<sup>7</sup>. Results could also be influenced by the characteristics of the population: age of the population, hormonal status, ethnic factor, type of infertility (primary or secondary) and indications for hysteroscopy.

It is difficult to draw direct correlations between hysteroscopic findings and benefits from a specific treatment method based on those findings. Treatments for few common abnormalities are suspected beneficial in infertile women. These are mostly intrauterine adhesions, congenital uterine malformations, endometrial polyps, and uterine myomas<sup>8</sup>.

It is hard to comment on does abnormal hysteroscopic findings, by guiding infertility treatments, increase pregnancy rates. In our study we founded abnormal hysteroscopic findings in 33.3% of the infertile women which could be related to infertility and benefit from a specific treatment. La Sala et al suggest hysteroscopy as a routine examination in infertile woman because it would be economically advantageous, in terms of costs of assisted reproductive technology<sup>9</sup>. The result of our study is compared with others studies.

In the present study out of 60 cases of infertility, primary infertility is 68.3% and secondary infertility is 31.7%. Similar result was found in Jain N et al<sup>10</sup> and in Manisha Bajaj et al<sup>11</sup>. In Jain N et al among 100 women with an age range of 20-48 years, 46% women were of age < 30 years while 54% women were of age ≥ 30 years. The mean age was 30.01 ± 5.48 years. The women with secondary infertility group were elder (31.1 ± 6.8 years) as compared to women with primary infertility (29.7 ± 5.01 years).

In Manisha Bajaj et al<sup>11</sup>, out of 105 patients, majority (76.19%) belonged to 25 - 35 years age group followed by >35 year age group with 14.29% women. Mean age of presentation was 29.95 years. Chitta Ranjan Nayak et al<sup>12</sup> found that majority of women with primary infertility belonged to the age group of 20-24 years and that of secondary infertility belonged to 30-34 years age group.

In our present study, majority (41.5%) of the patients with primary infertility was in the age group of 20-25 years. While in secondary infertility group, 31.6% belonged to the age group of 31-35 years. Present study shows primary infertility group more commonly present with 1-5 years duration (51.2%) and secondary infertility present with 6-10 years duration (84.2%). In Manisha Bajaj et al<sup>11</sup> study majority of the patients (57.14%) reported less than 5 years of infertility. Mean duration of infertility was 4.74 years. 69 (65.71%) were diagnosed with primary infertility while 36 (34.29%) had secondary infertility.

Duration of infertility in the study of Chitta Ranjan Nayak et al<sup>12</sup> was 1-3 years in majority of the patients (41.66%).

In USG findings, Nafeesa Binti Hussain et al<sup>13</sup> has found fibroid and polyp cases in 24% of patients which is similar to our study, whereas M Hrehorcak et al<sup>14</sup> has found uterine anomaly in 44% of the cases. Percentage of PCOS in present study is similar to M Hrehorcak et al but the percentage of PCOS is very high in study by Nafeesa Binti Hussain et al.

In the present study submucous fibroid 9.8% in primary infertility and 31.6% in secondary infertility is the most common pathology detected by hysteroscopy, it causes distortion of the endometrial cavity and implantation failure. Endometrial polyp presents in 7.3%, uterine anomalies 5%, intrauterine adhesion 3.3% of cases.

Uterine anomalies which was undiagnosed by prior USG and other routine investigations also can be diagnosed during diagnostic hysteroscopy. Uterine anomalies usually causes recurrent pregnancy loss and infertility and pregnancy

outcome dramatically improved after surgical correction in these patients. In a study carried out by Jain N et al<sup>10</sup> intrauterine adhesions are most common abnormal finding in their study. Godinjak Z et al<sup>15</sup> found endometrial polyp in 7.22%, Parveen S et al<sup>16</sup> found uterine anomalies in 12.9% are the most common causes detected in hysteroscopy. Similar to Godinjak et al in our study we found similar results in percentage of uterine anomaly and endometrial polyp.

The percentage of intrauterine adhesions in infertility cases in our study is almost same to the study of Parveen S et al<sup>16</sup>. Another study by Chitta Ranjan Nayak<sup>17</sup> stated, the most common pathology found was intrauterine adhesions.

### Conclusion

From our study, it is concluded that the diagnostic hysteroscopy is an effective and safe tool in evaluation of female infertility. It provides direct and magnified view inside uterus. Diagnostic hysteroscopy is a definitive daycare procedure in evaluation of infertility. It helps in the diagnosis of specific causes of infertility, which is not diagnosed by other investigations like hormonal study, USG and HSG. It is an acceptable and feasible procedure, because it has the benefit of shorter hospital stay, less to none post operative complications and quick return of routine activity. In our study, as hysteroscopy was able to detect uterine pathology efficiently we can come to a conclusion that hysteroscopy is a gold standard procedure in evaluation of uterine pathology and a unavoidable tool in management of female infertility.

**Conflict of interest:** None. **Disclaimer:** Nil.

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