

# Combined Hysteroscopy for the Diagnosis of Female Infertility: a Retrospective Study of 132 Patients in China

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## ABSTRACT

**Objectives:** To evaluate the effects and safeness of combined hysteroscopy on evaluation the causes of infertility. **Methods:** This retrospective study was conducted at the Department of Gynecology (The Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, Guangdong, China) from January 2011 to April 2014. Patients aged 21–43 years with infertility were included in this study. The prevalence of different lesions was collected to analyze. **Results:** 132 infertile patients were included, 71 (53.8%) women had primary infertility and the rest 61 (46.2%) had secondary infertility. Laparoscopic abnormalities were more common than hysteroscopy abnormalities both in primary infertility group and secondary infertility group. Pelvic inflammatory disease (59.09 %) and endometriosis (29.55%) were the most common abnormalities in two groups. The most common intrauterine pathology was uterine polyps and the most common uterine malformation was uterine septum in two groups. Out of 12 patients having malformation uterus, only one was double uterus and double cervical with double vagina. There was no major surgical or anesthetic complication in any of our patients, other than mild abdominal pain. **Conclusion:** Hysteroscopy is an effective and safe tool in comprehensive evaluation of infertility to diagnosis and treat the lesions of pelvic and uterus in the same time. Hysteroscopy may be recommended as the first and final procedure for evaluation of female infertility.

**Key words:** hysteroscopy, hysteroscopy, laparoscopy, infertility.

## 1. INTRODUCTION

Infertility affects about 10-15% of reproductive age couples (1). The prevalence of infertile individuals is increasing globally. Tuboperitoneal pathology is responsible for 40-50% cases of infertility. Experience has shown that routine examination and diagnostic procedures is not enough to evaluate pelvic pathology of infertile women. The ability to observe and treatment the uterus, fallopian tubes, and ovaries during laparoscopy has made it a gold standard to evaluate pelvic pathology (2). Similarly, visualizing the uterine cavity and identifying the possible pathology has made hysteroscopy an essential part of infertility evaluation. The abnormalities of pelvic and uterus can resolved in combined hysteroscopy, such as the lesion of tubal morphology and patency, ovarian morphology, and uterine cavity abnormalities at the same time (3). Therefore, the aim of this study was to assess the effects and safeness of combined hysteroscopy on evaluation the causes of infertility.

## 2. PATIENTS AND METHODS

This retrospective study was conducted at the department of gynecology (The Third Affiliated Hospital of Sun Yat-Sen

University, Guangzhou, China) from January 2011 to April 2014. Patients between 21 and 43 years of age with infertility were included in this study. Infertility is defined as the failure of a couple to conceive pregnancy following 12 months of unprotected intercourse. Primary infertility patients were those who had never conceived before, while secondary infertile patients had at least one prior conception, irrespective of the outcome. Patients with abnormal ovulation who were treatment six cycles but failed to get a pregnancy, patients who were suspected with fallopian tube abnormalities or endometriosis or patients with unexplained infertility were suggested to do this operation. Patients with active genital infections or any contraindications to operation were excluded. Hysteroscopy was performed in early follicular phase in all the patients. The data of the prevalence of different lesions was collected to analyze.

## 3. RESULTS

Out of 132 patients, 71 (53.8%) women had primary infertility and the rest 61 (46.2%) had secondary infertility. The patients in secondary infertility group were elder compared to primary infertility group (30.15±4.54 vs. 32.84±5.25 years,

P = 0.002). Abnormalities detected in laparoscopy were more common than those in hysteroscopy both in primary infertility group and in secondary infertility group. Endometriosis and pelvic inflammatory disease were the most common abnormalities detected in laparoscopy in two groups (Table 1).

Lesions	Primary		Secondary		Total	
	n	%	n	%	n	%
Pelvic inflammatory disease	42	59.15	36	59.02	78	59.09
Endometriosis	25	35.21	14	22.95	39	29.55
Myoma	9	12.68	11	18.03	20	15.15
Polycystic ovary	4	5.63	3	4.92	7	5.30
Ovary teratoma	5	7.04	1	1.64	6	4.55
Normal pelvic	5	7.04	9	14.75	14	10.61

Table 1 Prevalence of lesions detected in laparoscopy

The most common intrauterine pathology in both the groups was uterine polyps (47.89% in primary infertility group; 29.51% in secondary infertility group). The most common uterine malformation in both the groups was uterine septum. The septate uterus had large fibrous midline septum in its cavity. Out of 12 patients having malformation uterus, only one was double uterus and double cervical with double vagina (Table 2).

Lesions	Primary		Secondary		Total	
	n	%	n	%	n	%
Myoma	1	1.41	0	0.00	1	0.76
Polyp	34	47.89	18	29.51	52	39.39
Septum	7	9.86	5	8.20	12	9.09
Synechiae	3	4.23	2	3.28	5	3.79

Table 2. Prevalence of lesions detected in hysteroscopy

There was no major surgical or anesthetic complication in any of our patients, other than mild abdominal pain.

#### 4. DISCUSSION

Hysterolaparoscopy may appear to be invasive, but it may become more beneficial, as diagnosis and therapeutic interventions can be done at the same sitting. The decisions for artificial reproductive technique can be taken in time after the evaluation of hysterolaparoscopy (4). Mettler reported that the complication rate of hysteroscopy was 1.65% (5). Monitored by laparoscopy, the complication rate of hysteroscopy declined significantly. Hysterolaparoscopy is a very safe operation. Other than mild abdominal pain, there were no major surgical or anesthetic complications in any of our patients.

Combined hysterolaparoscopy make it possible to evaluate completely and treat in the same sitting. Pelvic inflammatory disease and endometriosis is still the two major lesions found among infertility women in more than 90% reports (6, 7). Our findings in laparoscopy were similar to those of these literatures. About 30%-35% of the infertility was caused by tubal and peritoneal pathology (8). We found that the incidence of pelvic inflammatory disease was 59.09% in this study. The patients already be treated by special doctors for some cycles and have no baby before operation. This could explain why the incidence of pelvic inflammatory disease and endometriosis was higher than other studies. The gold standard technique for finding these disorders is laparoscopy, which is a good predictor of future spontaneous pregnancy in infertile couples with unexplained infertility (9). Snowden et al reported that the false

negative rate of hysterosalpingography (HSG) was 13% and the false positive rate was 16% (10). HSG and laparoscopy are the two classic methods for evaluation of tubal pathology and are complementary to each other. Although pelvic sonography and HSG are good enough to exclude gross intrauterine pathology, subtle changes need be found and treated with hysteroscopy. Hysteroscopy is good at treatment of proximal obstruction of fallopian tube and laparoscopy is good at treatment of peritubal adhesions and hydrosalpinx. Hysteroscopy and laparoscopy are the two methods for evaluation and treatment of tubal pathology and are complementary to each other (4).

Uterine pathologies were the cause of infertility in about 15% of infertile couples and were diagnosed in about 50% of infertile women (11, 12). Among all congenital uterine abnormalities, septate uterus is the most common cause associated with highest reproductive failure rate (13, 14). The incidence of asymptomatic endometrial polyps in infertile women has been reported to range from 10% to 32% (15, 16). Developmental uterine anomalies have long been associated with pregnancy loss and obstetric complications, but the ability to conceive is generally not affected. This can explained why the incidence of uterine anomalies in primary infertility group was similar to those in secondary infertility group in this study.

#### 5. CONCLUSION

Hysterolaparoscopy is an effective and safe tool in comprehensive evaluation of infertility. It is a very useful tool that can detect and treat various structural abnormalities in multiple sites like pelvis, tubes, and uterus in the same time, especially in couples with normal ovulation and sperm quality. Hysterolaparoscopy may be recommended as the first and final procedure for evaluation of female infertility.

CONFLICT OF INTEREST: NONE DECLARED.

#### REFERENCE

- Dyer SJ. International estimates on infertility prevalence and treatment seeking: potential need and demand for medical care. *Hum Reprod.* 2009; 24(9): 2379-2380.
- Yucebilgin MS, Aktan E, Bozkurt K, et al. Comparison of hydrosalpingography and diagnostic hysteroscopy in the evaluation of infertile patients. *Clin Exp Obstet Gynecol.* 2004; 31(1): 56-58.
- Nayak PK, Mahapatra PC, Mallick J, et al. Role of diagnostic hystero-laparoscopy in the evaluation of infertility: A retrospective study of 300 patients. *J Hum Reprod Sci.* 2013; 6(1): 32-34.
- Vaid K, Mehra S, Verma M, Jain S, et al. Pan endoscopic approach "hysterolaparoscopy" as an initial procedure in selected infertile women. *J Clin Diagn Res.* 2014; 8(2): 95-98.
- Mettler L, Wendland EM, Patel P, et al. Hysteroscopy: an analysis of 2-years' experience. *JLS.* 2002; 6(3): 195-197.
- Godinjak Z, Idrizbegović E. Should diagnostic hysteroscopy be a routine procedure during diagnostic laparoscopy in infertile women? *Bosn J Basic Med Sci.* 2008; 8(1): 44-47.
- Tsuji I, Ami K, Miyazaki A, et al. Benefit of diagnostic laparoscopy for patients with unexplained infertility and normal hysterosalpingography findings. *Tohoku J Exp Med.* 2009; 219(1): 39-42.
- Miller JH, Weinberg RK, Canino NL, et al. The pattern of infertility diagnoses in women of advanced reproductive age. *Am J Obstet Gynecol.* 1999; 181(4): 952-957.
- Mol BW, Collins JA, Burrows EA, et al. Comparison of hysterosalpingography and laparoscopy in predicting fertility outcome. *Hum Reprod.* 1999 May; 14(5): 1237-1242.
- Snowden EU, Jarrett JC, Dawood MY. Comparison of diagnostic accuracy of laparoscopy, hysteroscopy, and hysterosalpingography in evaluation of female infertility. *Fertil Steril.* 1984; 41(5): 709-713.
- Wallach EE. The uterine factor in infertility. *Fertil Steril.* 1972; 23(2): 138-158.
- Brown SE, Coddington CC, Schnorr J, et al. Evaluation of outpatient hysteroscopy, saline infusion hysterosonography, and hysterosalpingography in infertile women: A prospective, randomized study. *Fertil Steril.* 2000; 74: 1029-1034.
- Homer HA, Li TC, Cooke ID. The septate uterus: a review of management and reproductive outcome. *Fertil Steril.* 2000; 73(1): 1-14.
- Grimbizis GF, Camus M, Tarlatzis BC, et al. Clinical implications of uterine malformations and hysteroscopic treatment results. *Hum Reprod Update.* 2001; 7: 161-174.
- Hinckley MD, Milki AA. 1000 office-based hysteroscopies prior to in vitro fertilization: feasibility and findings. *JLS.* 2004; 8(2): 103-107.
- Shalev J, Meizner I, Bar-Hava I, et al. Predictive value of transvaginal sonography performed before routine diagnostic hysteroscopy for evaluation of infertility. *Fertil Steril.* 2000; 73(2): 412-417.