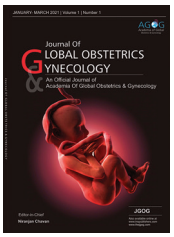
Academia of Global Obstetrics & Gynecology

Informatory Article, Recent Sdvances



Role of Hysteroscopy in Diagnosing Intrauterine Pathologies

Radhika Bhutada, Niranjan Chavan

Department of Obstetrics and Gynaecology, LTMMC and LTMGH, Mumbai, Maharashtra, India

ABSTRACT

Inspection of the uterine cavity by an endoscope inserted through the cervix is known as hysteroscopy. Hysteroscopy is considered the gold standard in visualizing intrauterine pathologies. Hysteroscopy is a minimally invasive procedure generally considered safe to perform. Over the years, hysteroscopy has played an important role in the diagnosis and treatment of intrauterine pathologies. It has various indications and benefits with few side effects. It can improve quality of life, treat infertility, remove foreign bodies, or diagnose malignancy without causing significant physical and mental burden.

Key words: Hysteroscope, diagnosis, distension media

INTRODUCTION

Inspection of the uterine cavity by an endoscope inserted through the cervix is known as hysteroscopy. It consists of introducing a rigid or flexible hysteroscope through the cervix into the uterine cavity for complete visualization of the endometrial cavity. It also involves the use of distending media which is mostly normal saline. Hysteroscopy is considered the gold standard in visualizing intrauterine pathologies.[1]

In the 20th century, hysteroscopy was first done using carbon dioxide as a distending media in 1925. In-office hysteroscopy was first performed in the early 1980s with the advancement in distension media options and operative techniques.[2] Since then, it has become routine in clinical practice. Due to recent advances in modern technology, smaller hysteroscope sizes, safe and better distending media, and various advanced instruments, hysteroscopy is the preferred modality for evaluating and treating intrauterine diseases.

INDICATIONS

Indications[3] for hysteroscopy are as follows:

- Abnormal uterine bleeding
- Infertility
- Abnormal endometrial thickening
- Postmenopausal bleeding
- Suspicion of the intracavitary lesion
- Removal of foreign bodies
- Mullerian congenital anomaly.

Whenever possible, in-office hysteroscopy is preferred because it offers many potential benefits, such as patient and surgeon satisfaction, speedy recovery, less hospital stay, decreased need for general anesthesia, and cost-effectiveness as compared to surgical options.

Correspondent Author:
Dr. Radhika Bhutada, Junior Resident, LTMMC and LTMGH, Sion, Mumbai, India. E-mail: radhu.031@gmail.com

Received: ***
Accepted: ***
DOI: ***

CONTRAINDICATIONS

Absolute

- Active pelvic infection
- Active genital herpes
- Confirmed cervical or endometrial cancer.

Relative contraindication

- Moderate vaginal bleeding
- Pregnancy (only performed to remove copper T in accidental pregnancies)
- Medical comorbidities.

Equipment

1. Hysteroscopes
   Hysteroscopes of various types and sizes are available for diagnostic and operative purposes. The two most important types are flexible and rigid hysteroscopes. They are available at viewing angles ranging from 0 to 70°. It has connections for inflow and outflow fluid tracts, a light source, and a camera

system. During the procedure, a continuous flow of distending media is needed for better evaluation of the intrauterine cavity. For operative purposes, it has an operative channel that permits the passage of surgical instruments such as small hysteroscopic graspers, scissors, or a tenaculum.

The selection of a hysteroscope is based on operative needs.

In recent times, the use of the resectoscope offers easy manipulation of electrocautery loop devices (monopolar cautery and bipolar cautery) that can be inserted into the operative scope, helping dissection through thick tissue.[4]

2. Distension medium
   From the start, adequate distension media for better visualization of the uterus has been essential to perform hysteroscopy. Distension media can be fluid or gas. Fluid distension media irrigates the cavity for better visualization. Fluid media must be carefully chosen. If electrolytes-rich fluid is used with monopolar cautery, it can cause energy spread and serious injuries to adjacent tissues. Hence, while using electrolyte-rich fluid media, such as normal saline, bipolar cautery is preferred. Carbon dioxide is only used during diagnostic hysteroscopies because bleeding with operative procedures interferes with vision.[5]
3. Other instruments
   The traditional hysteroscopic technique requires instruments for cervical dilation to enter in cervix. These instruments and materials include a Sims metal speculum, vulsellum or tenaculum, uterine sound, Hegars cervical dilators, and ring forceps. Some surgeons prefer the use of local anesthetics. Preferably 1–2% lidocaine with or without epinephrine is used. In recent times, due to vaginoscopy and the no-touch technique, there is no need for instruments apart from the hysteroscope.

PREPARATION

Preparation for hysteroscopy includes preoperative evaluation. In postmenopausal women, hysteroscopy can be performed at any time. However, if hysteroscopy is performed during the secretory phase of the menstrual cycle, it can lead to overdiagnosis of endometrial polyps since the endometrium may appear polypoidal in this phase. This is seen in premenopausal women. The use of misoprostol for cervical dilation preoperatively is neither accepted nor routinely performed.[6]

There is no need for prophylactic antibiotics.[7] A thorough history and physical examination should be performed on every patient before considering hysteroscopy. A urine pregnancy test should be performed on all premenopausal women before the procedure. Informed consent, including a discussion of risks, benefits, and complications, should always be obtained.

TECHNIQUE

1. The patient is given a lithotomy position
2. The bimanual examination should be performed
3. The bladder should be empty
4. Then, the hysteroscope is assembled, the camera is white-balanced and focused, and the inflow tract is assessed
5. In vaginoscopy, a surgeon can start directly by introducing the scope into the vagina. There is no need for traditional instruments
6. The vagina is then distended
7. The cervix and external os are identified by carefully advancing the hysteroscope. The posterior fornix is easy to identify
8. This is followed by slow and careful insertion of the hysteroscope through the internal os and its advancement into the uterine cavity
9. When a traditional technique is used, a speculum is inserted at the start of the procedure, the cervix is visualized and its anterior lip is grasped with a single-tooth tenaculum. The cervix is dilated with Hegar's dilators, after which the hysteroscope is inserted
10. Once the scope is in uterine cavity, proper visualization and inspection of the cavity is done. If any pathology is identified, the decision of whether to proceed or abort the operative intervention is to be taken. At the start of case, bilateral ostia are examined.

The most common indication for hysteroscopy is abnormal uterine bleeding.[8]

With advanced techniques, it is possible to perform various operative interventions using hysteroscopies such as uterine septoplasty, hysteroscopic adhesiolysis, removal of retained or embedded intrauterine devices, hysteroscopic polypectomy, and myomectomy.

The postprocedure recovery period is less as it is well tolerated by most women. Some common problems are vaginal spotting and discomfort which can be decreased by rest. Most of the time women can start their routine activities within 24 h of the procedure.

Following are some images that show hysteroscopic findings.

THE ROLE OF HYSTEROSCOPY IN THE EVALUATION OF ABNORMAL UTERINE BLEEDING AND INFERTILITY

Abnormal uterine bleeding is a disorder that affects a large number of women worldwide.[9] Various causes of AUB are identified and widely classified as PALM-COEIN. They are generally divided into structural and non-structural causes of AUB. It affects women's quality of life significantly, with a negative impact on their work, social, and sexual lives. Hysteroscopy helps to identify the etiology of AUB in both menstruating and postmenopausal women. Hysteroscopy is more accurate in both sensitivity and specificity for the evaluation of intrauterine pathologies when compared with other diagnostic modalities such as transvaginal ultrasound or saline infusion sonohysterography. While evaluating postmenopausal bleeding, endometrial thickness ≥4 mm is recommended to involve endometrial sampling to rule out endometrial malignancy. However, malignant pathology can be missed with blind sampling in 11% of cases, and a further 7% of cases can fail to obtain an endometrial sample. The accuracy of

diagnosis of endometrial cancer is achieved by hysteroscopic tissue biopsy. When endometrial cancer is in early stage, the risk of spread of cancerous cells through the fallopian tubes during hysteroscopy is considered non-significant because the prognosis is not altered by this.

In the evaluation of infertility, conditions that affect the endometrium and uterine cavity interfering with embryo implantation have an important role in initial diagnosis. Infertile women have more chances of intrauterine lesions than fertile women. Reproductive outcomes can be improved by the removal of submucous fibroids and endometrial polyps. At present, hysteroscopy plays an important part in evaluating and treating uterine factor infertility.[10]

Figures 1-3 depict the hysteroscopic appearance of Normal endometrium, Unilateral Ostia and Septate uterus respectively.

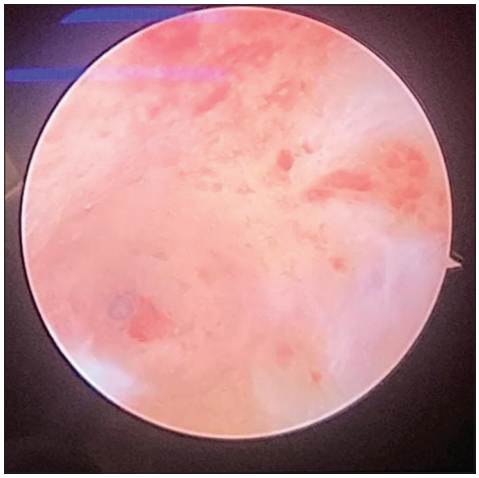


Figure 1: Normal endometrium

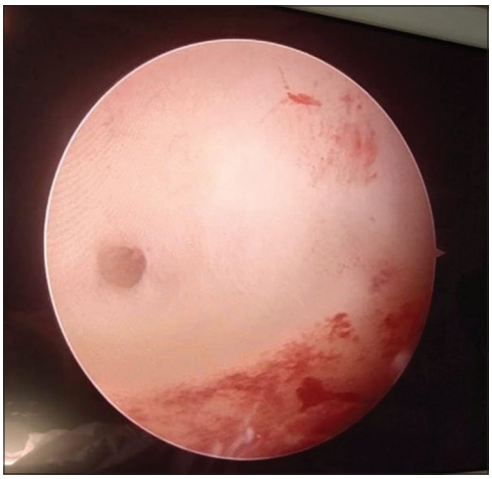


Figure 2: Unilateral ostia seen

COMPLICATIONS

Hysteroscopy is a minimally invasive procedure generally considered safe to perform. However, it also has complications that can be avoided with an experienced surgeon and proper precision.

1. Uterine perforation
   Uterine perforation is a commonly reported complication of both diagnostic and operative hysteroscopy. It can occur at any point during the procedure.[11] However, it is more common with resection extending into the uterine myometrium.
2. Fluid overload
   The fluid deficit is the quantity of fluid that the patient is absorbing into their circulation. The risk of water intoxication and hyponatremia resulting in cerebral edema, especially when electrolyte-free hypotonic solutions are used should be kept in mind while calculating fluid deficit. Table 1 shows the maximum allowed fluid deficit of distension media.
   With a bipolar system, electrolyte-rich isotonic fluid, such as normal saline is used.[12] In general, bipolar systems have less risk of fluid overload.
3. Embolism
   When carbon dioxide embolism is used as the distending media, it can cause embolism. This complication can be proven fatal due to the potential for cardiac failure.[13]

CLINICAL SIGNIFICANCE

Over the years, hysteroscopy has played an important role in the diagnosis and treatment of intrauterine pathologies.[14] It has various indications and benefits with few side effects. It can improve quality of life, treat infertility, remove foreign bodies, or diagnose malignancy without causing significant physical and mental burden.[15]

Table 1: Distension media with a maximum allowed fluid deficit

Distension media	Healthy women	Women with comorbidities
Isotonic	2500 mL	1000 mL
Hypotonic	1000 mL	750 mL

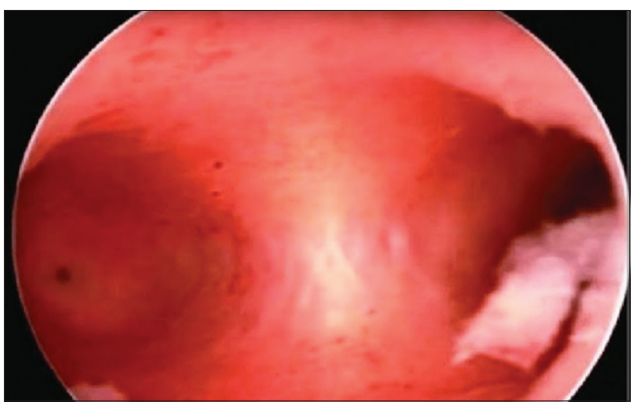


Figure 3: Septate uterus

CONCLUSION

This concludes, hysteroscopy has evolved as a gold standard procedure for the diagnosis and treatment of intrauterine abnormalities and has replaced the need for invasive procedures for diagnosis when performed by an experienced gynaecologist.

REFERENCES

1. Marlow JL. Media and delivery systems. Obstet Gynecol Clin North Am 1995;22:409-22.
2. Chapa HO, Venegas G. Vaginoscopy compared to traditional hysteroscopy for hysteroscopic sterilization. A randomized trial. J Reprod Med 2015;60:43-7.
3. Yen CF, Chou HH, Wu HM, Lee CL, Chang TC. Effectiveness and appropriateness in the application of office hysteroscopy. J Formos Med Assoc 2019;118:1480-7.
4. Roy KK, Lingampally A, Kansal Y, Bharti J, Kumar S, Vanamail P, *et al*. A pilot study comparing hysteroscopic adhesiolysis by conventional resectoscope versus mini-resectoscope. Oman Med J 2017;32:492-8.
5. Pellicano M, Guida M, Zullo F, Lavitola G, Cirillo D, Nappi C. Carbon dioxide versus normal saline as a uterine distension medium for diagnostic vaginoscopic hysteroscopy in infertile patients: A prospective, randomized, multicenter study. Fertil Steril 2003;79:418-21.
6. Polyzos NP, Zavos A, Valachis A, Dragamestianos C, Blockeel C, Stoop D, *et al*. Misoprostol prior to hysteroscopy in premenopausal and post-menopausal women. A systematic review and meta-analysis. Hum Reprod Update 2012;18:393-404.
7. ACOG Practice Bulletin No. 195: Prevention of infection after gynecologic procedures. Obstet Gynecol 2018;131:e172-89.
8. Yin X, Cheng J, Ansari SH, Campo R, Di W, Li W, *et al*. Hysteroscopic tissue removal systems for the treatment of intrauterine pathology: A systematic review and meta-analysis. Facts Views Vis Obgyn 2018;10:207-13.
9. Brill AI. What is the role of hysteroscopy in the management of abnormal uterine bleeding? Clin Obstet Gynecol 1995;38:319-45.
10. Pansky M, Feingold M, Sagi R, Herman A, Schneider D, Halperin R. Diagnostic hysteroscopy as a primary tool in a basic infertility workup. JSLS 2006;10:231-5.
11. Agostini A, Cravello L, Bretelle F, Shojai R, Roger V, Blanc B. Risk of uterine perforation during hysteroscopic surgery. J Am Assoc Gynecol Laparosc 2002;9:264-7.
12. Umranikar S, Clark TJ, Saridogan E, Miligkos D, Arambage K, Torbe E, *et al*. BSGE/ESGE guideline on management of fluid distension media in operative hysteroscopy. Gynecol Surg 2016;13:289-303.
13. Verma A, Singh MP. Venous gas embolism in operative hysteroscopy: A devastating complication in a relatively simple surgery. J Anaesthesiol Clin Pharmacol 2018;34:103-6.
14. Noventa M, Ancona E, Quaranta M, Vitagliano A, Cosmi E, D'Antona D, *et al*. Intrauterine morcellator devices: The Icon of hysteroscopic future or merely a marketing image? A systematic review regarding safety, efficacy, advantages, and contraindications. Reprod Sci 2015;22:1289-96.
15. Tarneja P, Duggal BS. Hysteroscopy: Past, Present and Future. Med J Armed Forces India 2002;58:293-4.

How to cite this article: Bhutada R, Chavan N. Role of Hysteroscopy in Diagnosing Intrauterine Pathologies. J Glob Obstet Gynecol 2023;3(4):21-24.

Source of support: Nil, **Conflict of Interest:** Nil.