

## Pre IVF Hysteroscopy



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IVF is an expensive treatment and according to the 2010 United Kingdom's National Health service (NHS) the chance of live birth in one cycle of IVF was 32.2 % in women aged under 35 years and 27.7 % for women aged between 35 to 37 years. There can be various causes for the failure. We should evaluate and correct the pathologies which can lead to a failed cycle as it can lead to a significant psychological and financial impact on the couple. Among various causes of IVF failure, implantation failure is one of the leading cause. Implantation failure may be because of various embryonic or endometrial factors. Uterine cavity plays a significant role in successful implantation. Various intrauterine pathologies and endometrial pathologies like polyps, submucous fibroids, synechiae and mullerian anomalies can affect pregnancy rate in women undergoing IVF. The prevalence of unsuspected intrauterine abnormalities, diagnosed by hysteroscopy prior to IVF, has been reported to be 11-45%. Currently, it is recommended to examine intrauterine pathologies before doing IVF.

There are various methods to examine intrauterine pathologies which includes transvaginal sonography (TVS), hysterosalpingography(HSG) and Hysteroscopy. HSG or hysterosalpingography is a radiological procedure to evaluate the uterine cavity and fallopian tubes. HSG has a very low sensitivity (50%) and positive predictive value (PPV; 30%) for the diagnosis of endometrial polyps and submucous myomas in asymptomatic infertile women. TVS can be used to diagnose the uterine pathologies, including myomas and saline infusion sonography(SIS)

has a high PPV (>90%) and negative predictive value (NPV) for detection of intrauterine pathologies (endometrial polyps, submucous myomas, synechiae). But here we don't have advantage of treating lesion in the same sitting as in hysteroscopy. Hysteroscopy, on the other hand is the gold standard as it allows reliable visual assessment of the cervical canal and uterine cavity for intrauterine adhesions, endometrial polyps, submucous fibroids, endometritis, uterine malformations that could interfere with implantation. It also provides the opportunity to perform therapy in the same setting such as removing endometrial polyps, submucosal fibroids etc.

### HYSTEROSCOPY PROCEDURE-

Hysteroscopy can be Diagnostic, Office hysteroscopy and Operative hysteroscopy.

There are various distension medias which can be used like Carbon-di-oxide, high molecular weight liquids and low molecular weight liquids. Normal saline is the distension media of choice in office hysteroscopy as it is physiological saline and it can be used with high frequency surgeries using bipolar.

Endoscope which are used can be flexible fiberscope or rigid rod lens optical system. Flexible fiberscope is rarely used due to its cost, durability factor and problem with sterilization. Rigid telescope comes in 0, 12 and 30-degree angle. 30-degree telescope is preferable in diagnostic hysteroscopy due to its wide viewing angle.

Hysteroscope with a diameter of 2.9mm is



commonly used in office setting. It can be loaded with 3.2mm or 5.3mm operating sheath and minor surgical procedures like polypectomy, pedunculated myomectomy, synechiolysis can be done in office setting.

**Patient preparation:**

After thorough preoperative workup the patient is posted for hysteroscopy. Patient is explained about the therapeutic effects of the procedure and possible complications and a written and informed consent is obtained. Patient is placed in dorsal lithotomy position and the parts are cleaned and draped. A careful bimanual examination is recommended to know the position and the size of the uterus. With the use of reduced caliber, oval instrument there is no requirement of speculum or vulsellum. Oval shape of scope adapts itself to canal's anatomy and there doesn't arise the need for cervical dilatation so no analgesia or anesthesia is needed. It is thus possible to do diagnostic hysteroscopy and also minor procedures using bipolar current and 0.9% normal saline as distension media.

**Hysteroscopy in Infertility-**

- 1. Endometrial Polyp- Incidence of endometrial polyps in infertile women is found to be 14.89% . There are various mechanisms described which could lead to infertility in patients with endometrial polyp. It may be mechanical interference with sperm transport, localised inflammatory reaction, altered production of endometrial receptivity factor or mechanical interference with implantation



Figure 1

There are various studies which have shown improved fertility outcome after removal of polyp in natural conception as well as in IUI and in ART (figure1).

- 2. Submucous myoma- Submucous fibroid is found to be a reason for infertility in 5-18% of women. Expression of molecular markers of endometrial receptivity HOXA11, leukemia-inhibiting factor, and basic transcriptional element-binding protein 1 were reduced in patients with uterine fibroid and infertility. Various other inflammatory mediators affecting implantation were found in patients with fibroid. Mechanical interference with implantation is also one of the theories for infertility. Hysteroscopic myomectomy has shown improved pregnancy rate in various studies. Removal of large myomas >3 cm was found to be much more beneficial in improving fertility outcome. Several studies have recommended that myomectomy should be done before starting the IVF cycle (figure 2).

Uterine cavity after removal of fibroid



Figure -2



3. Uterine synechiae: It is one of the major causes of implantation failure and hysteroscopic diagnosis and management helps to restore uterine cavity. Patients with mild Asherman's syndrome have shown improved pregnancy rate after hysteroscopic adhesiolysis (figure 3).

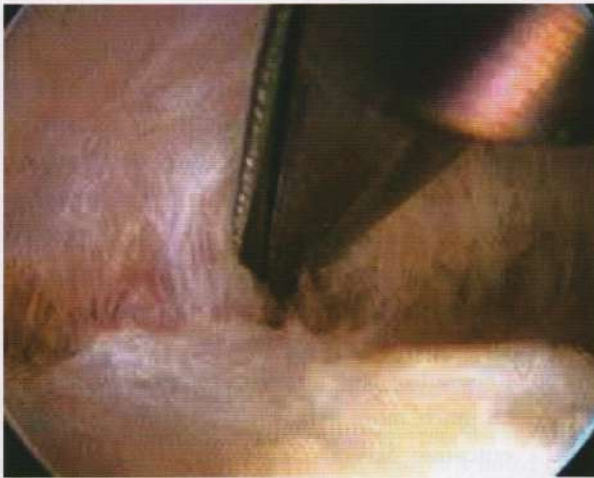


Figure 3

4. Hysteroscopy gives direct visualization of various uterine malformations like septate uterus, arcuate cavity etc. In a literature survey, miscarriage and preterm delivery rates prior to septum resection were 88 % and 9 % respectively, and live birth rate was only 3%. After septal resection, these rates were 14 %, 6% and 80 % respectively.

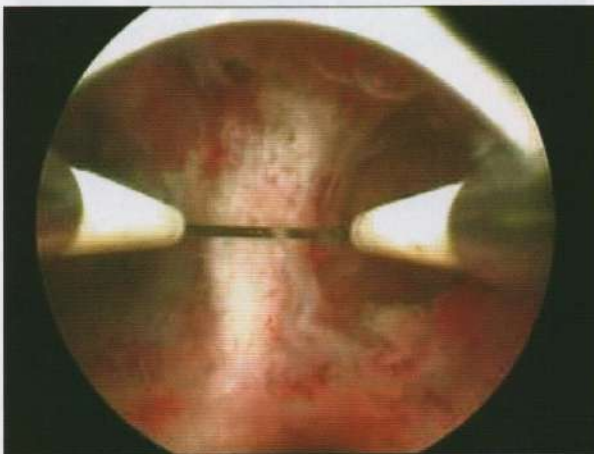


Figure - 4

5. Diagnosis and management of endometritis has shown improvement in reproductive outcome

**Complications of office hysteroscopy-**

- 1 False passage
- 2 Infection
- 3 Bleeding
- 4 Perforation

**Advantages of pre-IVF hysteroscopy-**

- 1 Diagnose and treat uterine pathologies which could lead to implantation failure
- 2 Endometrial stimulation for future successful implantation
- 3 As a trail ET for easy embryo placement
- 4 Day care procedure
- 5 Improved implantation rate after corrective procedure

**CONCLUSION-**

In infertility practice office hysteroscopy is an important technique and considered as the gold standard in assessment of cervical and uterine pathology. It enables us to diagnose and treat many infertility related uterine pathologies in office setting. It is painless, anaesthesia free, minimally invasive and day care procedure. It is well accepted by the patients thereby giving us both diagnostic and therapeutic advantage.

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