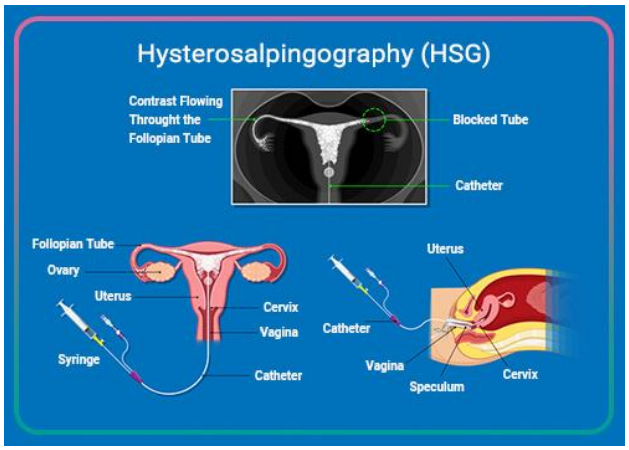
Hysterosalpingography

Fluoroscopic hysterosalpingography (HSG) is an x-ray examination of the uterus and fallopian tubes using a low dose x-ray [fluoroscopy]and iodinated contrast material.



Indications :

- Blockage of the fallopian tubes due to infection or scarring
- Tubal ligation
- Closure of the fallopian tubes in a sterilization procedure and a sterilization reversal
- Re-opening of the fallopian tubes following a sterilization or disease-related blockage
- Uterine fibroids
- Endometrial (uterine) polyps
- Adhesions
- Congenital problems (uterine anomalies)
- Tumors

Patient Safety:

- **This exam should NOT be performed if: You think you may be or are pregnant/ You currently have a pelvic infection.**
- **History of any allergies or adverse reactions to medications or iodinated contrast material.**

Preparation:

- **Schedule HSG exam from seven to 10 days after the first day of your menstrual period, but before ovulation. This is the best time for the exam.**
- **Before the procedure, may take pain medication to minimize any discomfort. Some doctors prescribe an antibiotic prior to and/or after the procedure.**
- **Written consent for the procedure explaining adverse reaction and complications.**

Procedure/Technique

the procedure should be performed during the proliferative phase of the patient's menstrual cycle (days 6-12) when the endometrium is thinnest this improves visualization of the uterine cavity and also minimizes the possibility that the patient may be pregnant if there is any uncertainty about the patient's pregnancy status, a beta hCG is warranted before commencing after an antiseptic cleaning of the external genital area, a vaginal speculum is inserted with the patient in the lithotomy position; the cervix is cleaned with an aseptic solution catheterization of the cervix is then performed; the type of device used depends on local practice preferences, and the main options are:

a 6 Fr Foley catheter with balloon inflation ,a Foley catheter has several technical disadvantages, such as difficult insertion in an: angulated or problematic cervix,acutely anteverted or retroverted uterus,cervical stenosis,highly positioned cervix due to pelvic adhesions, previous surgery, or uterine leiomyoma.

A Foley catheter should be placed just beyond the internal os of the cervix; if the catheter is placed within the cervical canal, it can be easily dislodged.

Inadequate seal of the balloon with the internal os will result in leakage of the contrast through the cervical canal, generating inadequate intrauterine pressure to push the contrast out of the bilateral fallopian tubes; this results in a false positive result of fallopian tube blockage .

A hysterosalpingography catheter or metal acorn-tipped cannula (e.g. Leech Wilkinson, Margolin, etc.)

- **a Leech Wilkinson catheter allows the passage of the angiographic tip to perform Fallopian tube clearance**
- **a tenaculum is also used to provide traction on the cervix**
- **a Margolin catheter has a silicon tip that can be inserted within a narrow cervical lumen**
- **a cervical vacuum cup**

whatever the device, it should be primed with contrast before insertion to avoid the introduction of gas bubbles which may provide a false positive appearance of a filling defect water-soluble iodinated contrast is subsequently injected slowly under fluoroscopic guidance

Some radiologists use iodinated oil (Lipiodol) as contrast when the indication is for lack of fertility, as some authors report increased fertility after its use; however, this remains controversial .

A typical fluoroscopic examination includes a preliminary frontal view of the pelvis, as well as subsequent spot images that demonstrate the uterine endometrial contour, filled fallopian tubes, and bilateral intra-peritoneal spill of contrast to establish tubal patency.

Complications

- **Common but self-limiting : abdominal cramping, per vaginal spotting , venous intravasation**
- **Rare but serious : pelvic infection, contrast reaction, tubal or uterine perforation.**

Scout

uterus

fallopian tubes

Fallopian tubes

peritoneal spillage

Sonohysterosalpingography

Sonohysterography, also referred as saline-induced sonohysterography (SIS), is an ultrasound technique that better characterizes the uterine cavity and endometrium. It is particularly useful for evaluation of endometrial polyps.

Indications:

- **fertility evaluation / recurrent pregnancy loss**
- **intrauterine adhesions**
- **screening before in-vitro fertilisation (IVF)**
- **endometrial polyps, endometrial hyperplasia, endometrial carcinoma**

SIS has better sensitivity for these lesions than normal endovaginal pelvic ultrasound useful when there is discordance between pelvic ultrasound and endometrial biopsy

- **congenital uterine anomalies (3D ultrasound or pelvic MRI may be better options)**
- **postmenopausal bleeding**
- **submucosal fibroids**
- **retained products of conception**

Contraindications:

- **Pregnancy**
- **Performing the study after day 14 in a woman's menstrual cycle is a relative contraindication**
- **pelvic inflammatory disease the presence of an intrauterine device (IUD)**

Procedure

A conventional endovaginal ultrasound of the pelvis should be performed before the sonohysterogram.

The study should be scheduled for days 4-7 in a woman's menstrual cycle. This is not as necessary in patients with abnormal uterine bleeding who are not sure about their cycle time points.

Positioning/room set up

- **some administer a NSAID one hour before the study**
- **prophylactic antibiotics are not usually necessary**
- **doxycycline may be administered if the fallopian tubes were previously shown to be dilated**

patient consent should be obtained

Equipment

- **speculum**
- **20 ml syringe**
- **hysterosonography catheter and 3 ml syringe for the catheter balloon**

Technique

- **The catheter should be flushed with saline to eliminate air.**
- **The patient is put in the lithotomy position and after identification of the cervix with the speculum, the cervix is prepped with iodine.**
- **Then the catheter is introduced into the uterine cavity through the cervical os, and the balloon is inflated when past the cervix.**
- **5-30 ml of warm sterile saline is then injected slowly during ultrasound imaging of the uterus. Imaging is performed in the coronal and sagittal planes. Sonographic volumes can be obtained for 3D ultrasound.**
- **Some leave the speculum in place during the exam, but it may obscure visualization with the endovaginal probe.**
- **Make sure to image the lower uterine segment while the balloon is being deflated and removed.**

Practical points

- **always make sure to flush the catheter before use**
- **infuse saline slowly to avoid a vasovagal reaction**
- **hemorrhage or clots in the uterus may lead to false-positive findings**
- **do not forget that although perhaps routine to the doctor and staff, the procedure may cause anxiety and sensitivity to the patient experience is critical**
- **appropriate draping is critical**

- **male and female physicians should be chaperoned by a female nurse or physician assistant**
- **do not forget to do a quick physical exam of the outer genitalia and with the speculum before the procedure.**

Alternatives:

- **Hysterosalpingography—This X-ray test is used to view the inside of the uterus and fallopian tubes and can show whether the tubes are blocked. It uses radiation and a fluid that contains a dye. [as described above]**

- **Hysteroscopy—A slender, light-transmitting device with a small camera attached—the hysteroscope—is inserted into the vagina and through the cervix to look inside the uterus. It is used to diagnose and treat certain problems inside the uterus.**

- **Magnetic resonance imaging (MRI)—This imaging test is used to view the internal organs, but it does not show the inside of the uterus as clearly as sonohysterography does.**

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REF :,Radiopedia.ACOG , https://www.radiologyinfo.org/en/info/hysterosalp