بسم الله الرحمن الرحيم

Asherman's Syndrome

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INTRODUCTION

Intrauterine adhesions (IUAs) are bands of fibrous tissue that form in the endometrial cavity, often in response to a uterine procedure

Disease severity can range from thin strings of tissue to complete obliteration of the cavity

Clinical sequelae include infertility, recurrent pregnancy loss, menstrual abnormalities, and pain

Clinical challenges include primary prevention of adhesions and prevention of recurrent adhesions after surgical treatment

EPIDEMIOLOGY

Estimates of the prevalence range from 1.5 percent as an incidental finding at hysterosalpingogram to 21.5 percent of women with a history of postpartum uterine curettage

In a meta-analysis that included over 900 women evaluated with hysteroscopy within 12 months following a spontaneous abortion (86 percent underwent curettage), the prevalence of IUAs was 19.1 percent

ETIOLOGY AND RISK FACTORS

IUAs appear to result from trauma to the basalis layer of the endometrium

The basalis layer appears to be most susceptible to damage in the first four postpartum or postabortal weeks

VEGF is downregulated in the endometrial tissue of women with Asherman's syndrome

Low estrogen state

Risk factors include intrauterine processes that have the potential to damage the basalis layer:

Pregnancy

Intrauterine procedures

intrauterine device (IUD)

Inflammation or infection

genital tuberculosis

Uterine compression sutures

Risk Factors	Frequency
Miscarriage curettage	66.7% (1237/1856)
Postpartum curettage	21.5% (400/1856)
Caesarean section	2% (38/1856)
Trophoblastic disease evacuation	0.6% (11/1856)
Mullerian duct malformation	16% (7/43)
Infection (Genital tuberculosis)	4% (74/1856)
Diagnostic curettage	1.6% (30/1856)
Abdominal myomectomy	1.3% (24/1856)
Uterine artery embolization	14% (7/51)
Hysteroscopic surgery: Metroplasty	6% (1/15)

CLINICAL PRESENTATION

Abnormal uterine bleeding – Abnormal, or changed, menstrual bleeding patterns are reported by 70 to 95 percent of women with IUAs

amenorrhea (37 percent), light bleeding (31 percent), normal menses (5 percent), and menorrhagia (1 percent)

In one report, up to three percent of women with severe adhesions noted cyclic, pain-free menses of normal volume and duration

- **Infertility** – Infertility has been reported in 7 to 40 percent of women with IUAs .IUAs are one of the differential diagnoses for the etiology of female infertility, and may be discovered when a HSG or hysteroscopy is performed as part of the standard infertility evaluation
- blockage of sperm or injury/destruction of the endometrium that prevents implantation of the blastocyst

- **Cyclic pelvic pain or dysmenorrhea** – 3.5 percent of women with IUAs, is likely due to obstruction of menstrual flow and/or hematometra
- **Recurrent pregnancy loss** – due to abnormalities of implantation in areas of denuded endometrium or insufficient vascularization

- **Incidental finding** – in a woman who undergoes a pelvic ultrasound, saline infusion SIS, HSG, or hysteroscopy for another indication (eg, infertility, abnormal uterine bleeding)
- As asymptomatic women do not routinely undergo hysteroscopy or pelvic imaging, the prevalence of asymptomatic IUAs is not known.

DIAGNOSTIC EVALUATION

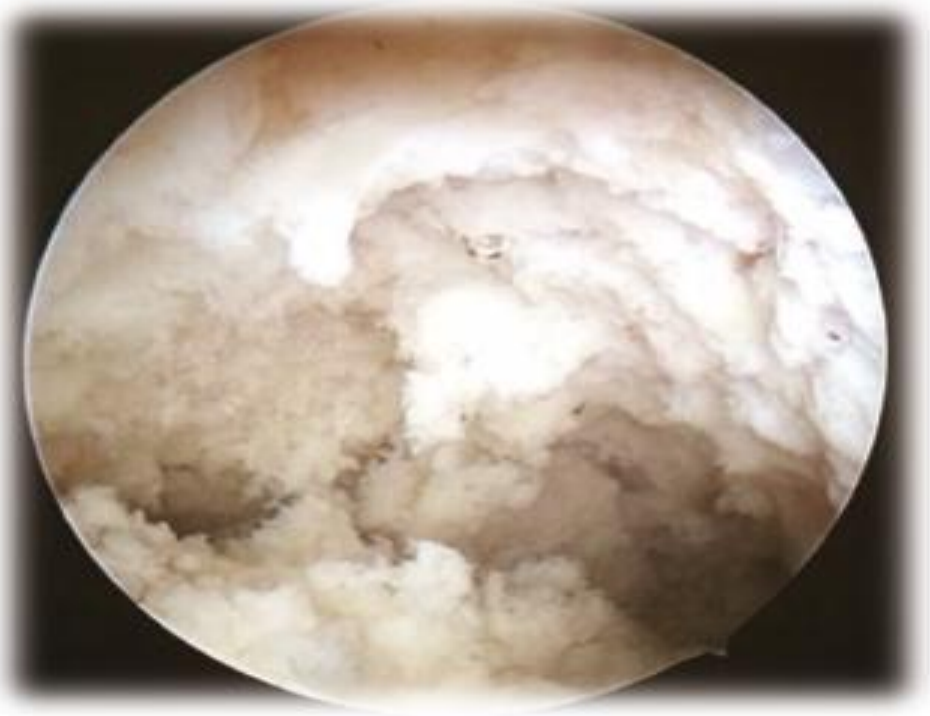
- The main components of the diagnostic evaluation for IUAs are the medical history and uterine cavity evaluation
- History : attention to menstrual symptoms and any pregnancies or intrauterine procedures that occurred prior to the onset of symptoms
- Physical examination : which is typically normal.

- determined by the likelihood of adhesive disease:
- Women with a high suspicion of IUAs go directly to endometrial evaluation, typically with hysteroscopy. While hysteroscopy is the gold standard, a saline infusion sonohysterogram (SIS) can also be used to evaluate the uterine cavity
- Women with a low risk of IUA ultimately often undergo hysteroscopy, but may have additional testing prior. As an example, for women with a primary complaint of oligomenorrhea or amenorrhea and suspicion of IUAs, we first perform SIS or office ultrasound to assess the endometrial thickness. A thin endometrial lining (<4 mm) can be suggestive of IUAs

Hysteroscopy

- allows direct visualization of the presence, extent, and morphologic characteristics of IUAs
- the uterine cavity can be assessed to determine how much of the endometrial surface appears viable
- simultaneous diagnosis and treatment
- Hysteroscopic findings are the basis for most classification systems

- Adhesions may arise from the endometrium, myometrium, or connective tissue
- They vary in size from thin and fragile to thick and dense, with the ends broader than the middle
- They may occur at the margins of the endometrial cavity or diffusely; in severe cases, they completely obliterate the cavity
- Marginal adhesions may appear crescent-shaped or like a curtain
- Mucosal adhesions are the same color as the endometrium and fragile, whereas fibrous adhesions are pale and strong
- TB : honeycomb



CLASSIFICATION

- The ASRM system consists of three stages of disease, based upon the extent of cavity involvement of the uterine cavity (<1/3, 1/3 to 2/3, >2/3), the type of adhesion seen at the time of hysteroscopy (filmy, filmy and dense, dense), and the patient's menstrual pattern (normal, hypomenorrhea, amenorrhea)
- The European Society for Hysteroscopy system grades adhesions based on the operator's ability to disrupt them with the hysteroscope and visualize the tubal ostia as well as the amount of scarring of the uterine cavity

Extent of cavity involved	<1/3 **1 point**	<1/3–2/3 **2 points**	>2/3 **4 points**
Type of adhesions	Flimsy **1 point**	Filmy & Dense **2 points**	Dense **4 points**
Menstrual pattern	Normal **0 points**	Decreased **2 points**	Amenorrhoea **4 points**

Prognostic classification: HSG score	
Stage I (Mild)	1–4
Stage II (Moderate)	5–8
Stage III (Severe)	9–12

European Society for Hysteroscopy classification of intrauterine adhesions

Grade	Extent of intrauterine adhesions
I	Thin or filmy adhesions easily ruptured by hysteroscope sheath alone. Cornual areas normal.
II	Singular filmy adhesions connecting separate parts of the uterine cavity. Visualization of both tubal ostea possible. Cannot be ruptured by hysteroscope sheath.
IIa	Occluding adhesions only in the region of the internal cervical os. Upper uterine cavity normal.
III	Multiple firm adhesions connecting separate parts of the uterine cavity. Unilateral obliteration of ostial areas of the tubes.
IIIa	Extensive scarring of the uterine cavity wall with amenorrhea or hypomenorrhea.
IIIb	Combination of III and IIIa.
IV	Extensive firm adhesions with agglutination of uterine walls. Both tubal ostial areas occluded.

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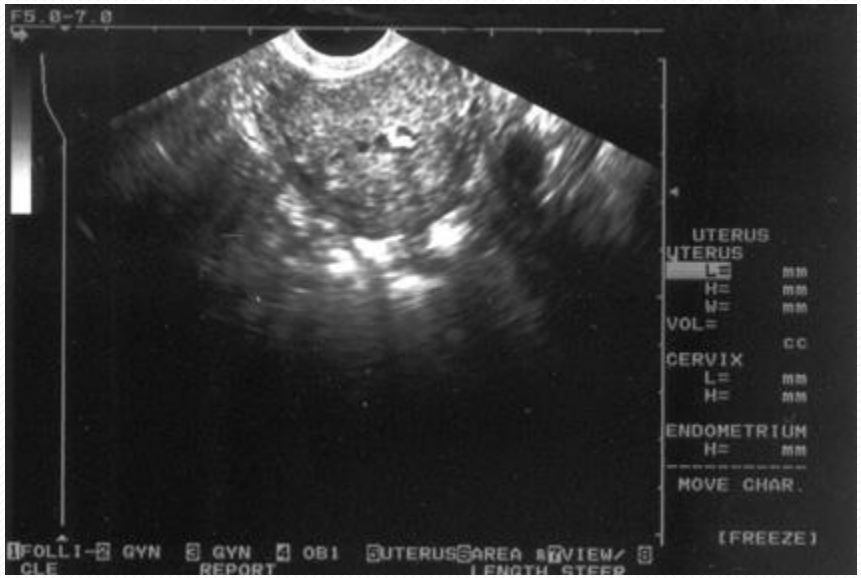
Imaging studies

- SIS ,hysterosalpingogram (HSG) and magnetic resonance imaging (MRI) have limited roles in the diagnosis of IUAs
- These studies may help the practitioner decide whether or not to perform hysteroscopy and, based on the surgeon's skill and available equipment, the appropriate setting in which to perform hysteroscopy with surgical correction (ie, office setting, outpatient operating room, or hospital-based operating room)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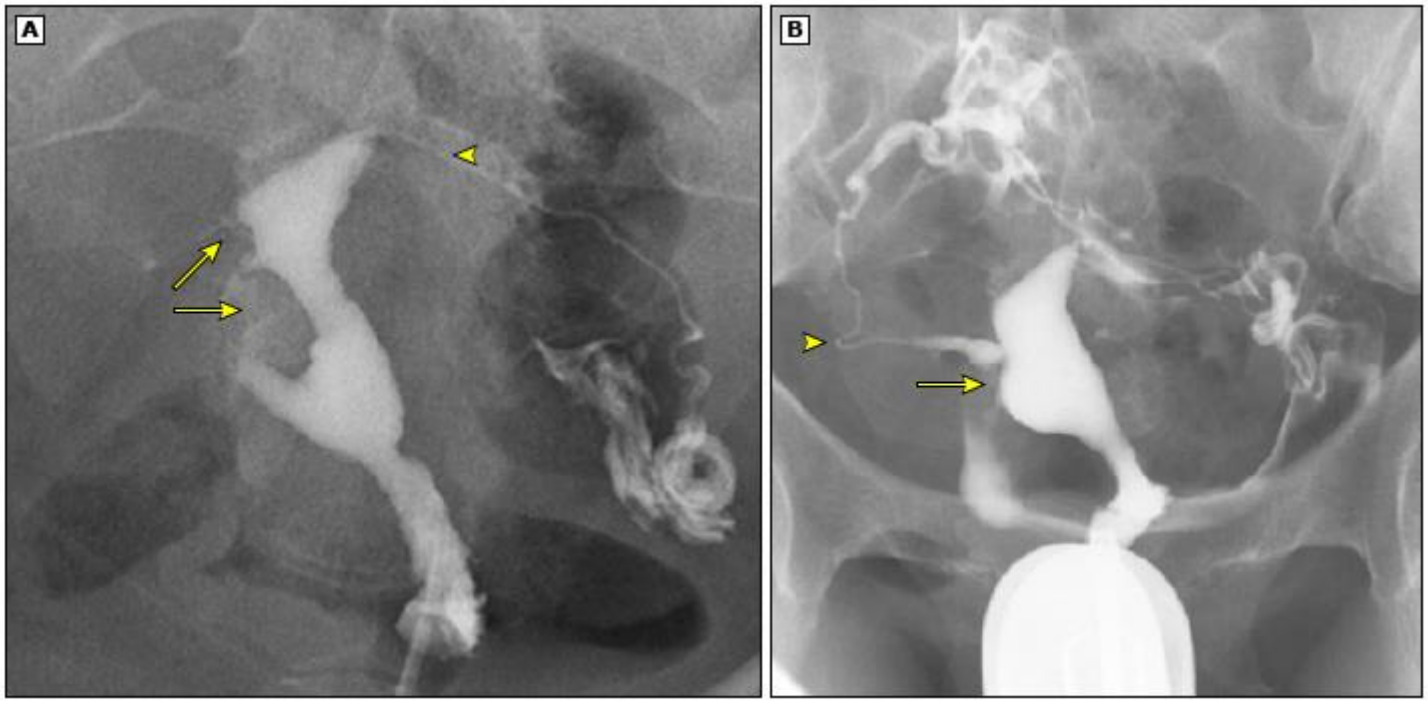
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- Pelvic 2Dultrasound alone is not generally a useful test to assess this condition, although adhesions may be detected by highly experienced ultrasonographers
- 3D:can provide useful information on the location and degree of involvement
- A thin and irregular endometrium (sometimes referred to as "skip lesions") may represent IUAs
- MRI has been used for women with cervical stenosis that prevents hysteroscopy, HSG, or SIS, but data on this technique are mainly limited to case studies

DIAGNOSIS

- Hysteroscopy is the gold standard for the diagnosis
- While imaging studies such as hysterosalpingography (HSG) and saline infusion sonohysterography (SIS) can detect adhesions, the sensitivity is lower compared with hysteroscopy, and therefore negative imaging studies cannot exclude adhesion

PRIMARY PREVENTION

- There are no established approaches to primary prevention of IUAs other than avoidance of intrauterine procedures or infections
- For women with miscarriage or unintended pregnancy, medical therapy may be used rather than surgical management at an early gestational age (up to 70 days of gestation for pregnancy termination)
- Women experiencing a missed abortion also have the option of expectant management

- **Surgical technique** – A joint review of studies by the AAGL and the European Society of Gynaecological Endoscopy (ESGE) reported that the risk of adhesion formation appears to be reduced with:
- Procedures confined to the endometrium compared with those involving the myometrium or opposing surfaces
- Procedures using cold loop lesion removal rather than electrocautery
- Procedures with less resection compared with greater resection (eg, polypectomy compared with resection of multiple fibroids) and with hysteroscopic resection rather than blind or ultrasound-guided curettage

ROLE OF EXPECTANT MANAGEMENT

- While surgery is considered the standard of care for symptomatic IUAs, there are no data from trials comparing surgery with expectant management
- For women with known symptomatic IUAs who do not want or are unable to access hysteroscopic resection, expectant management is a reasonable option
- One study reported pregnancy in 45.5 percent of women who elected expectant management when followed for up to seven years

HYSTEROSCOPIC RESECTION

- The standard treatment of symptomatic IUAs is lysis under direct hysteroscopic visualization
- The goal of surgery is to restore the size and shape of the uterine cavity, as well as endometrial function and fertility
- Lysis of moderate or severe adhesions should be performed by an experienced hysteroscopic surgeon

- **Cervical dilation and hysteroscope insertion** – Care must be taken during cervical dilation in women with severe occlusion of the uterine cavity because it is easy to create a false cervical passage and to perforate the uterus
- Guidance with pelvic ultrasonography can help define the cervical canal and the junction between the cervical internal os and the intrauterine cavity. Ultrasonography can also be used to guide dissection
- A small (5 mm) rigid hysteroscope can be used to pass through the cervical canal and into the uterine cavity under direct visualization to decrease the chance for creation of a false passage

- **Excision of adhesions** – The procedure is begun by placing the hysteroscope at the internal os and lysing adhesions with sharp dissection
- Adhesive bands are identified through the hysteroscope, and clipped at the junction of the band to the endometrium in order to excise the adhesion
- We prefer to use small, rigid scissors because scissors avoid the thermal tissue injury that occurs with electrosurgery.
- Careful dissection is continued until the entire uterine cavity is free of adhesions. The goal is restoration of normal anatomy
- Alternatives to scissors include blunt adhesiolysis and bipolar electrosurgery, in which the adhesive bands are vaporized

- **Adjunctive interventions** – For cases that require more extensive dissection, such as when there is agglutination of the walls of the cavity, we suggest concurrent laparoscopy or ultrasound guidance to reduce the risk of uterine perforation
- Alternatively, fluoroscopy can be used in severe cases to guide dissection
- **Role of laparotomy** – If adhesions are so severe that the cavity cannot be entered with the hysteroscope, a laparotomy with hysterotomy is possible, but is rarely performed, and is reserved for severe cases in which no other treatment options are available or possible

- With a completely obliterated cavity, dissection beginning in the midline and moving laterally under ultrasound guidance may be effective.
- If there is any area of less dense adhesions that would allow visualization of normal anatomic structures (such as the uterine cornua), dissection should begin in this area.
- Identification of the tubal ostia, either prior to or during the lysis procedure, can provide useful markers of the lateral and fundal cavity edges, and can be used to guide the degree of tissue removal.
- Aggressive dissection that might enter the myometrium should be avoided

PREVENTION OF ADHESION REFORMATION

- The goal of post-lysis management is to reduce the risk of reformation of adhesions and promote regrowth of endometrium. However, optimal postoperative management is not known
- In a meta-analysis of trials comparing multiple types of anti-adhesion therapies, including IUDs, hyaluronic acid gel, hormonal therapy, or human amniotic membrane grafting, with placebo or no intervention, the authors concluded that "clinical effectiveness of anti-adhesion treatment for improving key reproductive outcomes or for decreasing IUAs following operative hysteroscopy in subfertile women remains uncertain"

- In the meta-analysis, there was no difference between treatment and no treatment/placebo on live birth rate (odds ratio [OR] 0.99, 95% CI 0.46-2.13, three studies, 150 women), although antiadhesion therapy was associated with fewer recurrent IUAs at the time of second-look hysteroscopy (OR 0.36, 95% CI 0.20-0.64, seven studies, 528 women)
- Of note, in women surgically treated for IUAs, adhesion recurrence rates of 30 to 66 percent have been reported

- Estrogen therapy — The rationale for postoperative estrogen therapy is that the hormone will promote regrowth of the endometrium over the denuded surface
- 4 mg estradiol orally, twice daily, for 30 days. On the last 10 days of estrogen therapy, we add 5 mg of oral medroxyprogesterone acetate or 2.5 mg of oral norethindrone acetate to the regimen to stimulate a withdrawal bleed
- use an intrauterine pediatric bladder catheter (ie, pediatric Foley bladder catheter), in addition to estrogen therapy, to provide mechanical separation of the uterine walls during the healing phase
- The catheter balloon is typically filled with 2 to 3 mL of saline. The catheter is removed after 7 to 10 days of use.
- doxycycline 100 mg twice daily for 10 days

- **Repeat hysteroscopy** — Repeat hysteroscopy can assess for adhesion recurrence, and allow for repeat adhesion resection if reformation has occurred. Such second-look hysteroscopy is commonly performed up to three months after initial adhesiolysis, although the use of serial hysteroscopic procedures at shorter time intervals has also been described
- The technique for serial hysteroscopy is to repeat office hysteroscopy 7 to 14 days after the initial sharp lysis of adhesions

- **No further treatment** — One option after adhesiolysis is no further treatment
- Antibiotic therapy — Of note, there are no data to advise for or against antibiotic use in the pre-, intra-, or postoperative periods, and we do not routinely treat with antibiotics unless a catheter is left in place
- **Therapies in development** — Medications that improve endometrial vascular flow, intrauterine amnion grafts, and stem cell therapy are potential treatments for adhesion prevention,PRP

FOLLOW-UP

- see the patient three weeks after primary surgery and perform an ultrasound to assess endometrial development and pattern .
- Two to three months postoperatively, we perform hysteroscopy to assess whether a normal contour has been restored to the uterine cavity. If significant adhesive disease is identified, reoperation can be required

OUTCOME

- **Menstrual abnormalities** — Studies have reported a wide range of efficacy of treatment for women with menstrual abnormalities, from 23 to 100 percent. In a systematic review of 28 studies, most studies reported that approximately 80 to 100 percent of women had an improvement in menstrual flow
- **Infertility** — Data are inconsistent about the efficacy of treatment of IUAs in women with infertility. In a systematic review of 28 studies, most studies reported a pregnancy rate of 40 to 80 percent and a live birth rate of 30 to 70 percent
- adherent placenta, including placenta accreta, occurs in approximately 10 percent of cases

- **Recurrence** — The recurrence rate following treatment is as high as 33 percent in women with mild to moderate IUAs and 66 percent in women with severe adhesion
- Pregnancies in women with a history of moderate to severe IUAs can be considered high risk and may require a consultation from a maternal-fetal medicine specialist. Pregnancy complications can include intrauterine growth restriction, preterm delivery, and abnormal placentation (ie, accreta)

THANK YOU