SURGICAL THERAPY OF ASHERMAN’S SYNDROME

The surgical removal of uterine adhesions.

About Surgical therapy of Asherman’s syndrome

The management of Asherman's syndrome (AS, intrauterine adhesion, IUA; Pic. 1) is mostly focused on invasive methods. Asherman’s syndrome usually develops after the event of endometrial trauma (endometrial scratch), which most often follows curettage or shortly after pregnancy (Pic. 2).

Any insult severe enough to remove or destroy endometrium (lining of the womb) can cause adhesions. The gravid uterus is particularly susceptible to injury, especially between the second and fourth weeks postpartum. Inflammation or infection may also predispose patients to adhesions. In approximately 90% of cases, intrauterine adhesions relate to curettage for pregnancy complications, such as missed or incomplete abortion or retained products of conception. Adhesions can also develop after abdominal or hysteroscopic myomectomy (surgical removal of uterine fibroids), septum resection (surgical removal of the septus), or other uterine surgery.

According to many experts, the removal of the adhesions should start form the lower part of the uterus and progress toward the upper part. Any central (bridge-like adhesions) and thin film adhesions should be separated initially in order to allow adequate distension of the uterine cavity. Dense and lateral adhesions should be treated at the end, bearing in mind the greater risk of uterine perforation and bleeding.

Types of surgery

1. Hysteroscopic surgery

Hysteroscopy is the inspection of the uterine cavity by endoscopy with access through the cervix. It allows for the diagnosis of intrauterine pathology and serves as a method for surgical intervention.

Hysteroscopic surgery (hysteroscopic adhesiolyis) has brought a radically changed effect of the treatment of intrauterine adhesion and it is the established gold standard technique. The magnification and the direct view of the adhesions (Pic. 3) allow for a precise and safe treatment. When the lesions are filmy, the tip of the hysteroscope and uterine distension may be enough to break down the adhesions. Thus, in favourable cases the restoration of cavity can be obtained through “no touch” hysteroscopy in out-patient setting without general anaesthesia.

A wide range of mechanical or electric equipment has been adopted during hysteroscopic adhesiolyis (Pic. 4). Even the use of a sharp needle (Touhy needle) has showed a good rate of success. A cold-knife approach is supposed to prevent thermal damage of the residual endometrium and reduce the rate of perforation during the procedure. The use of powered instruments (electric surgery or laser) has also proven efficient for hysteroscopic adhesiolysis. Nevertheless the use of electric surgery is associated with potential damage to the residual endometrium.

2. Hysterotomy

A hysterotomy is an incision in the uterus, and is performed during a caesarean section. Hysterotomies are also performed during fetal surgery, and various gynaecological procedures.
Few cases of AS treatment using an open-surgery approach with transfundal separation of scarring uterine walls have been mentioned; in some cases an adequate restoration of menstruation and fertility was obtained. It has been superseded by hysteroscopic techniques, so today this strategy may be adopted only in extremely complex situations, where the hysteroscopic approach is not possible or unlikely to succeed, and only by expert surgeons. The patient should be informed about the risk of the procedure, and warned that the successful restoration of the cavity may not be obtained, not even with such an aggressive approach.

3. Dilatation and curettage

A dilatation and curettage (D&C) is an operation performed on women to scrape away the womb lining. The cervix (neck) of the uterus (womb) is dilated using an instrument called a dilator. The endometrium is then lightly scraped off using a curette. This spoon-shaped instrument can be used to remove diseased tissue, treat abnormal bleeding or to obtain a specimen for diagnostic purposes.

Before the introduction of hysteroscopy, the blind D&C was the treatment of choice. Nevertheless, blind D&C is associated with a high risk of uterine perforation as well as being a relatively poor diagnostic tool, with the result that this technique should be considered obsolete.

Re-adhesion prevention

As IUA frequently reform after surgery, techniques have been developed to prevent recurrence of adhesions. Adhesions recurrence rate is significantly higher in those cases where a severe AS is diagnosed. Several methods to prevent IUA reformations after surgery have been proposed.

Methods to prevent adhesion reformation include the use of mechanical barriers (Foley catheter, saline-filled Cook Medical Balloon Uterine Stent, IUCD) and gel barriers (Seprafilm, Spraygel, autocrisslinked hyaluronic acid gel Hyalobarrier) to maintain opposing walls apart during healing, thereby preventing the reformation of adhesions. Antibiotic prophylaxis (antibiotics used before surgery) is necessary in the presence of mechanical barriers to reduce the risk of possible infections.

Restoring normal endometrium

In order to restore basal endometrium and rebuild the normal endometrial layer inside the uterine cavity, hormonal treatment is proposed. Also, antibiotic prophylaxis is necessary in the presence of mechanical barriers to reduce the risk of possible infections. A common pharmacological method for preventing reformation of adhesions is sequential hormonal therapy with estrogen followed by a progestin to stimulate endometrial growth and prevent opposing walls from fusing together.

The general idea is to encourage fast growth of any residual endometrium immediately after surgery with the dual purpose of preventing new scar formation and restoring a normal uterine environment. It is supposed that this goal can only be achieved with supraphysiological (higher than occurs naturally) hormonal levels.

Post-treatment assessment

Presently, there is no clear consensus about follow up management. Usually, post-treatment assessment of the uterine cavity is recommended one-two months after the initial surgery. Ultrasound, hysterosalpingography (HSG) and hysteroscopy are the most common follow-up methods.

### Success or failure factors

Surgical treatment is the only way of removal of uterine adhesions. Once the adhesions are removed, fertility may be sometimes restored, depending on the severity of the initial trauma and other individual patient factors.

### Complications
Patients who carry a pregnancy even after treatment of IUA may have an increased risk of having abnormal formation of placenta including placenta accreta where the placenta invades the uterus more deeply, leading to complications in placental separation after delivery. Premature delivery, second-trimester pregnancy loss, and uterine rupture are other reported complications. They may also develop incompetent cervix where the cervix can no longer support the growing weight of the fetus, the pressure causes the placenta to rupture and the mother goes into premature labour. Cerclage is a surgical stitch which helps support the cervix if needed.

**Prognosis**

Evaluation of uterine cavity after adhesiolyis is an important step in AS management. As mentioned before, complete resolution of the adhesions is not always possible with a single procedure, especially in severe stages where a high recurrence rate is documented. For instance, 50% and 21.6% of recurrence was reported in severe and moderate AS respectively. Timely recognition of any recurrence of adhesions is essential to provide the best prognosis, therefore it may be necessary to repeat surgery. For this reason, most treatment protocols include a follow-up to assess endometrial restoration after the surgery. If this is not done, there is evidence of an increased obstetric risk. Although the restoration of menses is considered a good marker of success, other diagnostic investigations are fundamental for an exhaustive evaluation.

Surgical intervention is necessary to remove the intrauterine adhesions since adhesions can lead to partial or complete dysfunction of the endometrium with impairment of fertility and menstrual pattern (amenorrhea (an absence of menstrual period) and hypomenorrhea (short or scanty periods)). When the adhesions are exclusively located in the lower uterine tract and functioning endometrium persists, this syndrome can also cause severe pelvic pain and retrograde menstruation (menstrual blood flowing back through fallopian tubes).

Hysteroscopic treatment of AS offers good results and resolves menstrual disturbance in the majority of cases. Data regarding reproductive outcome came, in the majority of cases, from non randomized or prospective studies. In addition, a critical evaluation is often challenging, because of the different classification criteria and treatment strategy adopted. An overall pregnancy rate from 40% to 63% was previously described. Fertility restoration after hysteroscopic treatment seems to be influenced by several factors such as menstrual pattern before and after the surgery, severity of adhesions and adhesions recurrence rate after treatment.

The extent of adhesion formation is critical. Mild to moderate adhesions can usually be treated with success with 93, 78, and 57% pregnancies achieved after treatment of mild, moderate and severe adhesions, respectively and resulting in 81, 66, and 32% live birth rates, respectively. The overall pregnancy rate after adhesiolyis was 60% and the live birth rate was 38.9% according to one study.

Age is another factor contributing to fertility outcomes after treatment of AS. For women under 35 years of age treated for severe adhesions, pregnancy rates were 66.6% compared to 23.5% in women older than 35.

Extensive obliteration of the uterine cavity or fallopian tube openings (ostia) and deep endometrial or myometrial trauma may require several surgical interventions and/or hormone therapy or even be uncorrectable. If the uterine cavity is adhesion free but the ostia remain obliterated, IVF remains an option. If the uterus has been irreparably damaged, surrogacy or adoption may be the only options.

### Find more about related issues

#### Diagnoses

**Asherman’s syndrome**

A medical condition, where the walls of the uterus stick to one another due to bands of scar tissue. 

Learn more at: [www.fertilitypedia.org/therapy/diag/asherman-s-syndrome](http://www.fertilitypedia.org/therapy/diag/asherman-s-syndrome)

#### Gallery
Pic. 1: Intrauterine adhesions seen on hysterosalpingogram of a patient with Asherman syndrome

Pic. 2: Asherman syndrome: summary of risk factors

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miscarriage curettage</td>
<td>66.7% (123/1856)</td>
</tr>
<tr>
<td>Postpartum curettage</td>
<td>21.5% (409/1856)</td>
</tr>
<tr>
<td>Cesarean section</td>
<td>2% (38/1856)</td>
</tr>
<tr>
<td>Trophoblastic disease evacuation</td>
<td>0.5% (11/1856)</td>
</tr>
<tr>
<td>Mullerian duct malformation</td>
<td>16.4% (7/43)</td>
</tr>
<tr>
<td>Infection (Genital tuberculosis)</td>
<td>4% (74/1856)</td>
</tr>
<tr>
<td>Diagnostic curettage</td>
<td>1.8% (30/1856)</td>
</tr>
<tr>
<td>Abdominal myomectomy</td>
<td>1.3% (24/1856)</td>
</tr>
<tr>
<td>Uterine artery embolization</td>
<td>14% (275/1951)</td>
</tr>
<tr>
<td>Hysteroscopic surgery</td>
<td></td>
</tr>
<tr>
<td>* metroplasty</td>
<td>6% (1/15)</td>
</tr>
<tr>
<td>* myomectomy (single myoma)</td>
<td>31.3% (10/32)</td>
</tr>
<tr>
<td>* myomectomy (multiple myomata)</td>
<td>45.5% (9/20)</td>
</tr>
<tr>
<td>* endometrial ablation</td>
<td>36.4% (8/22)</td>
</tr>
<tr>
<td>Insertion of IUD</td>
<td>0.2% (3/1856)</td>
</tr>
<tr>
<td>Uterine compressive sutures for post-partum haemorrhage</td>
<td>18.5% (3/17)</td>
</tr>
</tbody>
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Pic. 3: Intrauterine adhesions: hysteroscopic appearance

Pic. 4: Adhesiolysis done using hysteroscopic scissors

Sources

" Total laparoscopic hysterectomy ([https://en.wikipedia.org/wiki/Hysterectomy#/media/File:Total_laparoscopic_hysterectomy.jpg](https://en.wikipedia.org/wiki/Hysterectomy#/media/File:Total_laparoscopic_hysterectomy.jpg))" —by Hic et nunc licensed under [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

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