Asherman’s Syndrome

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A Twenty Minute Survey

- Definition
- Etiology
- Causative Factors
- Symptomatology
- Diagnosis
- Treatment
- Outcomes after hysteroscopic adhesiolysis
- Treatments to maintain cavity patency
DEFINITION OF IUA

- The presence of permanent intrauterine adhesions partially or completely obliterating the uterine cavity
A History Lesson

1894
- Fritsch describes a 24 y/o with amenorrhea after postpartum D&C

1927
- Bass reports 20 cases of postabortal cervical atresia

1946
- Stamer reports 24 new cases of cervical atresia

1948
- Asherman describes 29 women with amenorrhea associated with stenosis of the internal cervical os

1950
- Asherman describes 8 cases of traumatic intrauterine adhesions
Asherman syndrome

- Trauma to the endometrium, producing partial or complete obliteration in the uterine cavity and/or the cervical canal, .... or fibrosis without adhesion together with symptoms such as menstrual abnormalities, infertility, and/or pregnancy complications such as recurrent pregnancy loss or abnormal placentation.
Asherman’s Contribution

- Differentiated between traumatic amenorrhea and traumatic intrauterine adhesions
- Atretic amenorrhea demonstrates adhesions at the level of the internal os
- Intrauterine adhesions are typically visualized on hysteroscopy
- Traumatic amenorrhea presents without visible pathology
Etiology

- Denudation or destruction of the basal layer of the endometrium
- Loss of the regenerative mechanism
- Retained placental remnants and villous elements may contribute to infection
- Increased fibroblastic activity and collagen formation
Etiology

- Trauma to a gravid uterine cavity is the main cause
  - Curettage during the postpartum period
  - Curettage after MA, TOP, or cesarean section.
  - Curettage for removal of placental remnants after delivery
  - Repeat curettage for incomplete abortions

- The uterus is in a vulnerable state after pregnancy, making the basal layer of endometrium more easily damaged by any trauma, especially curettage, together with the low estrogen status at the time of the operation or immediately afterward.
Causative Factors...

- Intrauterine adhesions were found in 40% of the women undergoing either a secondary removal of placental remnants after delivery or a repeat curettage for incomplete abortions. (Westendorp et al.)

- Removal of placental remnants after delivery/MA should be done by hysteroscopy !!
Causative Factors...

- **Hysteroscopic surgery:**
  - Resection of septa 6.7%
  - Hysteroscopic solitary myomectomy 31.3%
  - Multiple fibroids 45.5%
  - Thermal balloon ablation 36.4% (Taskin et al.)

- **Infection - is still in controversy.**
  - chronic or subacute endometritis
  - Contribute to the damaging effect of trauma to produce intrauterine adhesions.
  - Tuberculosis, Schistosoma, Mycobacteria
Words of Wisdom...

“Hysteroscopy, which has so often been mentioned in the literature and just as often discarded, may perhaps be of use for this purpose. If it were possible to see the adhesions and to loosen them instrumentally using the eye as a guide, the ideal method would have been found.” (Joseph Asherman, 1950)
Hysteroscopy....

- Hysteroscopic surgery became the optimal approach and the method of choice in the investigation and treatment of this condition.

- Yet, the management of moderate to severe disease still poses a challenge, and the prognosis of severe disease remains poor.
Diagnosis

- Symptoms/History
- Hystosalpinogram
- Pelvic Ultrasound
- Sonohystogram
- Hysteroscopy
- MRI
Symptomatology

Menstrual disturbances
Infertility
Spontaneous abortion
Abdominal pain
Ectopic pregnancy
Premature delivery
Abnormal placental implantation
IUGR
Intrauterine Filling Defects on HSG
Hysterosalpingography (HSG)

- HSG is a simple screening method for intrauterine adhesions, especially in the infertile patients.
- In a prospective study reported by Soares et al., HSG had a sensitivity of 75% and a PPV of 50%.
- HSG may not detect endometrial fibrosis per se,
- High rate of false-positive results, (30%)
- Minor filmy adhesions might be missed
Ultrasonography U/S

- Noninvasive procedure
- Important when uterine cavity is obliterated.
- Normal-appearing endometrium above the level of obstruction are likely to benefit successful hysteroscopic treatment

- The sensitivity of U/S was reported as 52% and the specificity as only 11% which is quite low.

- 3D U/S have been used to detect adhesions in the uterine cavity, with a specificity of 45%.
- Soares et al. reported that, transvaginal U/S did not detect any of the cases of intrauterine adhesions.
Hydrosonography (HS)

- HS has been shown to be as accurate as HSG and to be superior to transvaginal U/S.
- In a study on 65 infertile women, HS had both similar sensitivity (75%) and specificity (PPV as 42.9%) to HSG.
- Like HSG, HS is of value only in cases of partial intrauterine adhesions, not when it is completely obstructed.
SIS: Asherman
Diagnostic Hysteroscopy

- Diagnostic Hysteroscopy is the most accurate methods to confirm the presence, extent, and degree of adhesions and the quality of the endometrium.

- Hysteroscopy is considered as the gold standard

- The methylene blue test may be used to differentiate between fibrosis and normal endometrial lining.

- The endometrium stains well but connective (fibrotic) tissue and myometrium do not.
Flexible Hysteroscopy

- Advantages -
  - Patient comfort
    - Placing small diameter steerable flexible scope through a curved canal
    - Rapid view of the cavity with no tenaculum and no local anesthesia
Intra-Uterine Devices

- IUCD
- SIS - Catheter
- GynoSampler
- Flexible Hysteroscope
- 4 mm Dilator
Intrauterine Adhesions
Impact on fertility

- Density of adhesions
- Degree of cavity occlusion
- Scarring on the uterine wall

Classification of Intrauterine Adhesions

- March 1978 (Class I to III)
- Valle and Sciarra 1988 (Mild to Severe)
- American Fertility Society 1988 (Stages I to III)
- European Society for Gynecological Endoscopy 1993 (Grades I to V)
### Classification of Asherman’s Syndrome according to Valle & Sciarrra 1988

<table>
<thead>
<tr>
<th>Adhesions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild Adhesions</td>
<td>Filmy adhesions composed of basal endometrium, producing partial or complete uterine cavity occlusion</td>
</tr>
<tr>
<td>Moderate Adhesions</td>
<td>Fibromuscular adhesions that are characteristically thick; covered with endometrium that may bleed upon division; partially or totally occluding the cavity</td>
</tr>
<tr>
<td>Severe Adhesions</td>
<td>Composed of connective tissue; lacking any endometrial lining and likely to bleed upon division; partially or totally occluding the cavity.</td>
</tr>
</tbody>
</table>
Incidence of IUA after Missed Abortion

- Adoni et al. (1982) using HSG reported 15% of 120 patients 6-8 weeks after D&C for MA and early TAB had IUA.
- Lurie et al. in (1991) found a prevalence of 39% in women who underwent curettage after midtrimester abortion.
- Golan et al. (1992) reported 17%.
- Friedler et al. (1993) using hysteroscopy found an incidence of 19% after MA.
- Romer et al. (1994) found an incidence of 30% after D&C for incomplete or MA.

Prevalence of Asherman’s after intervention for retained placenta or incomplete abortion

- Westendorp et al studied 50 women who underwent manual or surgical evacuation for placental remnants more than 24 h after delivery or repeat curettage for retained POC’s after a missed or medical abortion

- Hysteroscopy was performed three months later to assess presence of intrauterine adhesions

*Human Reproduction, vol 13, no 12 3347-3350, 1998*
Prevalence of Asherman’s after intervention for retained placenta or incomplete abortion

- 20/50 (40%) found to have intrauterine adhesions
- Risk of Grade II-IV was 30% in both the puerperal group (12/40) and in the abortion group (3/10)

### Risk of Asherman’s Syndrome Grade II-IV

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Grade 0</th>
<th>Grade I</th>
<th>Grade II-IV</th>
<th>RR</th>
<th>95% CI</th>
<th>P</th>
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<tbody>
<tr>
<td>Prior abortion</td>
<td>8</td>
<td>2</td>
<td>6</td>
<td>1.4</td>
<td>0.61-3.3</td>
<td>0.64</td>
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<tr>
<td>Infection</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>1.2</td>
<td>0.50-2.8</td>
<td>0.66</td>
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<tr>
<td><strong>Hormonal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>18</td>
<td>2</td>
<td>8</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lactation</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>2.6</td>
<td>1.2-5.9</td>
<td>0.04</td>
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<tr>
<td>OC or MPA</td>
<td>12</td>
<td>4</td>
<td>3</td>
<td>0.55</td>
<td>0.17-1.8</td>
<td>0.31</td>
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<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Menstrual Cycle</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Normal</td>
<td>21</td>
<td>1</td>
<td>1</td>
<td>1.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Amenorrhea</td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>15</td>
<td>2.1-109</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hypomenorrhea</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>6.9</td>
<td>0.81-59</td>
<td>0.13</td>
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<tr>
<td>Dysmenorrhea</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>15</td>
<td>1.9-122</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Any disorder</td>
<td>8</td>
<td>4</td>
<td>13</td>
<td>12</td>
<td>1.7-58</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Unknown</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Treatment Goals

- Restore the size and shape of the uterine cavity
- Restore the normal endometrial function
- Restore fertility
Treatments Available

- Blunt cervical dilation
- Anterior Hysterotomy (via vaginal route)
- IUD
- Anterior Hysterotomy (via laparotomy)
- Balloon distention
- Endometrial Transplant
- Uterine reconstruction
- **Hysteroscopic adhesiolysis**: scissors, laser electrocautery
Methods of guidance

- Hysteroscopic adhesiolysis carries the risk of perforation of the uterus (2-9%), especially when adhesions are dense.
- Farther complication of intra-abdominal organ injury and impair the ability to finish the procedure.
- Thus, in order to improve the efficiency and safety of hysteroscopic surgery different methods of guidance where introduced.
Methods of guidance

- **Laparoscopy**
  - May prevent uterine perforation with advantage of identification of pelvic organ injury and possibility to treat the uterine injury.
  - Especially importance in dense adhesions.
  - Perforation may occurs but further trauma is prevented.

- **Transabdominal Ultrasound**
  - Nontraumatic, readily available technique
  - When adhesions may have completely or almost completely obliterated the uterine cavity.
  - Especially during the procedure of dilatation of cervix
Adhesiolysis and Reproductive Outcome...
Hysteroscopic classification, treatment, and reproductive outcome

- Valle and Sciarra evaluated and hysteroscopically treated 187 patients over a 10 year period
- 43 patients had mild IUA
- 97 had moderate IUA
- 47 patients had severe IUA
Presenting Symptoms

- 43 (23%) amenorrhea
- 14 (7.5%) oligomenorrhea
- 112 (59%) hypomenorrhea/dysmenorrhea
- 106 (56.7%) chief complaint was pregnancy wastage
- 81 (43.3%) chief complaint was infertility
- 98% of patients underwent curettage for pregnancy complication

Outcomes...

- 167 (89.3%) reported normal menses post op
- 143 (76.4%) achieved pregnancy
- 114 (79%) achieved term pregnancy
- 89% of women with recurrent SAB achieved a term pregnancy
- 60% of patients with prior infertility achieved term pregnancy

Summary of Technique used by Valle and Sciarra (1988)

Hysteroscopy performed in early proliferative phase
Simultaneous Laparoscopy
Adhesiolysis with semi-rigid scissors
Methylene blue injected to stain endometrium
IUD inserted if adhesions were extensive
Perioperative prophylactic antibiotics
High dose HRT 2-3 cycles
Summary of the technique used by Protopapas et al. (1998).

- Laparoscopic or ultrasound control if fundus obliterated
- Longitudinal incisions into myometrium from fundus to cervix with knife electrode
- Cervix dilated to Hegar 12–18 to prevent cervical stenosis at end of procedure
- Oral oestrogens for 3 months post-operatively
- Check hysteroscopy after 3 months
- Repeat surgery is result suboptimal
Post Adhesiolysis Therapy to Maintain Cavity Patency…

What do you do next?…
Avoiding Reformation of Adhesive Disease

- Conjugated Estrogen (Premarin) 2.5 mg QD to BID for 30 to 60 days + Medroxyprogesterone Acetate (Provera) 10 mg QD
- IUD 2-3 cycles
- Pediatric Foley 3-10 days
- Prophylactic Antibiotics
- Steroids
Sanfilippo compared 9 patients s/p D&C/Estrogen/Progestin to 26 patients s/p Hysteroscopy/D&C/IUD/Antibiotics. Pregnancy rate was higher in the group with IUD. Likely results were related to hysteroscopic localization of synechiae and insertion of an IUD.

Comparing IUD to Foley...

- Goal: To assess which treatment modality IUD vs. Pediatric foley has better outcome for adjunctive treatment of IUA in patients presenting with infertility
- 51 cases of IUA were treated with the IUD (Lippets)
- 59 cases were treated with a pediatric foley
- IUD removed after three cycles, Foley after 10 days

Comparing IUD to Foley

Foley Catheter group

- 81% vs. 62% had restoration of normal menses (P<0.05)
- Amenorrhea and hypomenorrhea occurred less frequently 18.6% vs. 37.3% (P<0.03)
- Conception rate was 33.9% vs. 22.5% in the IUD group
- Lower incidence of need for repeat procedure

Post OP Hysteroscopic Adhesiolysis (Robinson et al, 2005)

- 24 cases of Asherman’s syndrome
  - 83% amenorrhea or oligomenorrhea
  - 67% with recurrent ab or infertility
  - 54% with dysmenorrhea
  - 50% severe, 46% moderate, 4% minimal

- 95% improved menstrual flow
- 92% improved dysmenorrhea
- 46% pregnant or delivered at 1yr f/u
- 92% improved stage at f/u
Effectiveness of auto-cross-linked hyaluronic acid gel in the prevention of intrauterine adhesions after hysteroscopic adhesiolysis: a prospective, randomized, controlled study.

hyaluronic acid gel

92 patients with irregular menses and intrauterine adhesions

Group A - hysteroscopic adhesiolysis + intrauterine application of ACP gel
Group B - hysteroscopy alone (control group).
Baseline adhesion scores were calculated for each patient and at 3 months after surgery.

CONCLUSIONS: ACP gel significantly reduces the development of intrauterine adhesions postoperatively and its use is likely to be associated with a reduction of severe adhesions.
Effectiveness of auto-crosslinked hyaluronic acid gel in the prevention of intrauterine adhesions after hysteroscopic surgery: a prospective, randomized, controlled study.


132 patients with a single intrauterine lesion (myomas, polyps and uterine septum.

Group A - Hysteroscopic surgery + ACP gel (10 ml)
Group B - Hysteroscopic surgery alone

CONCLUSIONS: ACP gel significantly reduces the incidence and severity of de-novo formation of intrauterine adhesions after hysteroscopic surgery.
Interest of auto-cross-linked hyaluronic acid gel in the prevention of intrauterine adhesions after hysteroscopic surgery: A case-control study


CONCLUSION: ACP gel does not reduce the incidence and the severity of intrauterine adhesions after hysteroscopic surgery.
Factors affecting reproductive outcome of hysteroscopic adhesiolysis for Asherman's syndrome


- A total of 109 operative procedures were performed in 85 cases.
- Uterine perforation occurred on one occasion (0.9%).
- The chances of conception
  - Amenorrheic (2 out of 11; 18.2%)
  - Menses (37 out of 74; 50%).
  - Reformation of adhesions (2 out of 17; 11.8%)
  - Normal cavity (26 out of 44; 59.1%)

- The outcome of hysteroscopic adhesiolysis is significantly affected by recurrence of intrauterine adhesions.
In Conclusion...

- IUA are common
- Routine obstetrical and gynecological procedures put patients at risk for IUA
- Hysteroscopy is the gold standard for diagnosis and treatment of Asherman’s Syndrome
In Conclusion...

- Treatment of Asherman’s Syndrome via Adhesiolysis improves fertility outcomes and alleviates symptoms.
- Benefit of post adhesiolysis treatment is controversial.
- Promising evidence is rising for the use of post operative intrauterine anti adhesive barrier for secondary prevention.
To summarize

- Hysteroscopic surgery is currently the optimum approach to surgery for Asherman’s syndrome.
- Preoperative oestrogens may be useful to aid in identifying endometrial deposits.
- Intra-operative monitoring should be used if the uterine fundus is obscured.
- No advantage to using intrauterine devices routinely (eg. balloons, IUCD, drains).
- Estrogens should be administered in the immediate postoperative period.
- A control hysteroscopy should be done after 2 to 3 months.
What is without question is that

- The best treatment of Asherman’s syndrome is prevention by gentle instrumentation of the pregnant uterus and the avoidance of infection.
- Hysteroscopy and not Curettage for retained placenta
Summery
Asherman's syndrome patient

Pre operative treatment:
Estrogen priming follows with estrogen & progesterone. Follow up with examination of endometrium thickness

Long estrogen treatment with sonographic follow up for endometrial thickness

Withdrawal bleeding

Intra uterine adhesions**

Diagnostic Hysteroscopy

Cervical stenosis with normal cavity

cervical dilatation
Cyclic estrogen & progesterone

Menses restored

End of treatment

Normal cavity

Abnormal Uterine cavity

Long estrogen treatment

Normal uterine cavity is restored

Cyclic estrogen & progesterone

Diagnostic Hysteroscopy 8 weeks

Surgical Hysteroscopy*
Adhesiolysis
Thank you all for your attention