

## Clinically Significant Uterine Synechiae Caused by Transmural Uterine Incisions

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### ABSTRACT

The presence of clinically significant uterine synechiae, or Asherman's syndrome, is suspected when patients with a history of intrauterine instrumentation have new-onset menstrual disturbances, infertility, or recurrent pregnancy loss. Synechiae are typically attributed to instrumentation of a gravid or puerperal uterus. We present two cases in which uterine synechiae resulted from transmural uterine incisions. Hysteroscopic resection of adhesions bridging the anterior and posterior endometrial surfaces restored intrauterine anatomy. However, reproductive potential was still compromised. These cases highlight the need for increased vigilance to avoid iatrogenic intrauterine synechiae during repair of transmural uterine incisions. (J GYNECOL SURG21:95)

### INTRODUCTION

ASHERMAN'S SYNDROME was originally described in 1948 as the presence of intrauterine adhesions or synechiae resulting from trauma to the uterine cavity. Although postpartum curettage has been identified as a primary cause of intrauterine scarring, induced abortions and curettage after missed abortions have also given rise to Asherman's syndrome.<sup>1,2</sup> Intrauterine adhesions may present clinically as menstrual disturbances such as hypomenorrhea, oligomenorrhea, amenorrhea, infertility, or recurrent pregnancy loss. Subsequent pregnancy, if achieved, may be complicated by preterm labor, placenta previa, and placenta accreta.<sup>3</sup> Hysteroscopy allows definitive diagnosis and treatment of intrauterine adhesions.

Although instrumentation of a gravid or puerperal uterus is well recognized as the etiology for Asherman's syndrome, transmural incisions of the uterus are seldom appreciated as a possible source of synechiae. Here we report two such cases involving a cesarean section and an abdominal myomectomy, in which subsequent formation of solitary intrauterine adhesions caused significant clinical problems.

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## CASE REPORTS

### Case 1

The patient was a 38-year-old woman (gravida 3, para 1) who had given birth to a full-term healthy female infant by cesarean section 3 years before presentation. The indication for cesarean section was arrest of labor, and the surgery and recovery were unremarkable. Subsequently the patient experienced two late first-trimester spontaneous abortions, which were expectantly managed. The patient denied any irregularities in her menstrual flow. Her evaluation for recurrent abortion included thrombophilia screening, hormonal profile, and karyotype of the abortus, all of which were normal. However, hysterosalpingogram (HSG) revealed a filling defect in the lower to mid-uterine body, which was persistent in all views, and suggestive of a synechia. The patient was referred for hysteroscopy. An office hysteroscopy was performed under anesthesia and a single broad-based adhesion was clearly visualized from the anterior to posterior walls. The adhesion was resected at the mural attachments using endoscopic scissors (Fig. 1).

### Case 2

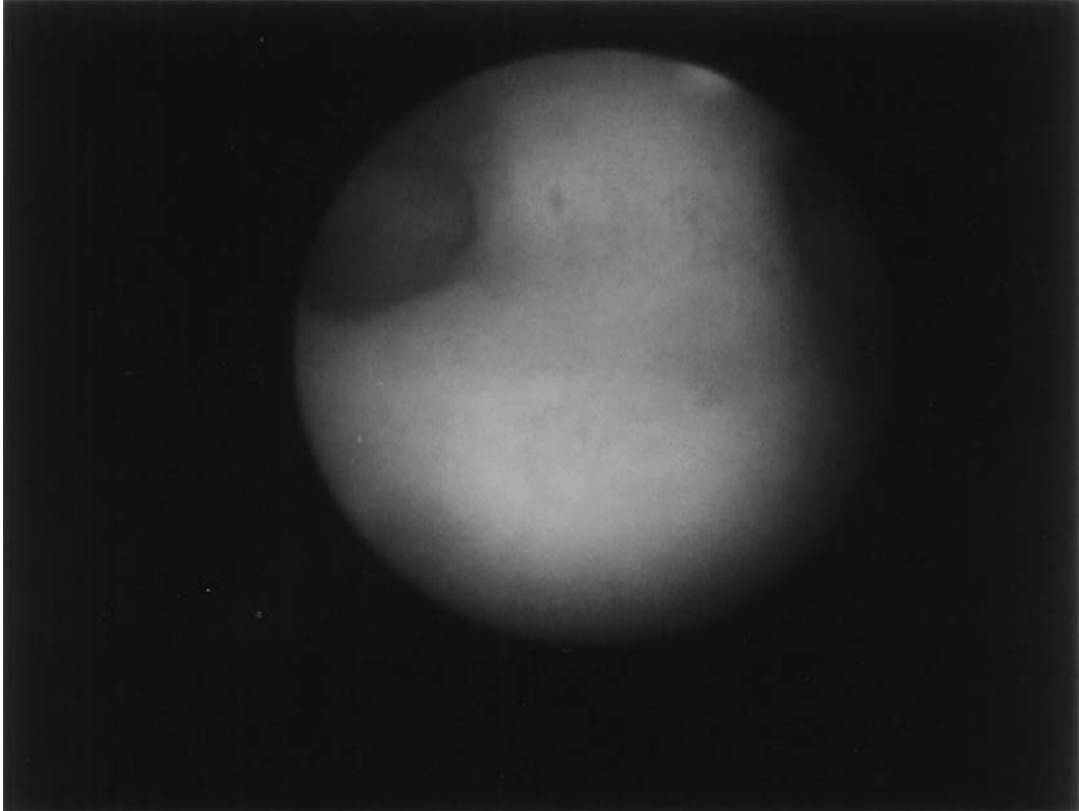
A 41-year-old woman (gravida 2, para 1) with a history of a first-trimester elective termination of pregnancy followed by a term spontaneous vaginal delivery presented with secondary infertility. Transvaginal ultrasound with saline infusion revealed multiple large intramural leiomyomata with some intracavitary impingement but no discrete filling defects. Abdominal myomectomy was recommended and performed without complication. No mention of entering the cavity was made on the operative report. Two years after surgery the patient presented again for evaluation for assisted reproduction. A HSG, performed to evaluate the uterine cavity and fallopian tubes, revealed a filling defect near the uterine fundus. Hysteroscopy confirmed the presence of a single dense adhesion bridging the anterior and posterior endometrial surfaces. The band was lysed with hysteroscopic scissors. The patient subsequently underwent *in vitro* fertilization for advanced reproductive age but failed to conceive.

## DISCUSSION

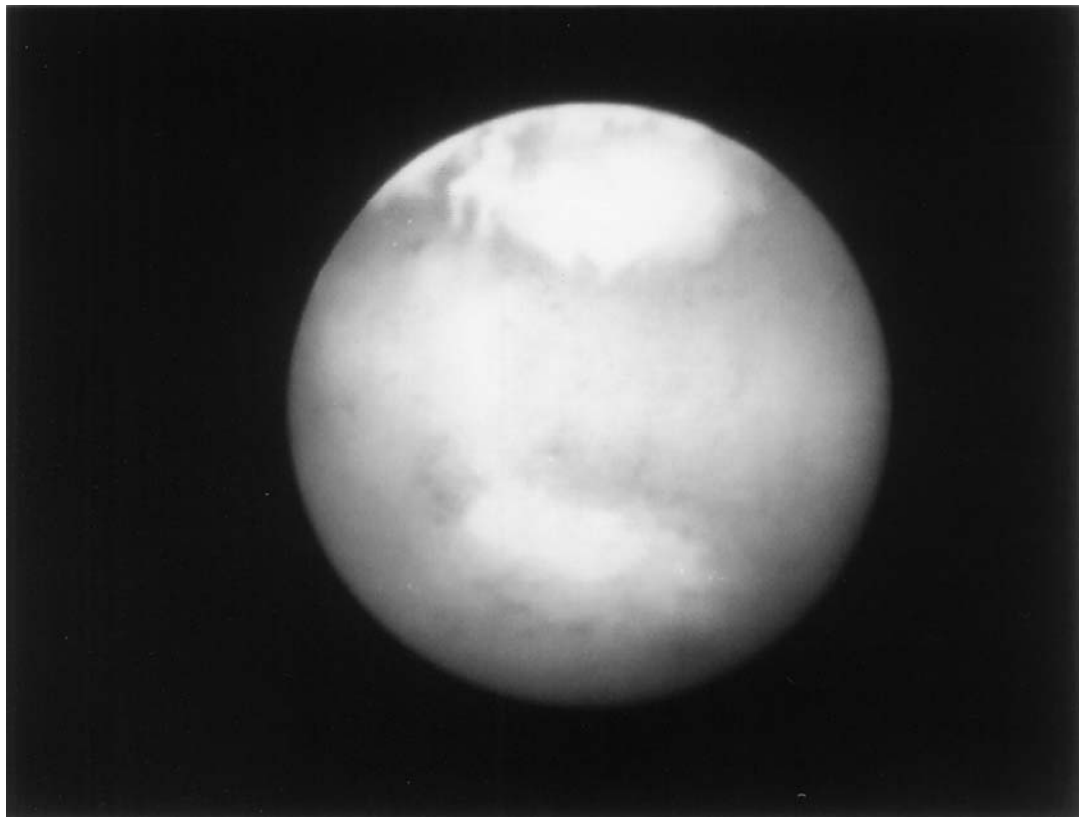
These two cases illustrate the iatrogenic potential for creating intrauterine adhesions during repair of transmural uterine incisions. Neither of these patients had a history of synechiae before their respective laparotomies, and neither had any other predisposing conditions that might have led to intrauterine adhesion formation, such as curettage for retained placenta, endometritis, or tuberculosis. Although the reasons for the formation of the adhesions may be multifactorial, it is reasonable to assume that these lesions were postoperative complications, possibly resulting from incorporation of a suture in the posterior uterine wall during the repair of the anterior incision. A stitch thrown too deeply may have created the direct apposition of the anterior and posterior endometrial surfaces, causing the formation of a fibrous agglutination in the cavity. However, intrauterine adhesions, like those that form in the peritoneal cavity, may be difficult to avoid even when paid meticulous attention, because of factors beyond the technical control of the surgeon.<sup>4</sup> Although these lesions did not obliterate the entire endometrial cavity or cause amenorrhea as originally described in Asherman's syndrome,<sup>5</sup> insult to the integrity of the cavity may have contributed to the infertility and spontaneous abortion noted in these patients.

Upon eliciting a history of secondary infertility, recurrent miscarriage, or abnormal menses af-

**A**



**B**



**FIG. 1.** A. Postcesarian synechiae, appearing as a broad band in the midline connecting the anterior and posterior walls. B. Appearance after hysteroscopic lysis.

ter uterine surgery, the diagnosis and treatment are straightforward. Imaging should be the first step in the evaluation. Although HSG was used for both of these patients, if tubal status is not of critical interest, saline-infused sonography is preferred for the detection of intracavitary lesions. It is simple to perform in the office with little discomfort to most patients, may be more sensitive for detection of intracavitary lesions than HSG,<sup>6</sup> and is less expensive than magnetic resonance imaging techniques.<sup>7</sup> Hysteroscopy is used to confirm the diagnosis and to resect the adhesion. Office hysteroscopy, using a 3-mm outer sheath with an operative channel and endoscopic scissors, can safely and quickly remove most adhesions. Because the entire extent of the lesion is visualized hysteroscopically, the procedure can often be safely performed without concurrent laparoscopy. Postoperative estrogen supplementation is unnecessary because the majority of the endometrium is unaffected. Although resection of the synechiae restores normal uterine anatomy, reproductive potential may still be compromised even after adhesiolysis.<sup>8,9</sup>

The vast majority of cesarean sections and abdominal myomectomies do not result in intrauterine synechiae; however surgeons should be aware of this possible complication when closing uterine incisions. Risk factors for postoperative synechiae may include complicated cases in which the anatomy is distorted by multiple myomas, visualization is obscured by hemorrhage, or operation is performed in a deep pelvis with limited access. Careful attention should be paid to suture placement to avoid incorporation of the posterior wall. Without compromising tensile strength, the use of a less reactive suture with a shorter absorption time may also minimize adhesion formation. The use of a bioresorbable adhesion barrier to prevent synechiae after uterine evacuation has been reported,<sup>10</sup> however it has not been studied in the context of a transmural incision. Multiple agents such as antibiotics, steroidal and nonsteroidal compounds, and fibrinolytic agents have been studied in prevention of peritoneal adhesions, but definitive evidence is lacking regarding which (if any) agent for adhesion prevention should be used adjunctively for the uterus.<sup>11</sup>

## REFERENCES

1. Lancet M, Kessler I. A review of Asherman's syndrome and results of modern treatment. *Int J Fertil* 1988;33:14.
2. Sanfilippo JS, Fitzgerald MR, Badwawy SZA, Nussbaum ML, Yussman MA. Asherman's syndrome: A comparison of therapeutic methods. *J Reprod Med* 1982;27:328.
3. Schenker JG. Etiology of and therapeutic approach to synechia uteri. *Eur J Obstet Gynecol Reprod Biol* 1996;65:109.
4. Parker MC. Epidemiology of adhesions: The burden. *Hosp Med* 2004;65:330.
5. Asherman JG. Traumatic intra-uterine adhesions. *J Obstet Gynaecol Br Emp* 1950;57:892.
6. Soares SR, Barbosa dos Reis MM, Camargos AF. Diagnostic accuracy of sonohysterography, transvaginal sonography, and hysterosalpingography in patients with uterine cavity diseases. *Fertil Steril* 2000;73:406.
7. Letterie GS, Haggerty MF. Magnetic resonance imaging of intrauterine synechiae. *Gynecol Obstet Invest* 1994;37:66.
8. Bergquist CA, Rock JA, Jones HW Jr. Pregnancy outcome following treatment of intrauterine adhesions. *Int J Fertil* 1981;26:107.
9. Pistofidis GA, Dimitropoulos K, Mastrominas M. Comparison of operative and fertility outcome between groups of women with intrauterine adhesions after adhesiolysis. *J Am Assoc Gynecol Laparosc* 1996;3:S40.
10. Tsapanos VS, Stathopoulou LP, Papathanassopoulou VS, Tzingounis VA. The role of Seprafilm bioresorbable membrane in the prevention and therapy of endometrial synechiae. *J Biomed Mater Res* 2002;63:10.
11. Risberg B. Adhesions: Preventive strategies. *Eur J Surg* 1997;163(suppl):32.

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