

Successful Fertility Restoration in a Patient With Severe Asherman's Syndrome Through Serial Hysteroscopic Adhesiolysis: A Case Report

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Abstract- Severe Asherman's syndrome, characterized by extensive intrauterine adhesions and endometrial fibrosis, poses a significant challenge to fertility restoration. In cases where the uterine cavity is non-visualized, surrogacy is often considered the only viable option. We report a rare and successful case of fertility restoration in a 30-year-old woman with severe Asherman's syndrome and multiple comorbidities. Following secondary amenorrhea post-curettage, imaging revealed a completely obliterated uterine cavity. Despite initial recommendations for surrogacy, the patient underwent three serial hysteroscopic adhesiolysis procedures. Gradual anatomical reconstruction and endometrial regeneration were achieved, culminating in a receptive cavity and near-normal menstruation. IVF was performed, resulting in a twin pregnancy. Despite a high-risk gestation complicated by PPRM and preterm delivery at 30+6 weeks, both infants were discharged in good health. This case underscores the transformative potential of staged hysteroscopic intervention in restoring fertility, even in the most severe presentations of Asherman's syndrome. It challenges traditional prognostic assumptions and highlights the importance of individualized, persistent surgical care.

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Introduction

Intrauterine adhesions (IUA) or Asherman syndrome is a gynecological disorder that is observed in the development of fibrous scar tissue in the uterine cavity. It usually occurs in the wake of endometrial lining trauma typically after dilation and curettage (D&C), after postpartum bleeding, pelvic operative procedures, or uterine infection. Those adhesions that result may be thin, filmy bands to dense, fibrotic tissue that can completely annihilate the uterine cavity (1,2).

Asherman syndrome has a range of clinical manifestations such as hypomenorrhea, amenorrhea, infertility, and frequent miscarriages. The symptoms are

usually severe as a result of the severity of intrauterine scarring. Hysteroscopy is the gold standard of making the diagnosis, though other imaging technologies like sonohysterography and hysterosalpingography can give preliminary information (3,4).

The treatment of Asherman syndrome is focused on hysteroscopic adhesiolysis, which is based on the need to normalize the structure of the uterine cavity and ensure endometrial renewal. The adhesions are usually prevented by the use of postoperative hormonal therapy and mechanical barriers (e.g., intrauterine balloon or IUD). Although surgical practice has improved, the prognosis of the treatment differs in a broad range with the intensity of the adhesions and regenerative ability of

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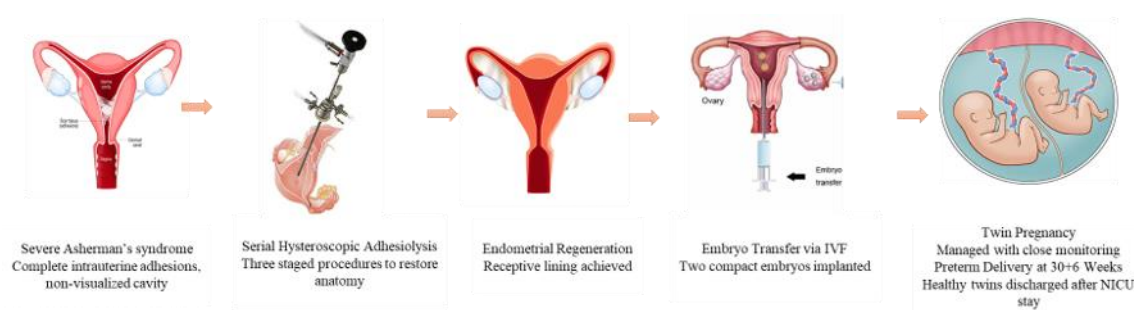
Successful fertility restoration in a patient

endometrial tissue. In the worst scenario, patients can be advised to turn to assisted reproductive technologies or even surrogacy (3,5,6).

The article will help increase the emerging knowledge on fertility restoration in patients with severe Asherman syndrome. It is a rare and educative case of an effective reconstruction of the uterine cavity by a series of hysteroscopic procedures leading to a twin pregnancy. The novelty of this work is shown by proving that, despite the situation when the uterine cavity is not visualized initially and surrogacy is the only option, subjective and consistent surgical care can provide complete reproductive recovery. This report highlights the role of personalized care, persistence in surgery, and the possibility of proving the traditional prognostic expectations in reproductive medicine.

While several case reports have documented

successful pregnancy outcomes following hysteroscopic adhesiolysis for moderate Asherman's syndrome, published cases of complete anatomical restoration following non-visualized uterine cavity remain exceptionally rare. This case is distinguished by: (1) initial complete cavity obliteration on imaging without identifiable landmarks; (2) the patient's complex medical comorbidities including insulin-dependent diabetes mellitus, chronic hypertension, and hypothyroidism; and (3) successful twin gestation following IVF. These features collectively provide unique insights into the potential for fertility restoration even under the most challenging clinical circumstances, extending beyond previously published reports that typically describe singleton pregnancies in otherwise healthy patients with partial cavity involvement.



Graphical abstract: Serial hysteroscopic intervention can restore fertility even in the most severe cases of Asherman's syndrome

Case Report

A 30-year-old woman with a history of chronic hypertension, overt diabetes mellitus requiring insulin therapy, hypothyroidism, nephrolithiasis, and prior HPV infection (managed with colposcopy but without biopsy) presented with secondary infertility.

Her first pregnancy occurred in 2019. At 25 weeks of gestation, she developed preterm labor and delivered vaginally; the neonate was born alive but died shortly thereafter. Following delivery, she underwent curettage for retained products of conception. Subsequently, she experienced secondary amenorrhea and, at most, extremely scant hypomenorrhea (1-3 drops of blood during the entire menstrual period).

She was referred to our infertility center, where severe Asherman's syndrome was diagnosed. Due to the severity of adhesions and lack of functional endometrium, she was initially considered a candidate for gestational surrogacy.

Despite the poor prognosis, the patient elected to pursue surgical restoration of her uterus. Prior to the first

procedure, the patient was counseled regarding the experimental nature of the surgical approach, the possibility of uterine perforation (estimated 5-10% given complete cavity obliteration), failure to restore any functional cavity (>80% probability based on published literature), and the continued option of surrogacy. The patient provided written informed consent specifically addressing these risks. She underwent three staged hysteroscopic adhesiolysis surgeries over several months:

First surgery: No intraoperative complications. Postoperative course uncomplicated; patient discharged same day. Mild pelvic cramping for 48 hours. Withdrawal bleeding (3 days) occurred 14 days after progesterone challenge.

Second surgery: Minor bleeding from lysis site (estimated 30 mL) controlled with balloon tamponade. Patient discharged after 23-hour observation. Postoperative pain controlled with ibuprofen 400 mg every 8 hours for 3 days.

Third surgery: No complications. Copper IUD removal performed outpatient at 30 days. First normal

menstrual period (duration 4 days, using 4 pads/day) occurred 21 days after IUD removal.

Total treatment duration: From first surgery to IVF

embryo transfer was 11 months. The patient missed approximately 15 workdays across all procedures and follow-up appointments (Figure 1).



Figure 1. Pelvic radiographs of the patient at different stages of management. (A) Pre-operative radiograph before surgical intervention, demonstrating complete cavitory obliteration with no identifiable uterine contour. (B) Post-operative radiograph following the first surgery, showing the intrauterine balloon (arrow) and partial opening of the lower uterine segment. (C) Radiograph after the final surgical procedure, demonstrating definitive anatomical reconstruction of the uterine cavity. All images obtained in anteroposterior projection

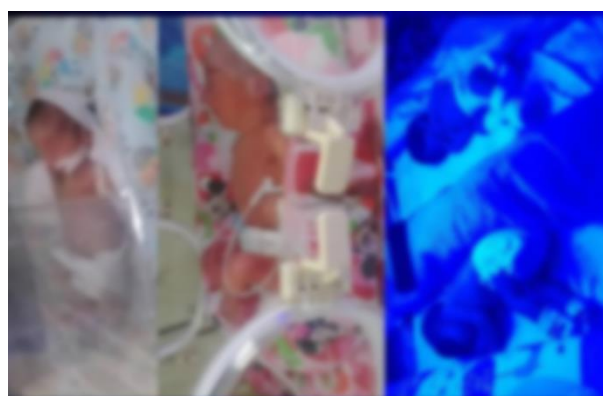


Figure 2. Neonatal intensive care unit (NICU) photographs of the twins following preterm delivery at 30+6 weeks of gestation. (A) Twin A, birth weight 1200 g, at day 1 of life receiving respiratory support via nasal continuous positive airway pressure (nCPAP). (B) Twin B, birth weight 1100 g, at day 3 of life. Both infants required supportive care for prematurity including thermoregulation, phototherapy for indirect hyperbilirubinemia, and enteral feeding via orogastric tube. No major morbidities (intraventricular hemorrhage, necrotizing enterocolitis, bronchopulmonary dysplasia, or retinopathy of prematurity) were observed. Both infants were discharged in good health at 26 days of life. Parental consent for publication of identifiable images was obtained

After the last procedure, the patient was subjected to IVF and two compact embryos (were transferred with an endometrial thickness of 8.11 mm and gave birth to twin pregnancy. Since the beginning of the case, it was treated as a high-risk pregnancy and registered in the local health network. When she was 26 gestational weeks old, she was hospitalized on account of shortening cervix (1.2 cm). She was hospitalized a total of 36 days. She got 30 weeks and 6 days of fever and preterm premature rupture of membranes (PPROM) during the environment of uterine contractions. Cesarean was done and two preterm infants with weighs of 1200g and 1100g respectively were born. The two babies spent 26 days in the neonatal intensive

care units, but they were later released in fine health. The current health status of the two children is healthy without developmental disorders.

The patient was given antenatal corticosteroids (betamethasone) and magnesium sulfate to protect the brain during the process of hospitalization. The medications used during pregnancy were levothyroxine 50 ug daily, hydralazine since the early gestation, folic acid, vitamin D and vaginal progesterone suppository (until 30 weeks). Glycemic control during hospitalization was done by insulin therapy. She has also had a few cases of urinary tract infection that was suitably treated.

This case represents a highly successful outcome in

the management of severe Asherman's syndrome. Despite initial imaging showing a non-visualized cavity and consideration of surrogacy, serial hysteroscopic intervention led to full anatomical and functional restoration of the uterus. The patient's ability to conceive and deliver twins underscores the potential for fertility recovery even in the most challenging presentations.

Discussion

Intrauterine adhesions and endometrial fibrosis is a syndrome of Asherman that is still among the most difficult causes of secondary infertility. It is usually caused by injury to the lowest layer of the endometrium, most often after dilation and curettage, postpartum problems or pelvic infections(7,8). The condition is mild in some cases to total erosion of the uterine cavity, and this has its commensurate effects on menstruation, implantation possibilities, and the results of pregnancy. In severe cases, the uterine cavity may be entirely non-visualized on imaging, and hysteroscopy may reveal dense fibrotic bands with poor anatomical landmarks. Such presentations are about to be viewed as poor choices to use in uterine reconstruction and patients can be advised to resort to surrogacy or adoption. But nowadays, with the new developments in the hysteroscopic procedure, along with hormone therapy and preventive measures against postoperative adhesion, have expanded the therapeutic window for even the most complex cases (9-11). In patients with complete cavity non-visualization, a trial of staged hysteroscopic exploration should be considered before concluding that uterine restoration is impossible. The absence of imaging landmarks does not reliably predict the absence of viable endometrial stem cells.

The patient in this report has gone through three consecutive hysteroscopic adhesiolysis surgeries that were aimed at addressing to deeper and deeper and more fibrotic areas of the uterine cavity. This gradual manner of restoration enabled endometrial architecture to be restored with minimal risk of perforation or excessive trauma. Endometrial regeneration could have been due to the use of postoperative estrogen therapy, and no viable tissue was lost with regard to careful surgical technique. Especially interesting is the fact that embryo implantation and the birth of twins alive in this case were successful. It contradicts the idea that total cavity eradication was irreversible and stresses the need to persevere and treat patients on a case-by-case basis. Although the literature indicates that there are mixed results with regard to the success rates of hysteroscopic therapy in severe

Asherman syndrome, the case contributes to the evidence of growing shows that even in patients with almost complete scarring, expert intervention can lead to full reproductive recovery. Clinical implication: We recommend multiple staged procedures using cold instruments over single aggressive resections. Surgeons should prioritize tissue preservation over complete adhesion removal at each operation, accepting that full restoration may require several months and multiple interventions.

Perhaps the most ethically significant challenge raised by this case concerns the appropriate threshold for recommending surrogacy. The patient was initially counseled that surrogacy was her only viable option a recommendation consistent with published guidelines for complete cavity obliteration. However, her decision to pursue surgical restoration against this recommendation resulted in successful twin pregnancy and delivery of healthy infants.

Implications for clinical practice and treatment protocols

This case supports several modifications to current treatment paradigms for severe Asherman's syndrome:

Reconsideration of surrogacy as immediate recommendation: In cases of complete cavity non-visualization, our findings suggest that a trial of staged hysteroscopic intervention should be offered before concluding that uterine restoration is impossible. The absence of imaging landmarks does not reliably predict absence of viable endometrial stem cells.

Staged rather than aggressive single-procedure approach: Our serial approach using cold microscissors contrasts with aggressive resection using electrosurgery, which may permanently ablate residual endometrial progenitor cells. We recommend multiple conservative procedures rather than attempting complete lysis in a single operation.

Use of targeted ultrasound guidance: Preoperative identification of even small endometrial foci (as small as 4 mm in this case) enabled surgical prioritization of tissue preservation over complete lysis of all adhesions.

Patient selection considerations: Patients with preserved ovarian reserve, no contraindications to estrogen therapy, and willingness to undergo multiple procedures are most appropriate for this approach.

The case indicates the great potential of fertility restoration in individuals with severe Asherman syndrome even in those who at the outset didn't have any signs of a uterine cavity after imaging. This report is novel, as the procedure of serial hysteroscopic

adhesiolysis has been successfully used to recreate the endometrial environment, and twins have been successfully implanted and delivered as a result of IVF. It disputes the traditional beliefs about the irreversibility of highly developed intrauterine adhesions and shows that, through surgical accuracy and dogged determination, reproductive functioning can be attained in a situation where once a case was regarded as untreatable.

Ethics approval and consent to participate

This case report was conducted in accordance with the Declaration of Helsinki. The study protocol was reviewed and approved by the Institutional Review Board of Golestan University of Medical Sciences (Approval No.: IR.GOUMS.REC.1404.339). Written informed consent was obtained from the patient for all surgical procedures, the IVF cycle, and for the publication of this case report including clinical details, imaging studies (Figure 1), and identifiable photographs of her infants (Figure 2). The patient was informed that she could withdraw consent at any time without affecting her ongoing medical care. A copy of the signed consent form is available for review by the journal editor. All personal identifiers beyond those essential for clinical understanding have been removed to protect patient privacy.

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