Case Report

Pregnancy in Infertile Patient after Intrauterine Adhesiolysis by Multitherapeutic Strategy: A Case Report and Mini-review

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Abstract

Asherman's syndrome, characterized by intrauterine adhesions (IUAs), represents a significant challenge in the field of female infertility. Hysteroscopic adhesiolysis has emerged as the gold standard for both the diagnosis and treatment of Asherman's syndrome. Understanding the intricate relationship between Asherman's syndrome, uterine adhesiolysis, and infertility is crucial for guiding comprehensive and effective management strategies. The success of the treatment is contingent upon preventing adhesion recurrence, particularly in cases of severe IUAs. This is the first case, in which we employed a multifaceted preventive approach, utilizing hyaluronic gel, Foley balloon, hormonal therapy, and platelet-rich plasma, achieving successful pregnancy following embryo transfer despite the presence of severe IUAs. The patient, a 35-year-old female, underwent one cesarean section following *in vitro* fertilization and required dilation and curettage due to retained products of conception. The patient presented with oligohemorrhage, and the uterine lining was thin while using hormones for endometrial preparation. The diagnosis of severe IUAs was confirmed through ultrasound and hysteroscopic examination of the uterine cavity. The patient underwent hysteroscopic adhesiolysis with a preventive approach using a combination of methods. Subsequently, the patient underwent a second-look hysteroscopy to assess the uterine cavity and achieved successful embryo transfer. The patient carried the pregnancy to 38 weeks and underwent repeated cesarean section due to the vertex-vertex presentation of the twins.

Keywords: Asherman's syndrome, hysteroscopic adhesiolysis, intrauterine adhesion

Introduction

Intrauterine adhesions (IUAs) commonly arise from injurious insults to the endometrial lining. The manifestation of symptoms such as oligomenorrhea, amenorrhea, infertility, or recurrent miscarriages characterizes Asherman's syndrome. A prevalent etiology of Asherman's syndrome involves damage to the endometrial lining induced by suction curettage in the context of abortion or placental removal postpartum. Following such trauma to the endometrial lining, fibrous tissue bands form, exhibiting suboptimal responsiveness to hormonal cues, thereby inducing deformities within the uterine cavity [Video].[1-3]

Patients afflicted with Asherman's syndrome exhibit a substantial incidence of infertility, reaching up to 50%. This may arise from diminished endometrial responsiveness to hormonal signaling, occlusion of the fallopian tubes and cervical canal due to adhesions, impeding sperm motility, or adhesions constricting the embryonic implantation site. The therapeutic paradigm for Asherman's syndrome-induced infertility involves hysteroscopic adhesiolysis, a procedure aimed at excising adhesions within the uterine cavity. Hysteroscopic adhesiolysis contributes to the amelioration of endometrial thickness and receptivity. Posthysteroscopic adhesiolysis, the pregnancy rate escalates to 65.5%, markedly surpassing the 18% preintervention rate.[4] Notably, a majority of patients achieve pregnancy within 1-year postprocedure,

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with an impressive success rate of 97.2% within a 2-year timeframe.[5]

This clinical case will elucidate a rare case of infertility stemming from IUAs after uterine intervention for retained products of conception (RPOC). Subsequently, the patient underwent hysteroscopic adhesiolysis, culminating in the successful transfer of the embryo.

Case Report

A 35-year-old female patient, gravida 1, parity 1, one previous cesarean section after *in vitro* fertilization and uterine intervention (dilation and curettage) for RPOC, exhibited thin endometrial lining during standard hormonal preparation and experienced oligomenorrhea. The diagnosis revealed severe IUAs on ultrasound and hysteroscopy. Hysteroscopic adhesiolysis was performed, successfully separating the adhesions within a 20-min duration, without complications. Hyaluronic acid was administered on days 1 and 7 posthysteroscopic adhesiolysis. A Foley balloon was inserted for 7 days postsurgery. The patient received 4 mg of estrogen valerate and 20 mg of dydrogesterone daily for 2 weeks, with platelet-rich plasma (PRP) injected on the 4th day postsurgery Figure 1.

Two months later, a second-look hysteroscopy confirmed normal findings within the uterine cavity. One month following this, the patient underwent embryo transfer with two blastocysts on day 5. The transfer occurred with a slightly lower and left-deviated catheter placement, resulting in successful implantation and intrauterine pregnancy. The patient carried the pregnancy to 38 weeks and underwent repeated cesarean section due to the vertex-vertex presentation of the twins, with both fetuses in a transverse lie and discordant growth, emphasizing the complexity of the multiple pregnancies.

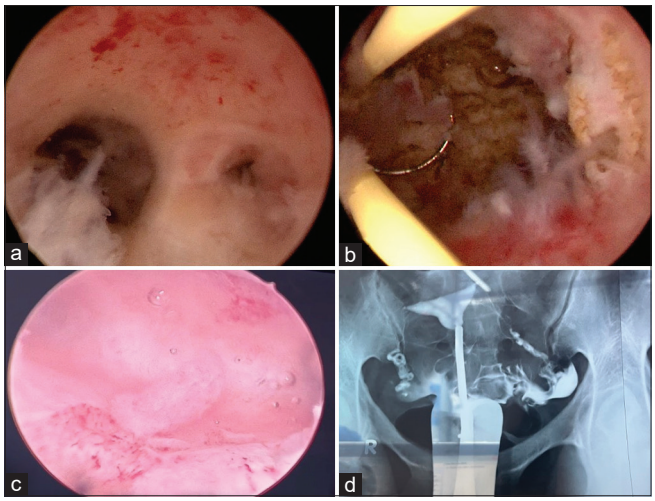

Figure 1: (a) Severe intrauterine adhesions under hysteroscopic diagnosis. (b) Successfully adhesiolysis. (c and d) Hysterosalpingography (HSG) and second-look hysteroscopy confirmed normal uterine cavity http://www.apagemit.com/page/video/show.aspx?num=330&kind=2&p

Discussion

Hysteroscopic adhesiolysis is considered the gold standard in Asherman's syndrome treatment. However, achieving successful outcomes is challenging due to the elevated recurrence rate of adhesions following the procedure. The recurrence rate is contingent upon the severity of IUAs, with a higher degree of adhesion correlating with an increased likelihood of recurrence. According to the European Society for Gynaecological Endoscopy (ESGE) guidelines from 2017, IUAs are categorized into three degrees: mild, moderate, and severe. In cases of severe IUAs, the recurrence rate can reach up to 62.5%.[6] Hanstede *et al*. reported a series of cases involving hysteroscopic adhesiolysis in 638 patients over a 10-year period, wherein 97.8% of patients resumed normal menstruation within 2 months postsurgery, with an overall success rate (restoration of the uterine cavity and normal menstruation) of 95%.[7]

During the adhesiolysis process, attention must be given to the fact that adhesions in the central region have fewer and thinner blood vessels compared to those closer to the uterine walls. Therefore, it is advisable to initially address the central adhesions to minimize bleeding, followed by those on the outer periphery. Sequentially detaching adhesions from proximal to distal (from caudad to cephalad) facilitates the creation of space for the distension medium, rendering the procedure more manageable. In addition, preoperative assessment of the uterine orientation is crucial. In cases of an anteverted uterus, the surgical approach should be directed anteriorly and upward, whereas, in retroverted uteri, it should be aimed posteriorly and downward to avoid uterine perforation.

Several adjunctive measures can aid in adhesiolysis to minimize complications, including combining abdominal laparoscopy or ultrasound guidance during the procedure and evaluating the thickness of uterine muscle at the fundus, anterior, and posterior walls before intervention.

One critical consideration pertains to the potential for adhesion recurrence subsequent to surgical intervention, necessitating postoperative prophylaxis. The efficacy of preventive measures against adhesion recurrence lacks consensus, warranting additional data for comprehensive evaluation. Diverse strategies encompass intrauterine devices, Foley balloons, hyaluronic gel, hormonal therapy, and PRP. Hyaluronic gel exhibits superior efficacy compared to Foley balloons, with intrauterine devices incorporating Foley balloons proving more effective than standalone Foley balloons in preventing adhesion recurrence.[8] However, intrauterine devices, characterized by a small surface area, pose an infection risk of up to 8%, and uterine perforation has been documented. Therefore, the use of intrauterine devices for preventive purposes is not recommended.[9] The reported

clinical pregnancy rate following postoperative application of hyaluronic gel is as high as 79.8%.[8] Research on the optimal dosage and duration of hormone use postsurgery to prevent IUA recurrence remains limited. In accordance with recommendations from the ESGE, postoperative hormonal therapy, with or without progesterone, may effectively prevent adhesion recurrence. PRP has also demonstrated efficacy in preventing adhesion recurrence and enhancing menstrual blood flow during menstruation.[10]

The literature documents a variable pregnancy rate postintervention, ranging from 30% to 66%. In a systematic analysis conducted by Guo *et al.*, encompassing 54 studies, the pregnancy rate following hysteroscopic adhesiolysis was determined to be 50.7%.[11] The preintervention pregnancy rate in cases of IUAs was 18%, rising to 65.5% postintervention. The postintervention live birth rate was 36%, contrasting with the 14.7% rate observed before the procedure. A significant proportion of patients achieved conception within 1-year postsurgery, with 97.2% achieving pregnancy within 2 years.[12] However, the pregnancy rate and outcomes are contingent upon the severity of IUAs, recognized as a primary factor contributing to infertility. Notably, pregnancy rates following hysteroscopic adhesiolysis differ significantly among cases categorized as mild, moderate, and severe, with rates of 71.4%, 47%, and 40%, respectively.[13] It is evident that in severe cases, the pregnancy rate decreases significantly compared to milder cases. This phenomenon may be attributed to the state of endometrial atrophy, influencing the implantation process and contributing to adhesion recurrence following surgical adhesiolysis in cases characterized by severe IUAs.

In this instance, we conducted hysteroscopic adhesiolysis utilizing a technique designed to prevent uterine perforation, successfully completing the procedure within 20 minutes without complications. This represents the first case of severe IUAs, in which we employed a multifaceted approach simultaneously to prevent adhesion recurrence. The combined preventive measures included the application of hyaluronic gel, Foley balloon, hormonal therapy, and PRP. The outcome yielded the anticipated efficacy, as evidenced by a normalized uterine cavity upon hysteroscopic examination and successful pregnancy following embryo transfer.

In conclusion, hysteroscopic adhesiolysis remains the gold standard in the management of IUAs, with a paramount focus on preventing adhesion recurrence. The prognosis for cases with severe IUAs is notably poorer compared to those classified as moderate or mild. Various antiadhesion methods, including hyaluronic gel, hormonal therapy, and PRP, are recommended due to their heightened efficacy, particularly in cases associated with infertility. The strategic combination of these methods may yield more favorable outcomes for challenging instances characterized by severe IUAs.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Author contributions

Data collection, analysis, surgery and writing the manuscript were done by Hoang DT, Nhan TN and An TNP. All authors have read and approved the final version of the manuscript.

Data availability statement

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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Conflicts of interest

There are no conflicts of interest.

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