REVIEW ARTICLE

Reproductive Outcome following Hysteroscopic Adhesiolysis in Patients with Asherman's Syndrome

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ABSTRACT

Asherman's syndrome is a clinical condition characterized by a spectrum of disorders ranging from amenorrhea to hypomenorrhea to normal menses. It is frequently associated with infertility or recurrent pregnancy loss. Hysteroscopic adhesiolysis with adjuvant measures is considered the gold standard of treatment. A number of studies have reported on the reproductive outcomes after treatment of Asherman's syndrome with varied results as these are difficult to assess because there is no universally agreed system of classification. Such outcome measures include resumption of normal menses, conception rate and pregnancy outcome. We review the current best evidence about treatment modalities as well as subsequent reproductive outcome for Asherman's syndrome.

Conclusion: Large prospective controlled studies are needed to determine the best diagnostic and treatment modalities for intrauterine adhesions.

Keywords: Asherman's syndrome (AS), Intrauterine adhesions (IUA), Uterine synechiae (US), Intrauterine synechiae (IUS), Hysteroscopic adhesiolysis, Amenorrhea, Infertility, Reproductive outcome.

INTRODUCTION

Asherman's syndrome was first described by Heinrich Fritsch in 1894[1] but it was Joseph Asherman who first pointed out the frequency of the pathologic condition and described the symptoms of amenorrhea, infertility and dysmenorrhea following complicated delivery or abortion (Asherman, 1948).[2] The syndrome is also commonly referred to as intrauterine adhesion (IUA), although, attempts have often been made by some authors to differentiate Asherman's syndrome (where amenorrhea from complete obliteration of the uterine cavity is a cardinal symptom) from intrauterine adhesions (where there is varied menstrual flow patterns, ranging from eumenorrhea through hypomenorrhea to amenorrhea, occurring as a result of partial obstruction of uterine cavity),[3,4] this differentiation has not gained widespread popularity. Other common names given to this condition include intrauterine synechiae, uterine atresia, amenorrhea traumatica and endometrial sclerosis.

OBJECTIVES

1. To assess the various types of hysteroscopic adhesiolysis and adjuvant treatment measures used in management of patients with Asherman's syndrome.
2. To assess the reproductive outcome (resumption of menses, conception rate, time interval to conceive as well as pregnancy outcome) in patients with Asherman's syndrome following hysteroscopic adhesiolysis.

METHODOLOGY

Materials

The study was carried out through a literature search using the information technology installations of the World Laparoscopy Hospital, Gurgaon, NCR Delhi. Standard stationary was also provided by the resource centre of the hospital.

Time: The study was carried out during a period of one week between 17 December 2010 and 24 December 2010.

Data Collection

All the publications used in the current study were accessed from the electronic (virtual) library using the following search engines: Google, Cochrane library, SpringerLink, HighWire press, PubMed and other linked references. Publications used were searched for using the following key words: Asherman's syndrome, intrauterine adhesions, uterine synechiae, hysteroscopic adhesiolysis, amenorrhea, infertility, reproductive outcome.

PREVALENCE

The true incidence of Asherman's syndrome is unknown as the clinical spectrum ranges from amenorrhea to menstrual disturbance to infertility. It is, however, known to be a relatively uncommon condition. The American Society for Reproductive Medicine (ASRM) Practice Committee educational bulletin published in 2006 estimates a frequency of 7% of secondary amenorrhea,[5] while it was found in 6.3% of subfertile population in Nigeria.[6] Schenker

and Margalioth[7] reviewed 90 articles, reporting on a total of 2981 cases of Asherman's syndrome in various countries; they found that the incidence was especially high in Israel (25.8%), Greece (15.3%) and South America (14.9%). The prevalence of adhesions varied geographically, and the discrepancies could be explained by several factors:

1. The degree of awareness of the clinicians.
2. The number of therapeutic and illegal abortions in different parts of the world.
3. the kind of instrument used for puerperal and postabortal evacuation.[8]
4. The incidence of genital tuberculosis and puerperal infection in different countries.
5. The criteria used for diagnosis of intrauterine adhesions.

CLASSIFICATION

The need for objective evaluation of the extent of the adhesions, determining the most appropriate therapeutic regimen and predict the results of treatment, has made proper classification of the disease necessary.

Over time, a variety of classifications of the syndrome have been based on different diagnostic tools. According to their findings on hysterosalpingography (HSG), Toaff and Ballas[9] classified intrauterine adhesions into four groups, based on a semiquantitative evaluation. With the advent of hysteroscopy, various investigators have created a series of classifications[10-12] based on the extent of adhesions and the visualization of the ostia. However, none of these classifications took into account the various clinical presentations, especially with regard to the menstrual history. In 1988, the American Fertility Society developed an objective scoring system for classification of intrauterine adhesions that correlated the menstrual history with hysteroscopic and hysterosalpingographic findings (Table 1).[13] Conversely, the European Society of Hysteroscopy (ESH) and European Society of Gynecological Endoscopy (ESGE) adopted the classification developed at the Hysteroscopy Training Center in the Netherlands by Wamsteker (Table 2).[14] Both of these classification schemes appear to be more thorough, but they

Table 1: The American Fertility Society classification of intrauterine adhesions, 1988

Extent of cavity involved	< 1-3	1/3-2/3	> 2/3
	1	2	4
Type of adhesions	Filmy	Filmy and Dense	Dense
	1	2	4
Menstrual pattern	Normal	Hypomenorrhea	Amenorrhea
	0	2	4
Prognostic classification		HSG[a] score	Hysteroscopy score
Stage I (Mild)	1-4		
Stage II (Moderate)	5-8		
Stage III (Severe)	9-12		

Source: The American Fertility Society classifications of adnexal adhesions, distal tubal occlusion, tubal occlusion secondary to tubal ligation, tubal pregnancies, mullerian anomalies and intrauterine adhesions. Fertil Steril 1988;49:944-55: All adhesions should be considered dense.

Table 2: European Society of Gynecological Endoscopy (ESGE) classification of IUAs (1995 version)

Grade	
I	Extent of intrauterine adhesions[a]
	Thin or filmy adhesions
	Easily ruptured by hysteroscope sheath alone
	Cornual areas normal
II	Singular dense adhesion
	Connecting separate areas of the uterine cavity
	Visualization of both tubal ostia possible
	Cannot be ruptured by hysteroscope sheath alone
IIa	Occluding adhesions only in the region of the internal cervical os[b]
	Upper uterine cavity normal
III	Multiple dense adhesions
	Connecting separate areas of the uterine cavity
	Unilateral obliteration of ostial areas of the tubes
IV	Extensive dense adhesions with (partial) occlusion of the uterine cavity
	Both tubal ostial areas (partially) occluded
Va	Extensive endometrial scarring and fibrosis
	in combination with grade I or II adhesions
	With amenorrhea or pronounced hypomenorrhea
Vb	Extensive endometrial scarring and fibrosis
	in combination with grade III or IV adhesions[b]
	With amenorrhea

Source: Wamsteker 1997, Hysteroscopy Training Center, Spaarne Hospital, Haarlem, Netherlands.
a: From findings at hysteroscopy and hysterography; b: Only to be classified during hysteroscopic treatment

are rather complex and difficult to use. More recently, an improved classification system has been developed that takes into account clinical presentations, hysteroscopic findings and past reproductive performance.[15] This scoring system is attractive because of its potential to predict reproductive outcome. None of these classification systems, however, have been validated by clinical studies, and no one has used them uniformly when reporting reproductive outcome after treatment of intrauterine adhesions. Thus, comparison among the different reports that include outcomes is difficult.

ETIOLOGY

The etiology of Asherman's syndrome is not clear as the pathophysiology of the regeneration of the endometrial layers is not well understood. However, its causes can largely be grouped into:

1. Mechanical and iatrogenic complications with excessive local destruction beyond the basal layer of the endometrium into the 'compact zone' covering the myometrium. Examples include curettage for miscarriage, evacuation of retained products for incomplete miscarriages, manual removal of placenta, hysteroscopic resection of polyps or multiple submucous uterine fibroids, abdominal myomectomy with opening of the uterine cavity,[16] uterine artery embolization[17] and uterine septum resection.[18]

2. Pathophysiological disturbance, such as endometritis, complete miscarriage, septic abortion as well as uterine tuberculosis. Genital tuberculosis, which appears to be an important and common cause of Asherman's syndrome in India,[19,20] carries a rather poor prognosis with treatment.[21] Other causes include schistosomiasis,[22] Müllerian malformations, atrophy due to a long period of lactation[23] or menopause.[24]

3. Idiopathic cause when no apparent reason is found. The findings of Asherman's syndrome vary considerably from complete obliteration to minimal adhesions. There can also be filmy, fluffy adhesions or dense adhesions that are difficult to cut with hysteroscopic scissors. The extent of findings at hysteroscopy includes adhesion of the cavity ranging from filmy to severe, total atresia and cervicoisthmic adhesions. Adhesions in the cavity are the most common, whereas total atresia and cervicoisthmic adhesions are rare.[20] A subgroup of women with Asherman's syndrome due to uterine outlet obstruction from intrauterine or cervical adhesions was demonstrated to have substantially thinner albeit normal endometrium with very uncommon finding of hematometra.[25] The histologic appearance is variable and can be endometrial, myometrial or connective tissue. Most frequent are fibromuscular bands, sometimes lined with endometrium.[26] Endometrium obtained by

curettage at the time of treatment of adhesions was secretory in 80%, proliferative in 12%, atrophic in 5% and hyperplastic in 3%.[20] It appears that dense fibrous adhesions without glands carry the worst prognosis for patients in terms of both menses and fertility, as lack of evidence at pathophysiological level makes the choice of an effective treatment more difficult.

DIAGNOSIS

Women with IUA seeking help from the gynecologists may present different clinical manifestations from menstrual disorder, dysmenorrhea to subfertility and pregnancy complications. In Schenker and Margalioth's study,[7] it was further reported that, among 165 pregnancies in women with untreated Asherman's syndrome, the rate of spontaneous miscarriage was 40%, preterm delivery was 23%, term delivery was 30%, placenta accreta was 13% and ectopic pregnancy was 12%. The pregnancy complication rates in this group of patients appeared to be high, although there was no proper control group.

The presence of IUA can be suspected, taking into account relevant information from a thorough personal patient history aimed to identify previous gynecological infections, pelvic inflammatory disease, iatrogenic correlated complications, obstetrical complications and history of pelvic tuberculosis. Other causes of amenorrhea and menstrual disturbances should be ruled out. Pregnancy is the most frequent cause of amenorrhea in this age group and should be assessed prior to any other work-up. Secondary amenorrhea of course is associated with many causes including polycystic ovarian syndrome, hypothalamic amenorrhea, ovarian failure and hyperprolactinemia. Asherman's syndrome should be considered in any patient with a recent history of trauma to the uterine cavity. Laboratory evaluation should consist of serum pregnancy test, complete blood count, and depending on the history and physical examination, follicle-stimulating hormone, thyroid stimulating hormone (TSH) and prolactin. In almost all cases of IUAs, the physical examination will be normal.

Hysteroscopy represents the gold standard for the diagnosis of IUA, since it offers a direct view of IUA. Comparatively, sonohysterography and hysterosalpingography have a sensitivity of 75% with positive predictive values of about 43 and 50%, respectively.[27] A recent study comparing hysterosalpingography with hysteroscopy found a sensitivity and specificity of 81.2 and 80.4% respectively, for hysterosalpingography.[28] Hysterosalpingography is limited by its high false-positive rate, which stems from its inability to distinguish between varying etiologies of filling defects; hysterosalpingography, therefore represents a good screening test for IUA with the added benefit of its ability to assess tubal patency.[29] Like hysterosalpingography, sonohysterography is also limited by its high false-positive

rate and is best utilized as a screening test for IUA.[27,30] Three-dimensional sonohysterography represents a newer diagnostic modality that can detect IUA and also estimates endometrial cavity volume, which is decreased in the setting of Asherman's syndrome.[31,32] Although, three-dimensional sonohysterography is quite sensitive and specific in the detection of intrauterine abnormalities, hysteroscopy is still 33% more sensitive in diagnosing IUA.[32] Transvaginal ultrasonography (TVS) can demonstrate hyperechogenic areas correlating with dense adhesions. TVS has high specificity but widely varying sensitivity. TVS that is performed on women of high risk for IUA formation can have very good accuracy and is very useful as screening test prior to hysteroscopy.[33,34] Preoperative endometrial thickness as determined by TVS appears to have prognostic value in cases of severe Asherman's syndrome.[35] Recent TVS studies demonstrated very thin endometrium and absence of hematometra in most women with uterine outlet occlusion by IUA.[36] Recently, it has been stated that saline infusion sonography (SIS) had a higher level of correlation with hysteroscopic findings than TVS.[37,38] SIS and HSG may have similar sensitivity with high false-positive rate.[38,39] Magnetic resonance imaging (MRI)[40] also represents a newer diagnostic modality for IUA, which is under evaluation as its limited application. The main advantage of MRI is its ability to image the uterine cavity above the adhesions and assess the endometrial remnants in the upper part of the uterine cavity, which may influence the decision and outcome of treatment, especially in those with uterine cavity or cervical canal obstruction that cannot be visualized by hysteroscopy. However, the MRI-signal characteristics of intrauterine adhesions have not been examined in detail; it is anticipated that adhesions would produce low signal intensity on T2 images.[40] Further prospective results to address these are awaited. The extent and location of IUA are best defined with hysteroscopy, and they can simultaneously be treated. In addition to diagnosis and treatment, hysteroscopy is required for the classification of IUA.

TREATMENT OF ASHERMAN'S SYNDROME

Treatment of Asherman's syndrome aims at restoring the size and shape of the uterine cavity, preventing recurrence of the adhesion, promoting the repair and regeneration of the destroyed endometrium and restoring normal reproductive functions.

Thus, treatment modalities in this condition are described in the following sections:

Expectant Management

In a study by Schenka and Margalioth,[7] 23 amenorrheic women were noted from the literature, who had not undergone any surgical intervention, of whom 18 regained regular menses after 1 to 7 years. For fertility outcome,

292 women in whom treatment was withheld, were collated, among whom 45.5% conceived spontaneously. The unpredictable outcome of this mode of treatment has made it very unpopular amongst patients.

Blind Dilation and Curettage

Before the advent of hysteroscopy, Asherman's syndrome was treated by dilation and curettage of the uterus. It is not surprising that this method resulted in a high incidence of uterine perforation and had a low success rate. This method is now considered obsolete.

Hysterotomy

Transfundal separation of the walls of endometrial cavity by hysterotomy has been described. In an analysis of 31 cases of hysterotomies compiled from a total of 12 reports,[7] 52% conceived and 25.8% had term deliveries. The procedure is, however, seldom performed nowadays except in very severe cases where the uterine cavity is completely obliterated. Reddy and Rock[41] had also reported their experience with this technique in three patients who had previous unsuccessful hysteroscopic resection of intrauterine adhesions. All three patients resumed normal menstruation after surgical treatment,with re-establishment of the uterine cavity and regeneration of the endometrium. However, this method of treatment should only be considered in the most extreme of situations, and patients should have been counseled with regard to the implications of a laparotomy, the potential risk of bleeding with hysterectomy and the risk of scar rupture during subsequent pregnancies.

Hysteroscopic Adhesiolysis

Hysteroscopic surgery is now the treatment of choice for Asherman's syndrome because of its minimally invasive nature and it can be performed under direct vision. Adhesiolysis usually begins inferiorly and can be advanced cephalad until the uterine architecture has been normalized.[20] Sometimes, the mere touch of the endoscope can be sufficient to separate filmy columns of adhesions. In most cases, adhesiolysis may be performed with the help of the hysteroscopic scissors or other cutting modalities, such as laser or diathermy. In general, filmy and central adhesions should be divided first as these are more easily distinguished; marginal and dense adhesions are more difficult to identify, and division of these adhesions carries an increased risk of uterine perforation.

Hysteroscopic adhesiolysis using scissors or biopsy forceps[42] has the advantage that it permits dissection and avoids complications related to energy sources, and it possibly minimizes the destruction of endometrium. Surgery that uses energy sources either with the electrode or laser

vaporization system could provide effective and precise cutting as well as good hemostasis, but there is a theoretical possibility of further endometrial damage. Electrosurgery systems, such as a monopolar cutting needle, Versapoint bipolar have been used in treatment of intrauterine adhesions. Thermal damage of endometrium may be limited by using an electrode needle rather than a cutting loop because of the reduced exposure to the current. Several studies have reported successful outcomes of adhesiolysis by using electrosurgery, which suggests that with proper application significant damage is unlikely.[43]

Hysteroscopic surgery using laser vaporization, including Nd-YAG laser and KTP laser, have been reported by Newton et al[44] and Chapman and Chapman.[45] The depth of necrosis in the latter modality has been described as minimal, at about 1 to 2 mm.

In Cochrane database review of pain relief for outpatient hysteroscopy,[46] meta-analysis demonstrates a significant reduction in the mean pain score with the use of local anesthetic in comparison to placebo or no treatment during and within 30 minutes after hysteroscopy. However, the clinical signicance of the results is limited as the reduction in mean pain scores is small. Subgroup analysis has demonstrated a further reduction in mean pain scores during and within 30 minutes after hysteroscopy in postmenopausal women.

Methods of Guidance

Hysteroscopic division of intrauterine adhesions may be technically difficult, especially if the adhesions are dense. It carries a significant risk of perforation of uterus, especially during the dilatation of the cervical channel and introduction of the hysteroscope. The introduction of the dilator and hysteroscope must be guided carefully by one of the methods described here to avoid perforation because perforation at this early stage would preclude satisfactory completion of the hysteroscopy. The efficiency and safety of hysteroscopic surgery for Asherman's syndrome may be improved if the procedure is guided by one of the following methods:

Laparoscopy: Laparoscopy is a common method used to monitor hysteroscopic adhesiolysis. Some investigators have performed hysteroscopic surgery under concomitant laparoscopic control to prevent perforation of the uterus.[43] This is of particular importance if the adhesions are dense. Lateral perforation of the uterus may cause significant bleeding, compared with central perforations. When the uterine wall becomes unduly thin, it will permit transmission of light across the uterine wall, and there will be a bulge over the remaining serosal layer, which signifies that further hysteroscopic surgery must immediately stop. However, with laparoscopic guidance, it is often too late to prevent the perforation. Nevertheless,

it has the advantage of detecting the perforation immediately, preventing any further trauma to pelvic organs. Laparoscopy also provides an opportunity to inspect the pelvis, to diagnose and treat any concurrent pathology, such as endometriosis or adhesions.

Fluoroscopic control: This technique provides an intraoperative fluoroscopic view of pockets of endometrium behind an otherwise blind-ending endocervical canal in women with severe Asherman's syndrome.[47]

Gynecoradiologic uterine resection (GUR): Karande et al[48] reported the use of a special catheter inserted into the uterine cavity through the cervix with a balloon attached to its tip. Radiopaque dye was injected through a side channel of the catheter to delineate the uterine cavity with its adhesions, and hysteroscopic scissors were introduced through a central channel of the catheter to divide the adhesions. The study, however, had a small sample size and needs further evaluation. The main disadvantage of this procedure relates to radiation exposure.

Transabdominal ultrasound guidance: Transabdominal ultrasound guidance has been increasingly used to replace laparoscopic guidance during hysteroscopic division of intrauterine adhesions, especially in women with severe intrauterine adhesions. When there are severe adhesions in the uterine cavity, it may be very difficult to identify the cavity without ultrasound. Our opinion is that transabdominal ultrasonography provides efficient monitoring of the hysteroscopic procedure and guiding the scope towards the uterine cavity even when the adhesions may have completely or almost completely obliterated the uterine cavity. It can significantly decrease the risk of perforation of uterus, especially during the procedure of dilatation of cervical channel. Moreover, it is a nontraumatic, readily available technique. Several newer innovative surgical procedures have been described for women with severe intrauterine adhesions albeit need large studies to evaluate them better. They include:

1. Transcervical adhesiolysis after use of laminaria tent.[49]
2. Conversion of blind hysteroscopic procedure to a septum division.[50]
3. Myometrial scoring technique.[51]
4. Pressure lavage under guidance;[52] a novel technique which may be good for women with mild intrauterine adhesions.

Complications During Hysteroscopic Adhesiolysis Procedures

Complications during the adhesiolysis procedure include uterine perforation, hemorrhage and pelvic infection. Uterine perforation occurred in about 2% of all cases reported. However, the rate was up to 9% in those with severe adhesions. The incidence of perforation can be reduced by ultrasound guidance.[53] Hemorrhage is less commonly

reported; however, it is unclear whether hemorrhage is a less common occurrence or whether it is under-reported by various studies.

Prevention of Recurrence of Adhesion

Studies have shown a high rate of reformation of intrauterine adhesions (3.1 to 23.5%), especially severe adhesions (20 to 62.5%). Thus, prevention of reformation of adhesions after surgery is essential to successful treatment. Various methods have been used to achieve this aim.

Intrauterine contraceptive devices: The insertion of an intrauterine device (IUD) has been advocated by many studies as an effective, widely used method to prevent adhesion reformation.[54] Postoperative use of an IUD keeps the raw, dissected surfaces separated during the initial healing phase and may reduce the chances that they will readhere to one another. In a literature review, March[55] discussed the use of IUDs and concluded that T-shaped IUDs may have too small surface area to prevent adhesion reformation, and that IUDs containing copper may induce an excessive inflammatory reaction. Therefore, their use is not advised in patients who have had intrauterine adhesions. The loop IUD is considered the best choice for the prevention of reformation of intrauterine adhesions,[55] although it is no longer available in many countries, including Nigeria. Presently, there have been no randomized controlled trials to confirm the usefulness of IUDs in preventing adhesion reformation after hysteroscopic lysis of intrauterine adhesions.The introduction of an IUD may also carry a small risk of perforation of the uterus.

Foley catheter: Several studies have reported on the use of a Foley catheter introduced into the uterine cavity with an inflated balloon for several days after lysis of adhesions to prevent recurrence. The use of balloon to prevent adhesion formation after adhesiolysis maintains the freshly separated uterine cavity by separating the opposing uterine walls. In 2003, Orhue et al[6] demonstrated that the Foley catheter was a safer, more effective method for preventing reformation of intrauterine adhesions after adhesiolysis. Furthermore, in a prospective controlled study, Amer et al[56] assessed the efficacy of an intrauterine balloon in preventing intrauterine adhesions after operative hysteroscopy. The investigators concluded that its application after operative hysteroscopy is of great value in preventing intrauterine adhesions. Amer and Abd-EI-Maeboud[57] had tried amnion grafts after hysteroscopic lysis of intrauterine adhesions. In a pilot study, involving 25 patients with moderate or severe intrauterine adhesions, hysteroscopic adhesiolysis was followed by intrauterine application of a fresh amnion graft over an inflated Foley catheter balloon for 2 weeks. Second-look hysteroscopy revealed adhesion reformation in 48% of the patients who had initial severe adhesions, but all had minimal adhesions. Drawbacks of this technique include the risk of ascending vaginal infection from the catheter's stem passing through the cervix into the vagina. The overinflated balloon may also increase pressure on the uterine walls, which may result in decreased blood flow to uterine walls with potential effects on endometrial regeneration. In addition, this method can produce significant discomfort for the patient. Randomized comparative studies are needed to validate this method's benefits, including the reproductive outcomes.

Hyaluronic acid (HA): Recently, hyaluronic acid, a natural component of the extracellular matrix, the vitreous humor and synovial fluid of the joint, has been proposed as a barrier agent to prevent adhesion development after abdominal and pelvic surgery.[58] The antiadhesive effects depend on the preparation's molecular weight as well as its concentration.[59] Investigators[60] have studied intrauterine application of modified hyaluronic acid (HA), including Seprafilm (Genzyme Corporation, Cambridge, MA) and auto-crosslinked HA (ACP) gel (Hyalobarriergel; Baxter, Pisa, Italy), to reduce the intrauterine adhesions after adhesiolysis. Seprafilm, a bioresorbable membrane formulated from chemically modified HA (sodium hyaluronate) and carboxymethyl cellulose, has been shown to significantly reduce intrauterine adhesions. Seprafilm turns into a hydrophilic gel approximately 24 hours after placement and provides a protective coating around traumatized tissues for upto 7 days during re-epithelization. Tsapanos et al[60] reported on a randomized, controlled trial to evaluate the safety and efficacy of Seprafilm in preventing and reducing postoperative endometrial synechiae formation after suction evacuation or curettage for incomplete, missed and recurrent abortion. In the Seprafilm-treated group, 10% developed intrauterine adhesions; whereas in the control group, 50% developed intrauterine adhesions.

Hormone treatment: Many gynecologists do use estrogen therapy after hysteroscopic lysis of intrauterine adhesions but its use has not been universally accepted as there has been no objective evidence based on randomized, controlled trials to confirm the efficacy of estrogen treatment on the reduction of reformation of intrauterine adhesions.

OUTCOMES OF TREATMENT

Surgical success can be judged by the restoration of normal anatomy in the uterine cavity. The rate of successful anatomic restoration in a first procedure has been reported to range from 57.8 to 97.5%.[61] However, even when the uterine cavity has been restored anatomically, the extent of endometrial fibrosis will determine the reproductive outcome. Hence, the restoration of both uterine anatomy and the function of the endometrium are equally important.

Adhesion reformation has been a major limiting step to the success of the operation. The reformation of intrauterine adhesions appears to be directly related to the severity of the adhesions. It has been reported that the recurrence rate for intrauterine adhesions ranges from 3.1 to 23.5% among all cases of intrauterine adhesions and from 20 to 62.5% in those with severe adhesions. Repeat surgery for those who have adhesion reformation may be worthwhile as there have been case reports of conception and delivery after repeated surgical adhesiolysis.[50]

Another outcome measure of the procedure is restoration of normal menses. The return of menstruation has been reported to range from 52.4 to 88.2%. From five available studies; we can conclude that, of 625 women who underwent surgical treatment of Asherman's syndrome, 84.5% regained normal menstruation.

Finally, in women who present with infertility or recurrent pregnancy loss, the outcome may be measured in terms of pregnancy rate and live birth rate. Pace et al[61] reported that in women with Asherman's syndrome, pregnancy rate varied from 28.7% before surgery to 53.6% after hysteroscopic treatment. In a study of women with two or more previous unsuccessful pregnancies,[62] the operative success as measured by live birth rate improved from 18.3% preoperatively to 68.6% postoperatively. In the literature, the pregnancy rate after hysteroscopic lysis of intrauterine adhesions in women who wanted to have a child has been about 74%, which is much higher than found in untreated women (46%). The pregnancy rate after treatment in women with infertility is about 45.6%; the successful pregnancy rate after treatment in severe cases is reported to be consistently lower at 33%. For women with previous pregnancy wastage, both the pregnancy rate and the live birth rate after treatment are reasonably high— 89.6 and 77.0% respectively.

Women who conceive after treatment of Asherman's syndrome still have a high risk of pregnancy complications, including spontaneous abortion, premature delivery, abnormal placentation, intrauterine growth restriction (IUGR) and uterine rupture during pregnancy or delivery.

Everett[63] reported that, in the general population, in 550 women who conceived, bleeding occurred before the 20th week in 117 patients (117 out of 550; 21%), and 67 pregnancies (67 out of 550; 12%) ended in miscarriage. The spontaneous miscarriage rate after treatment of intrauterine adhesions was around 20% (94 out of 477). It is unclear whether this represents an increase in the risk of early miscarriage after treatment of Asherman's syndrome, as the likelihood of miscarriage in the general population (about 15 to 20%) is rather close to this figure. Continued collection of data is required to determine if the miscarriage rate after treatment of Asherman's syndrome is increased. This increased rate could be related to the presence of fibrosed endometrium, which impairs successful implantation. Thus, pregnancies in women with a history of Asherman's syndrome should be considered to be high risk. Careful monitoring during the antenatal period, especially the third trimester, should be undertaken. Also, the importance of preventing Asherman's syndrome cannot be overemphasized. Such preventive measures include the need to avoid postpartum or postabortal curettage; the need for gentle curettage, if surgical evacuation is needed; and preference for medical management of miscarriages.

CONCLUSION

Asherman's syndrome is a worldwide disease and hysteroscopy remains the method of choice in the investigation and treatment of the condition. The management of moderate to severe disease remains a challenge, while the prognosis of severe disease remains poor. In those who succeed in achieving pregnancy after treatment of the condition, careful surveillance of the pregnancy is essential because a number of obstetrics complications may occur. Large prospective controlled studies are needed to determine the best diagnostic and treatment modalities for intrauterine adhesions.

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