Adhesions and Asherman

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8.1 Introduction

Intrauterine adhesion or uterine synechiae describes situations where scar tissues develop within the uterine cavity. It was first described and published by a German gynecologist by name Henrich Fritsch in 1894, but became fully characterized by Joseph Asherman in 1948 [1, 2].

It is known as Asherman syndrome when uterine adhesions become associated with symptoms such as menstrual irregularities and infertility. The original definition of Asherman syndrome described pregnancy related trauma to the uterine cavity. Sometimes the same symptoms are present, but the cause of the uterine adhesion is not pregnancy related. While some authors believe the term Asherman syndrome can still be used in such situations, others suggest that it should be restricted to cases of uterine synechiae resulting from endometrial damage related to a gravid uterus [3].

The true prevalence of uterine synechiae is unknown, as the condition is rare in the general population. A prevalence rate of 19.1% was reported by Hooker and colleagues among 912 women, 86% of whom had curettage following a pregnancy loss, with subsequent hysteroscopic assessment of the endometrial cavity [4]. Curettage of a pregnant or recently pregnant uterus therefore appears to be the most common predisposing factor for uterine synechiae. Other causes of uterine synechiae include cesarean section; myomectomy; use of the B-lynch compression sutures; use of intrauterine devices; uterine artery embolization; infections such as tuberculosis of the genital tract; and following surgeries for Mullerian abnormalities [5–7].

The damage to the basal layer of the endometrium results in the formation of granulation tissue on the opposing surfaces of the uterine cavity. Once these coalesce, adhesions form, leading to partial or total obliteration of the uterine cavity.

8.1.1 Classification

A variety of classification systems exist, but no comparative analysis to date has been performed, as comparisons between studies are difficult to interpret.

The European Society for Hysteroscopy classification of intrauterine adhesions is presented in Table 8.1.

Table 8.1 European Society of Hysteroscopy classification of intrauterine adhesions

Grade	Extent of intrauterine adhesions
I	Thin or filmy adhesions easily ruptured by hysteroscope sheath alone, cornual areas normal
II	Singular firm adhesions connecting separate parts 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. Upper uterine cavity normal
III	Multiple firm adhesions connecting separate parts of the uterine cavity, unilateral obliteration of ostial areas of the tubes
IIIA	Extensive scarring of the uterine cavity wall with amenorrhea or hypomenorrhea
IIIB	Combination of III and IIIA
IV	Extensive firm adhesions with agglutination of the uterine walls. Both tubal ostial areas occluded

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8.2 Diagnosis

The diagnosis of intrauterine adhesion is made based on the clinical presentations and assessment of the endometrial cavity. While some patients have no symptoms, others present with symptoms such as hypomenorrhea or amenorrhea; cyclical abdominal/pelvic pains; recurrent pregnancy loss; and infertility. Hysteroscopy remains the gold standard in the diagnosis of intrauterine adhesions. Hysteroscopy affords the direct visualization of the adhesions and the possibility of treatment (Figs. 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, 8.19, 8.20, and 8.21). Hysterosalpingography would show filling defects while at the same time determining the patency of the fallopian tubes (Figs. 8.22 and 8.23). Saline infusion sonography performed in an office setting is equally useful in the diagnosis of intrauterine adhesions. While a versatile sonologist might successfully diagnose intrauterine adhesions using a transvaginal ultrasound scan, magnetic resonance imaging is rarely used due to the exorbitant cost.

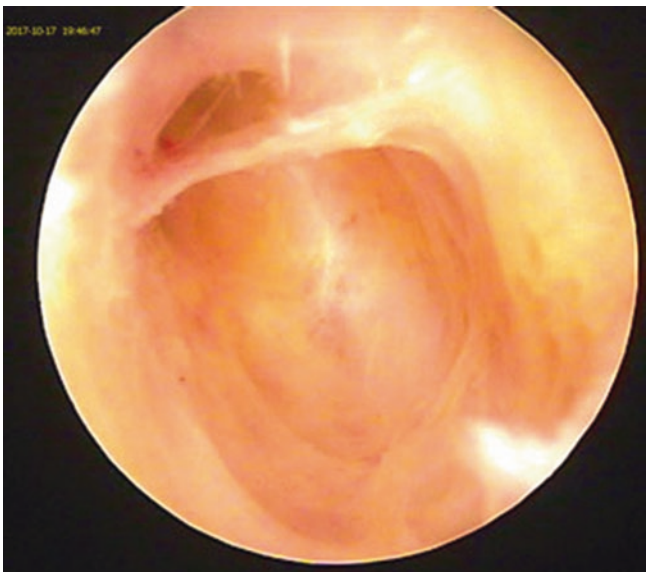

Fig. 8.1 Intrauterine adhesion showing European Society of Hysteroscopy (ESH) classification grade I. This can be broken down with the hysteroscopy sheath

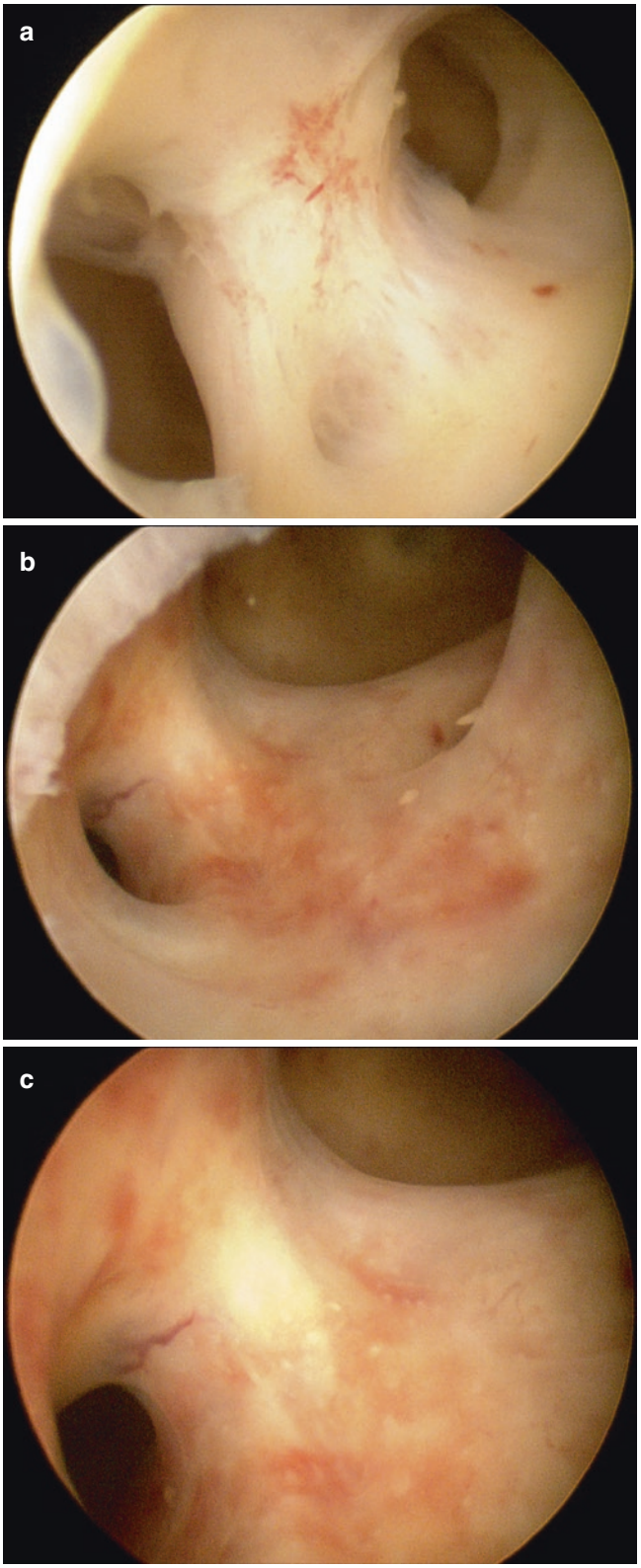

Fig. 8.2 (**a**–**c**) Column of intrauterine adhesions running from the anterior to the posterior uterine walls, ESH classification grade II. See hysteroscopic adhesiolysis in movie 8.1

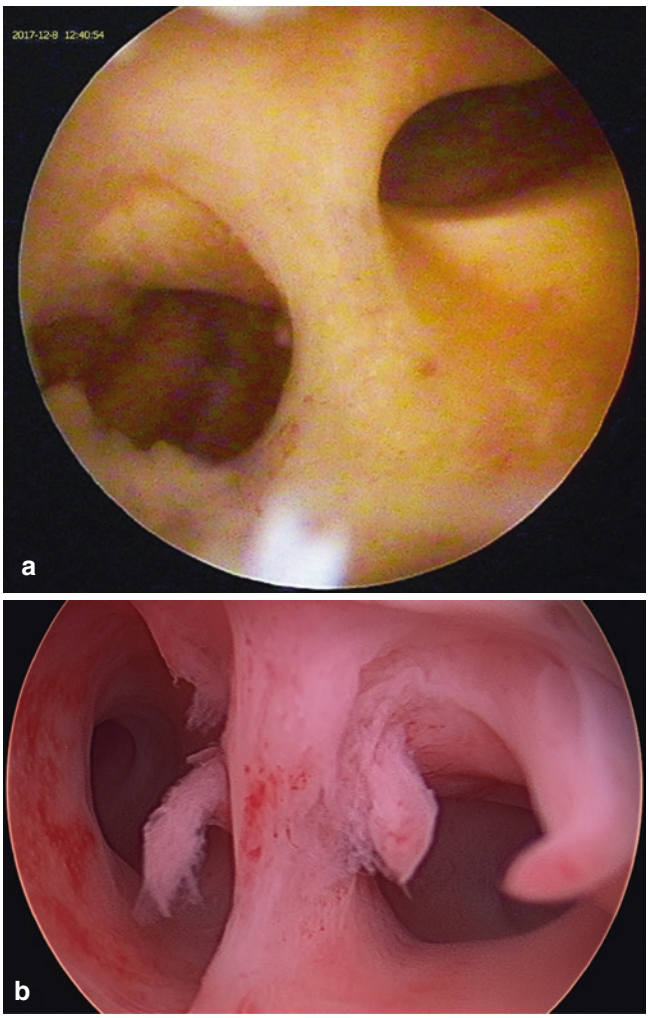

Fig. 8.3 (**a**, **b**) Two more cases of ESH grade II

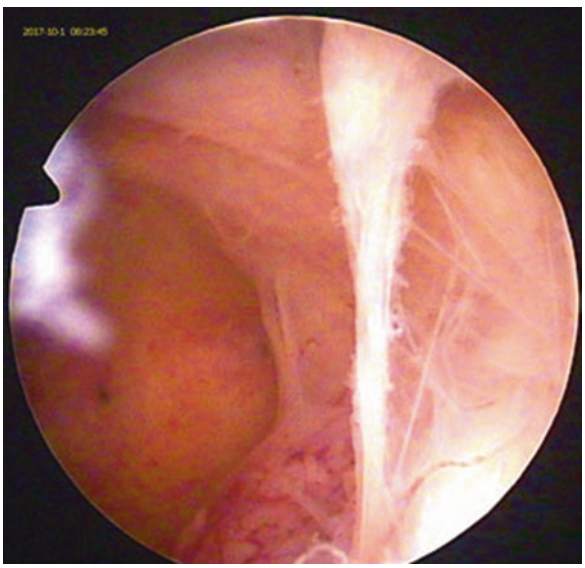

Fig. 8.4 Intrauterine adhesions with associated submucous fibroid

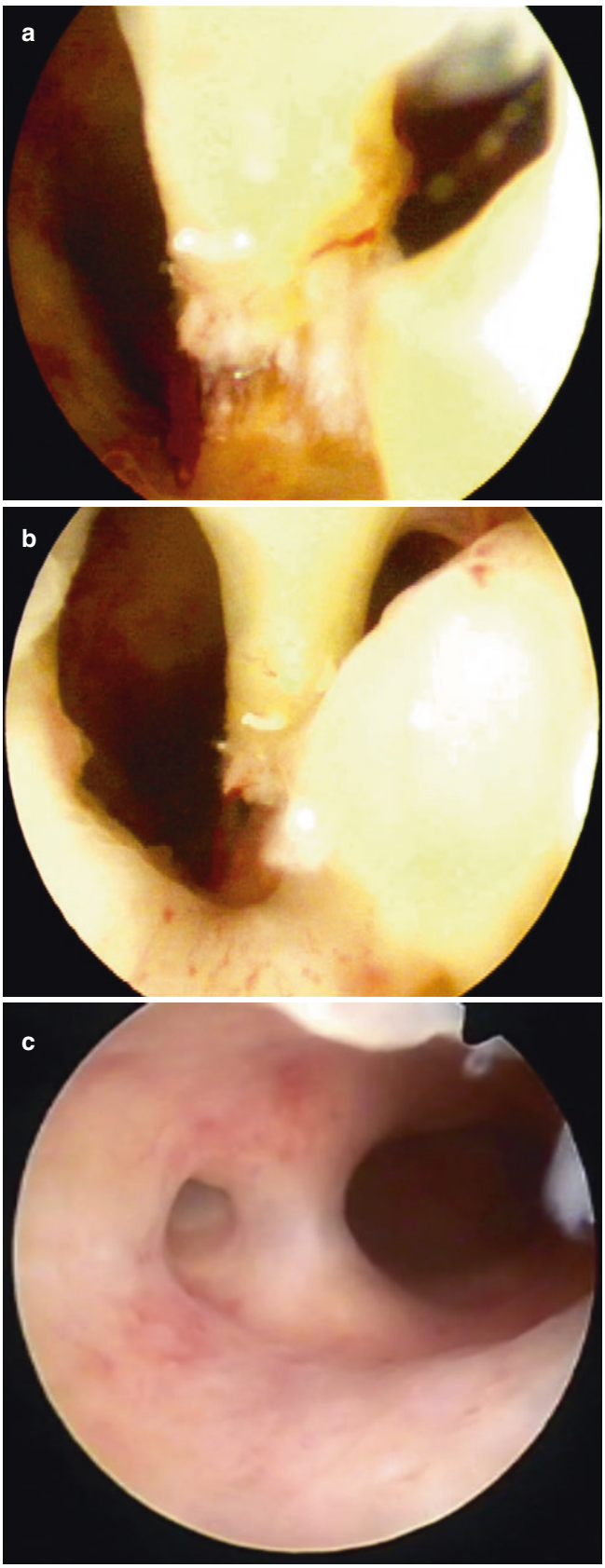

Fig. 8.5 (**a**–**c**) Intrauterine adhesions at the level of the internal cervical os (ESH classification grade IIa)

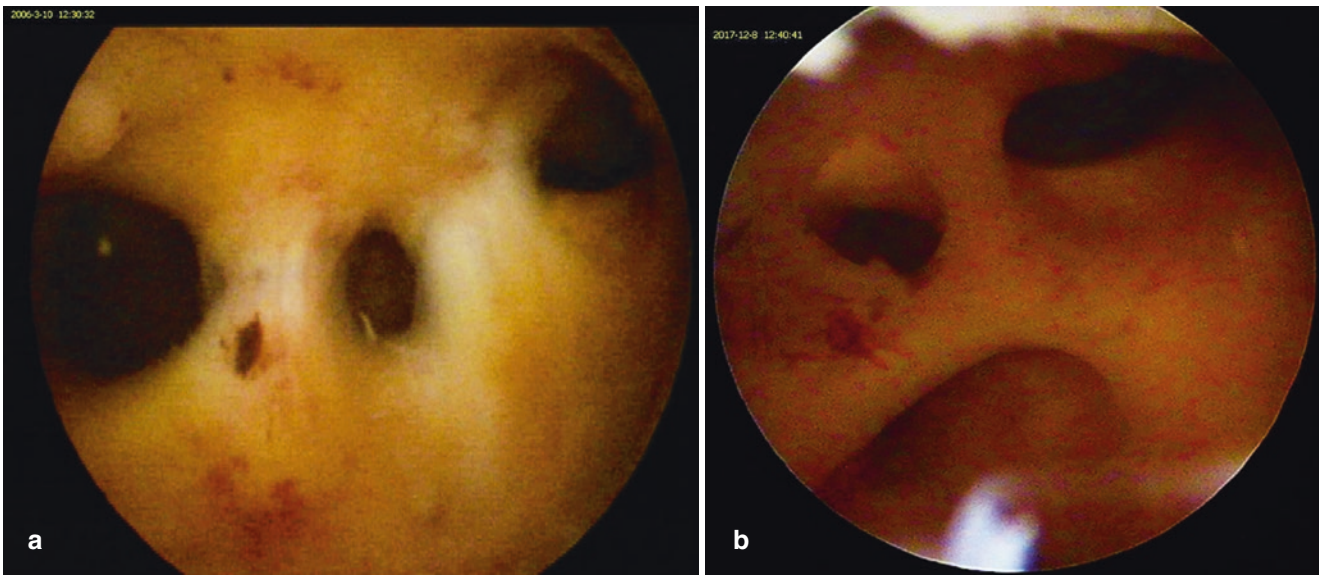

Fig. 8.6 (**a**, **b**) Multiple intrauterine adhesions following abdominal myomectomy

Fig. 8.7 Intrauterine adhesions showing almost complete obliteration of the uterine cavity (ESH classification grade III)

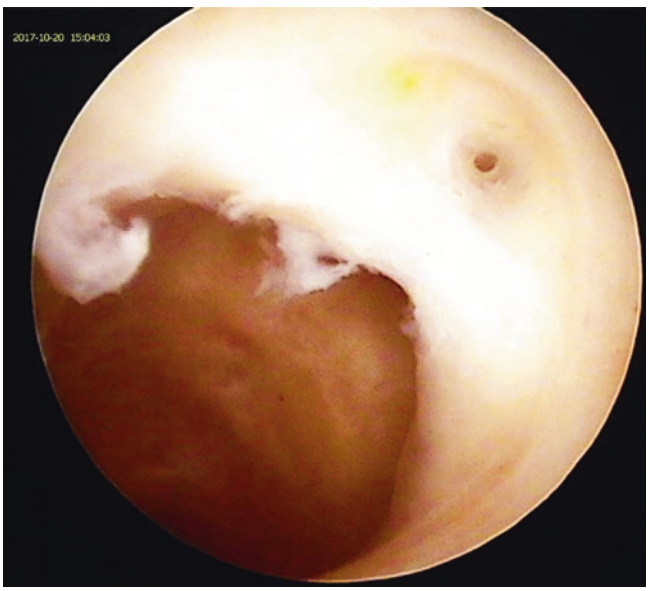

Fig. 8.8 Another case of intrauterine adhesions

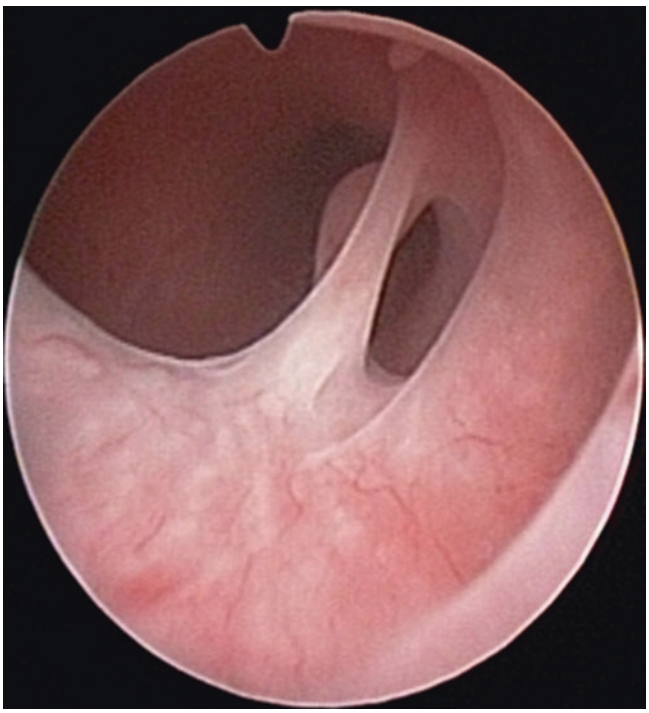

Fig. 8.9 Intrauterine adhesions courtesy of Luis Alonso

Fig. 8.11 Severe intrauterine adhesions (ESH classification grade IV)

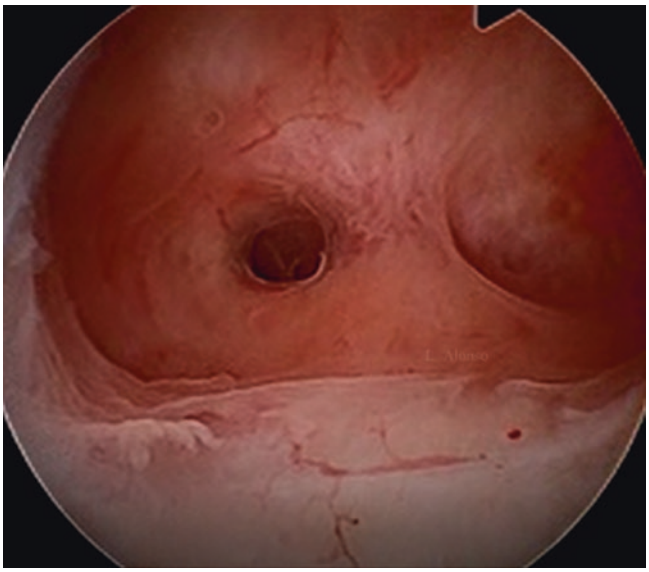

Fig. 8.10 Intrauterine adhesions courtesy of Luis Alonso

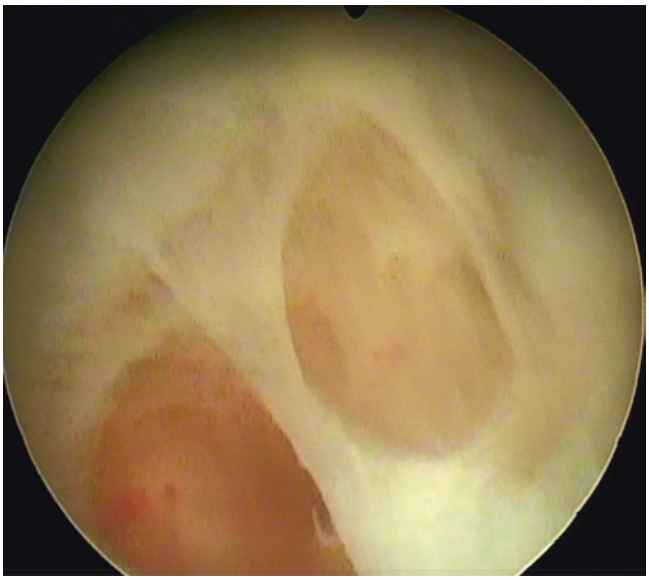

Fig. 8.12 Intrauterine adhesions

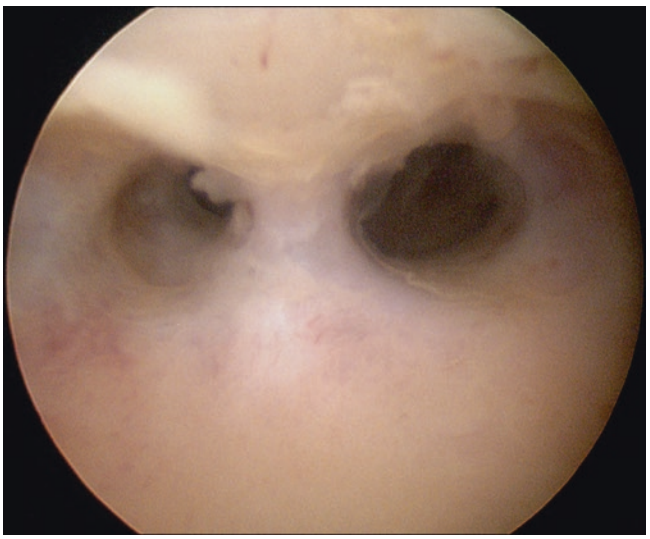

Fig. 8.13 Short column of intrauterine adhesions

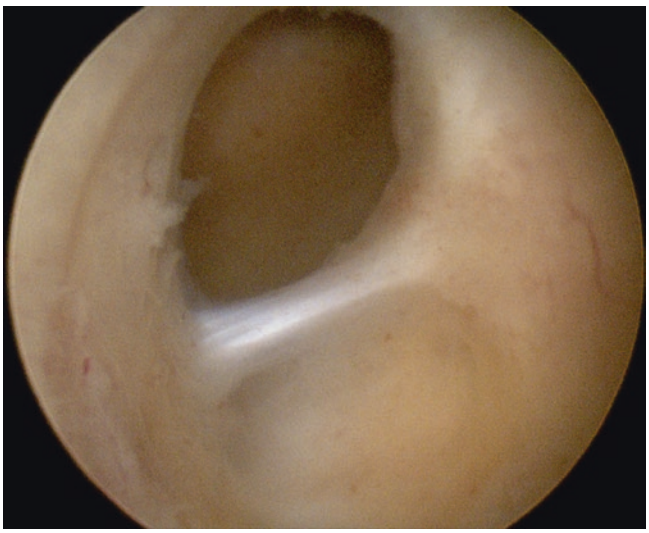

Fig. 8.15 Intrauterine adhesions

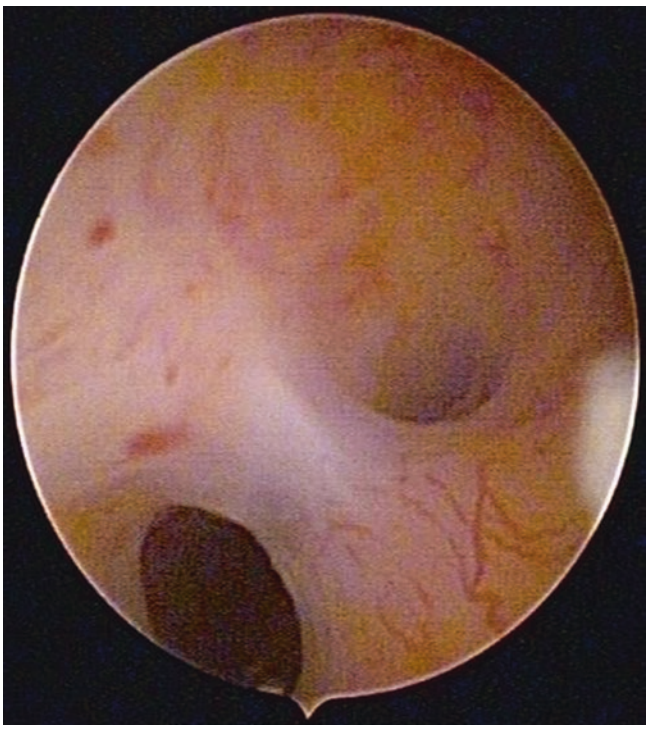

Fig. 8.14 Intrauterine adhesions. Courtesy of Prof. Sergio Haimovich

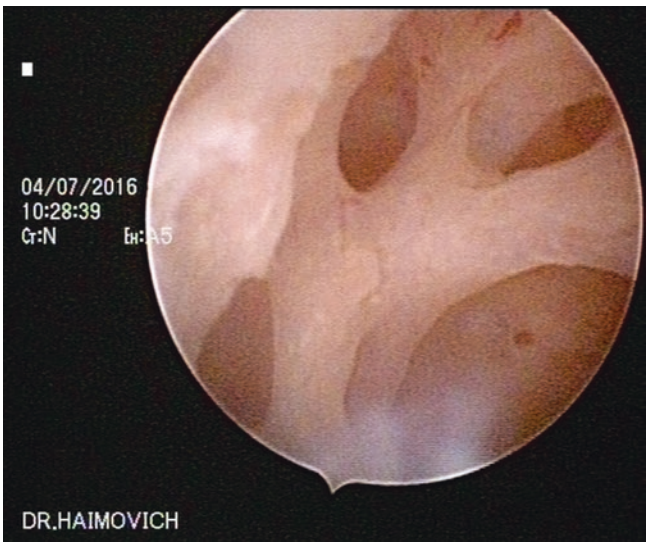

Fig. 8.16 Criss-crossing intrauterine adhesions. Courtesy of Prof. Sergio Haimovich

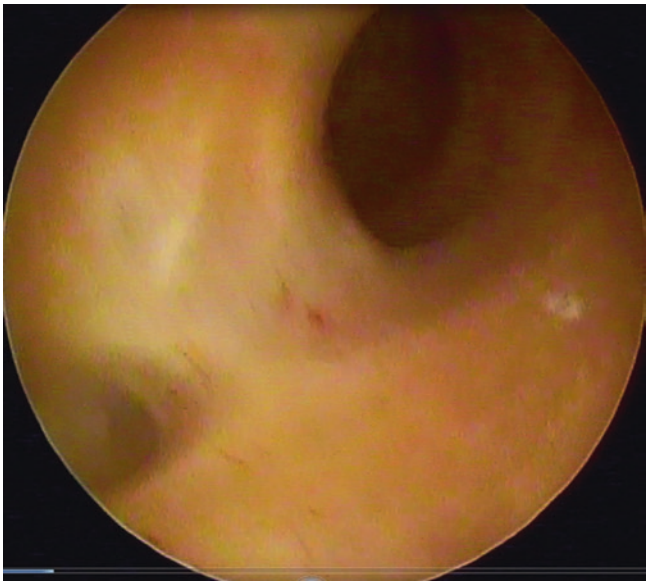

Fig. 8.17 Intrauterine Adhesions

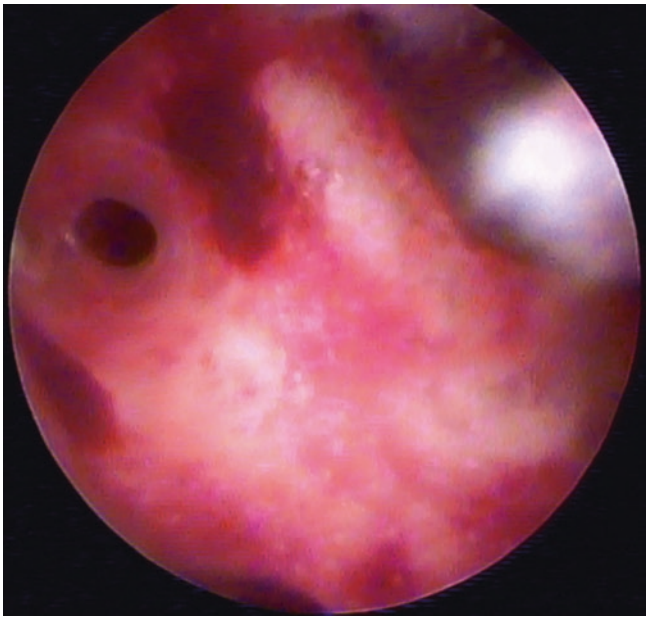

Fig. 8.19 Intrauterine adhesions masquerading as normal fundus and tubal ostium. A normal fundal wall was discovered following adhesiolysis

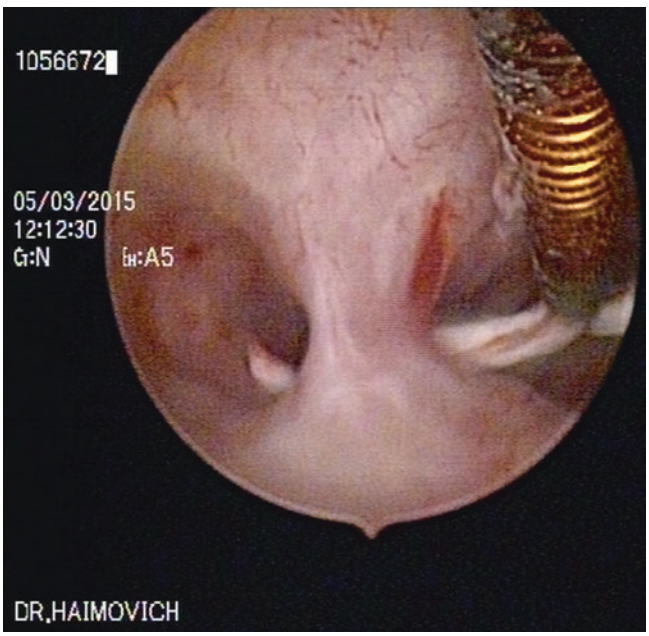

Fig. 8.18 Intrauterine adhesions with an intrauterine device. Courtesy of Prof. Sergio Haimovich

Fig. 8.20 Intrauterine adhesion

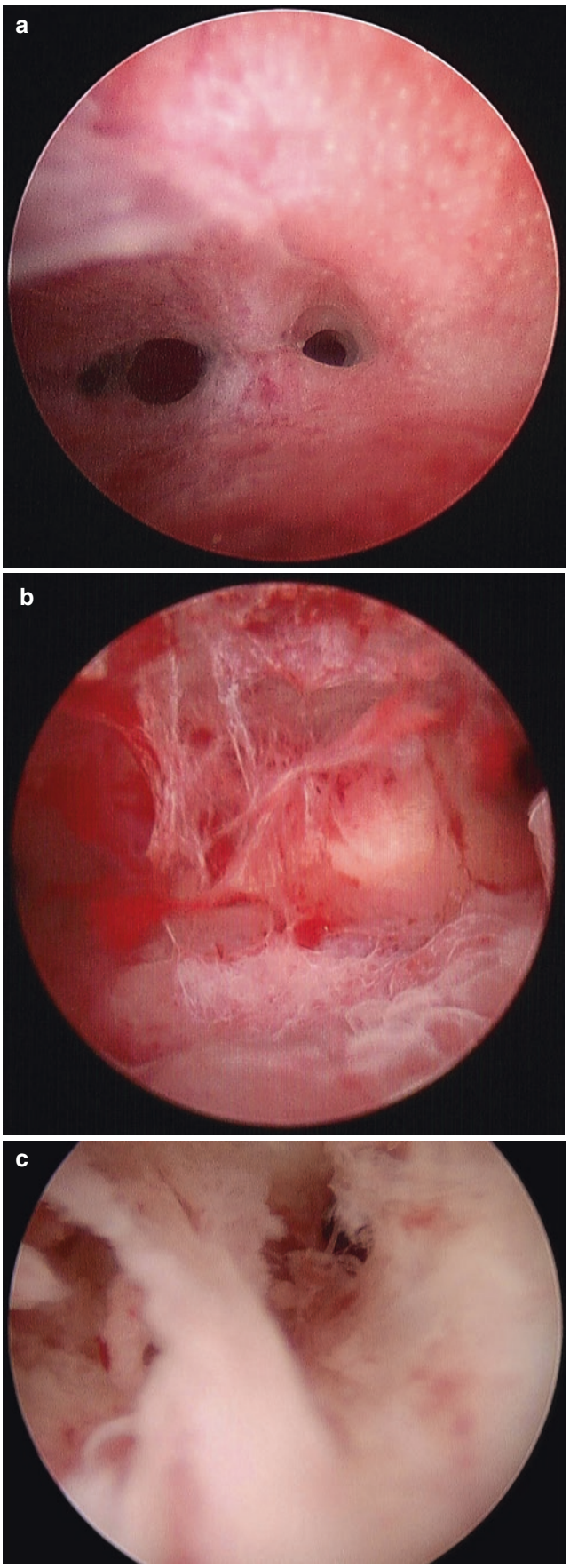

Fig. 8.21 (**a**–**c**) Tuberculous endometritis with intrauterine adhesions. Courtesy of Dr. Sunita Taldudwadkar

Fig. 8.22 Hysterosalpingogram showing multiple filling defects secondary to intrauterine adhesions: Movie 8.2 shows the hysteroscopic assessment and treatment of the patient

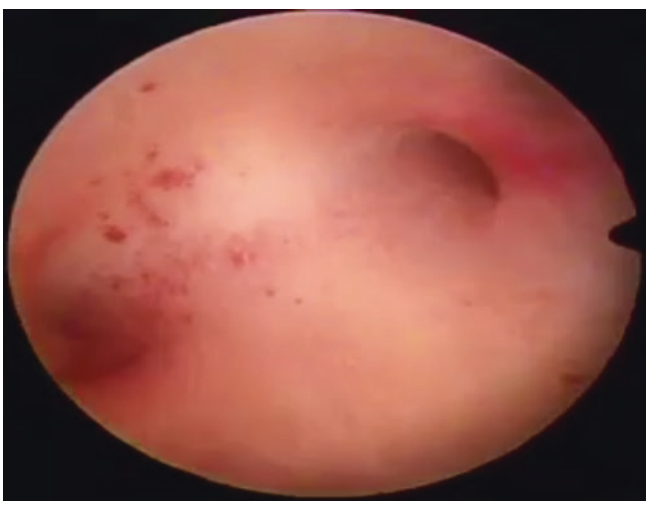

Fig. 8.23 Same patient as in Fig. 8.22 above showing a 'curtain" of adhesion masquerading as a normal fundal wall. Movie 8.2 showcases the hysteroscopic assessment and treatment

8.3 Treatment

Since the advent of hysteroscopy which allowed a proper visualization of adhesions within the endometrial cavity, blind adhesiolysis has been relegated [8]. The treatment of uterine synechiae is aimed at restoring the normal anatomy of the uterine cavity. It also aims at preventing any recurrence. Treatment is based on the personal experience of the gynecologist, case reports, and case series, as randomized controlled trials comparing different treatment modalities are lacking.

A rigid hysteroscope is used for the treatment of uterine synechiae. Commonly used hysteroscopes are the 2.7–4 mm telescopes. Hysteroscopes of less than 2 mm diameter are currently available with good quality of vision. Mild adhesions can be broken with the pressure effect of the distention fluid or with the tip of the hysteroscope [9]. Hysteroscopic scissors is preferred to the use of an energy source by some gynecologists (Figs. 8.24 and 8.25 and Movies 8.1 and 8.2) as it is believed to cause less injury to the endometrium [10, 11]. With the use of an energy source (Fig. 8.26), there is the choice between monopolar and bipolar cautery, which uses nonelectrolyte-containing fluids (such as 1.5% glycine) and electrolyte-containing fluids (such as normal saline), respectively. Strict assessment and documentation of fluid input and output are essential for patient safety, with a deficit of up to 2 L allowed for normal saline and 1 L allowed for 1.5% glycine. Fluid is delivered either with the manual pressure cuff or with the use of automated pumps.

In terms of technique, the adhesions that are centrally located within the uterine cavity are dealt with first before breaking down those located at the periphery of the cavity [12].

In very severe cases of intrauterine adhesions, the hysteroscopic procedure is carried out under simultaneous ultrasound scan, laparoscopy, or fluoroscopic guidance (Movie 8.3). Despite this, hysteroscopic adhesiolysis still remains the procedure with the greatest risk of perforation of the uterus [13].

Stem cell therapy seems to be gaining popularity in the management of uterine synechiae.

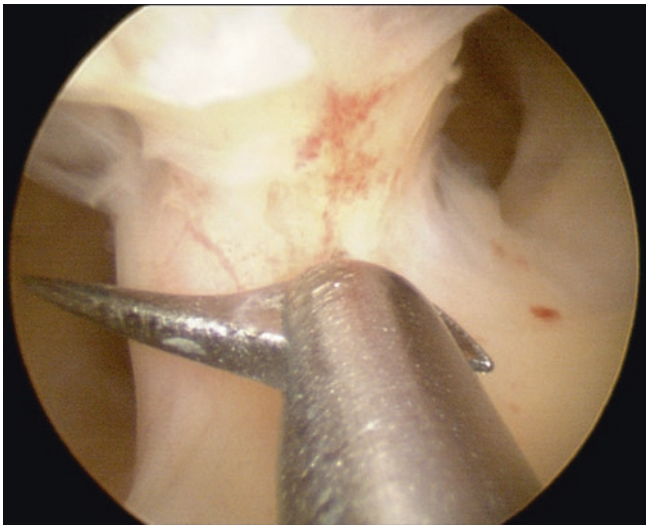

Fig. 8.24 Hysteroscopic adhesiolysis with scissors

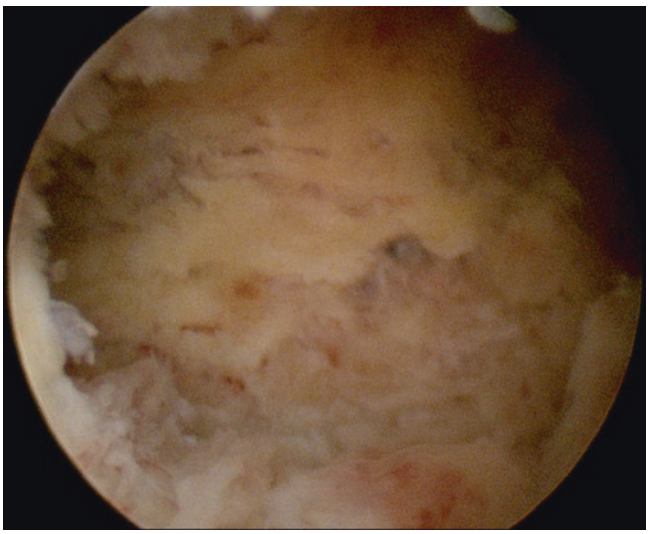

Fig. 8.25 Uterine cavity following hysteroscopic adhesiolysis with scissors

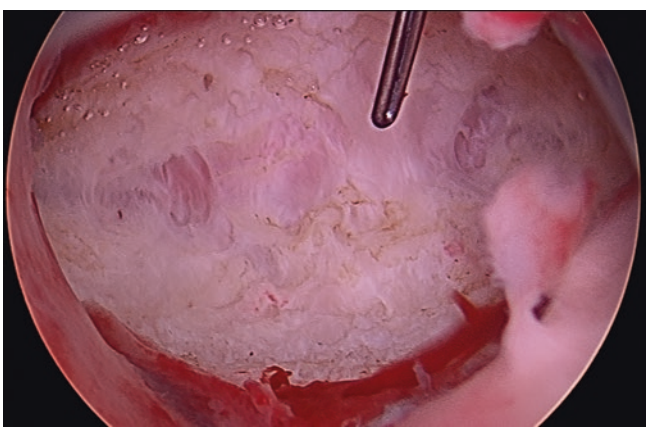

Fig. 8.26 Hysteroscopic adhesiolysis with cautery. Courtesy of Dr. Mykhailo Medvediev

8.4 Prevention of Adhesion Reformation

In the prevention of adhesion reformation, the following have been used:

- Intrauterine device
- Intrauterine Foley catheter
- Intrauterine balloon stent
- Intrauterine gel
- A non-randomized study which compared the use of Foley catheter for 10 days with an intrauterine device for 3 months following adhesiolysis found fewer infections and lower recurrence rate in the Foley catheter group [14].

A high impedance of spiral arteries was observed in patients with Asherman syndrome, and this is suspected to be responsible for the reduced endometrial receptivity and regeneration in women with Asherman syndrome [15]. Estrogens at various dosages have been used with the intention of stimulating endometrial growth after adhesiolysis. Other medications that have been used but not endorsed include aspirin, nitroglycerin, and sildenafil citrate.

Assessment of adhesion reformation can be done via office hysteroscopy, saline infusion sonography, and hysterosalpingography. While mild-to-moderate intrauterine adhesions have a recurrence rate of about 33%, about 66% of patients with severe adhesions would likely develop a recurrence [16].

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