Hysteroscopic treatment of severe Asherman’s syndrome and subsequent fertility

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In a retrospective case report series, we evaluated the efficacy of hysteroscopic adhesiolysis in patients with severe Asherman’s syndrome. In 31 patients with permanent severe adhesions, hysteroscopic treatment was performed. In all patients, uterine cavity with at least one free ostial area was restored after one (n = 16), two (n = 7), three (n = 7), and four (n = 1) surgical procedures. All previously amenorrhoic patients (n = 16) had resumption of menses. Twenty-eight patients were followed-up with a mean time of 31 months (range 2–84). Fifteen pregnancies were obtained in 12 patients and the outcomes were the following: two first trimester missed abortions, three second trimester fetal losses, one second trimester termination of pregnancy for multiple fetal abnormalities and nine live births in nine different patients. Pregnancy rate after pregnancy for multiple fetal abnormalities and nine live births was 12/28 (42.8%) and live birth rate was 9/28 (32.1%). In patients treated for polyps (range 1–2), the delay between the causal procedure and subsequent fertility was 6 months (range 0–18). In the obstetric histories we found five Caesarean sections, two prepartum uterine ruptures and three cases of placenta accreta. Risk factors for cavity obliteration were the following: 16 women (51.6%) with a past history of at least one D&C for elective abortion in the first trimester (range 1–5), 10 patients (32.2%) with at least one D&C for missed abortion or incomplete abortion in the first trimester (range 1–4), three patients (9.6%) with D&C for post-partum bleeding, six patients (19.3%) with myomectomy involving hysterotomy performed at another hospital and six patients (19.3%) with at least one D&C for polyps (range 1–2). The delay between the causal procedure and hysteroscopic treatment of IUA was unfortunately not available. Eight patients (25.8%) were referred to our tertiary care reproductive centre after a first inefficient procedure.

There was no case of tuberculous endometritis in this series. Of the 31 patients, 16 patients (52%) reported amenorrhoea and 15 (48%) reported prolonged hypomenorrhoea. Twenty-six (84%) patients complained of infertility and five (16%) complained of recurrent pregnancy loss.

Diagnosis was made by hysterosalpingography and confirmed by hysteroscopy in all cases.

Materials and methods

Patients

From 1 January 1990 to 31 March 1997, 178 patients underwent hysteroscopic treatment of intrauterine adhesions (IUA) at the University Hospital of Clamart. We reviewed all operative reports and selected all patients with extensive firm adhesions, with agglutination of uterine walls and both tubal ostial areas occluded (Grade IV according to the European Society of Hysteroscopy; Wamsteker and De Block, 1993). Thirty-one patients were selected according to these criteria. Median age was 34.7 years (range 26–44). Mean parity was 0.6 ± 0.9 (range 0–3). In the obstetric histories we found five Caesarean sections, two prepartum uterine ruptures and three cases of placenta accreta. Risk factors for cavity obliteration were the following: 16 patients (51.6%) with a past history of at least one D&C for elective abortion in the first trimester (range 1–5), 10 patients (32.2%) with at least one D&C for missed abortion or incomplete abortion in the first trimester (range 1–4), three patients (9.6%) with D&C for post-partum bleeding, six patients (19.3%) with myomectomy involving hysterotomy performed at another hospital and six patients (19.3%) with at least one D&C for polyps (range 1–2). The delay between the causal procedure and hysteroscopic treatment of IUA was unfortunately not available. Eight patients (25.8%) were referred to our tertiary care reproductive centre after a first inefficient procedure.

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Technique

Hysteroscopy was performed under general or epidural anaesthesia in the early proliferative phase of the menstrual cycle in the patients

Introduction

Asherman’s syndrome is defined by the presence of intrauterine permanent adhesions, obliterating partially or completely the uterine cavity. The most common cause is dilatation and curettage (D&C) of a recently pregnant uterus. The incidence of intrauterine adhesions after one D&C was found to be 16% and most of them were mild lesions (Friedler et al., 1993). After two and three procedures, the incidences were 14 and 32% respectively, and more than 50% were severe adhesions (Friedler et al., 1993). Clinical symptoms include menstrual abnormalities such as hypo- or amenorrhoea, infertility and recurrent pregnancy loss (Klein and Garcia, 1973). Hysteroscopic approach has allowed rapid improvement in the diagnosis and treatment of total or partial uterine obliterations. Nevertheless, there are very few series concerning severe Asherman’s syndrome (Valle and Sciarra, 1988; Chen et al., 1997; Protopapas et al., 1998) and obstetric prognosis is usually considered as poor. The aim of this study was to evaluate the safety and efficacy of hysteroscopic adhesiolysis in the treatment of 31 consecutive patients with severe Asherman’s syndrome by observing the re-establishment of the uterine cavity, postoperative resumption of menses, pregnancy rate and outcome in a retrospective case report series.
who were menstruating. A 9 mm hysteroscope equipped with an hysteroscopic monopolar knife (Karl Storz GmbH, Tuttlingen, Germany) was introduced into the blind reduced cavity, obtained after prudent dilatation of the cervix by Hegar’s dilators. Glycine was used as distending medium. Treatment was performed by making several myometrial incisions 4 mm deep: two or three lateral incisions from the fundus to the isthmus on both sides and two or three transversal incisions of the fundus. Procedure was stopped at that point, even if ostial areas were not visible. A simultaneous laparoscopy was performed only in three patients with a past history of pelvic inflammatory disease or ectopic pregnancy, to observe the distal tubal status. Prophylactic antibiotics amoxicillin and clavulanic acid at the dose of 2 g (SmithKline Beecham, Nanterre, France) were given routinely at the induction of anaesthesia. No intrauterine contraceptive device was inserted, since no significant advantage has been noted when compared with hormonal therapy alone (San Fillipo and Fitzgerald, 1982). Postoperative oestrogen therapy (oestradiol 4 mg daily; Laboratoires Cassenne, Puteaux, France) was given to all patients for 2 months. Postoperative hysterosalpingography was not performed routinely. The anatomical result was checked in all patients by an outpatient hysteroscopy without anaesthesia at the end of hormonal therapy. Subsequent fertility was studied by calling all patients by telephone.

The follow-up was defined as immediately after treatment for women who were trying for pregnancy, except in one case. 

\( \chi^2 \) test modified by Yates correction when appropriate was used for statistical evaluation and \( P < 0.05 \) was considered to be statistically significant.

**Results**

Thirty-one patients underwent a total of 55 hysteroscopic treatments. The mean operating time for the initial procedure was 24.4 ± 8.2 min, including dilatation time. All patients were discharged from the hospital on the day of surgery. A complication was noted in four procedures out of 55 (7.3%) involving a perforation occurring during cervix dilatation. The procedure was stopped and patients were operated on 2 months later without any difficulty.

A satisfactory anatomical result was observed after the initial procedure by the outpatient control hysteroscopy in 16 patients out of 31 (51.6%), and these patients were allowed to try for pregnancy. Nevertheless, in 10 of these 16 patients (62.5%), filmy adhesions were found and were easily ruptured by the hysteroscope. In the 15 remaining patients, the control hysteroscopy diagnosed the persistence of mild or severe IUA justifying a second operative hysteroscopy. Finally, reconstruction of a functional uterine cavity was realized after one \( (n = 16) \), two \( (n = 7) \), three \( (n = 7) \) or four \( (n = 1) \) surgical procedures.

Menstruation improved in all patients. All 16 patients previously amenorrheic had resumption of menses after one \( (n = 11) \), two \( (n = 4) \) or three surgical procedures \( (n = 1) \). The 15 patients with hypomenorrhea had longer and heavier periods.

Three patients were lost to follow-up after the control hysteroscopy.

The mean follow-up time was 31 months (range 2–84) for the remaining 28 patients. All patients except one had at least a 6 month follow-up period.

Fifteen pregnancies were obtained in 12 patients and the outcomes were the following: two first trimester missed abortions, three second trimester fetal losses, a second trimester termination of pregnancy for multiple fetal abnormalities and nine live births in nine different patients. Pregnancy rate after treatment was 12/28 (42.8%) and live birth rate was 9/28 (32.1%). These results are shown in Table I. All patients conceived spontaneously except one. In this patient only one ostial area was restored, homolateral to a previous salpingectomy for ectopic pregnancy. She successfully underwent a first cycle of in-vitro fertilization (IVF) and embryo transfer.

In patients aged ≤35 years, 10 out of 16 conceived (62.5%) compared with two out of 12 (16.7%) in patients aged >35 years \( (P = 0.01) \).

Three pregnancies out of 15 (20%) were complicated with a second trimester fetal loss. One patient had a one-step procedure and two patients had undergone three surgical procedures. Two patients out of the three became pregnant again and had an uneventful pregnancy after cervical cerclage performs at 12 weeks gestation.

In nine patients with live births there were four vaginal deliveries at term and five Caesarean sections. Three Caesarean sections were performed for prepartum fetal distress, one was performed for past history of two Caesarean deliveries and the last one was realized at 30 weeks gestation for chorioamnionitis. Severe complications occurred in two cases out of nine (22.2%).

The first case was a Caesarean hysterectomy for placenta accreta in a patient with a history of two previous Caesarean sections with a placenta accreta at the latest delivery. The patient did well after the procedure. The second patient underwent a Caesarean section at 30 weeks gestation because of *Candida albicans* chorioamnionitis after preterm rupture of membranes. The placenta was abnormally adherent and was partially removed manually. Haemostasis was obtained by hypogastric arteries ligation and placenta accreta was confirmed by histological diagnosis. The mother had an uneventful postoperative course. The infant required respiratory support initially and specific treatments. He is now 2 years old and has a normal development.

**Discussion**

Severe intrauterine adhesions are difficult to treat, and even when a satisfying anatomical result is obtained, normal endometrial function is not guaranteed. In any case, normal size and shape of the uterine cavity are essential to carry a pregnancy to term. Restoration of ostial areas is not always possible and patients can have recourse to IVF and embryo transfer.

Different hysteroscopic techniques have been described. Intrauterine adhesions can be divided by hysteroscopic scissors (Valle and Sciarra, 1988) or laser treatment (Chapman and Chapman, 1996). More recently an innovative technique involving hysteroscopic scissors has been reported: a 5 mm hysteroscope was introduced from the cervix to each cornua, converting the obliterated cavity into a uterine septum.
(McComb and Wagner, 1997). Hysteroscopic resection with a monopolar probe is also efficient (Chen et al., 1997; Protopapas et al., 1998). In the technique described by Chen et al. (1997), laminaria tents were used to distend the uterine cavity prior to transcervical resectoscopy. No perforation of the uterus occurred in this series of seven patients, and all patients achieved normal menstruation and normal uterine cavity. Similar to our own technique, myometrial scoring has been described (Protopapas et al., 1998). This technique was proposed to seven patients who had undergone a first inefficient hysteroscopic procedure. Scoring involved making six to eight 4 mm deep longitudinal incisions into the myometrium with a knife electrode, from the uterine fundus to the isthmus and distributed over all the circumference of the endometria. A normal uterine cavity was restored in all patients. Contrary to all these reports, we had no need for laparoscopic guidance and no perforation was noted except during dilatation of the cervix. After a limited number of incisions, systematically realized in the same way (two or three lateral incisions from the fundus to the isthmus on both sides and two or three transversal incisions of the fundus), the procedure was stopped since it was impossible to distinguish denuded myometrium from scar tissue. At that point, further treatment might become inefficient or dangerous, even under laparoscopic control. Therefore, endometrial regrowth was awaited and a second stage hysteroscopy, surprisingly easy relative to the initial step, was performed when necessary.

Debate concerning the abdominal versus the hysteroscopic approach has revived recently (Reddy and Rock, 1997). There are probably very few indications left for laparotomy, even in the treatment of the most severe IUA. Repeated hysteroscopic procedures as described (Chapman and Chapman, 1996; Protopapas et al., 1998), and our series allowed the re-establishment of a normal cavity in all cases. Menses improved in all our patients. In any case, patients should be made aware of the possibility of multiple stage surgery.

Many studies fail to present their results according to the severity of the adhesions. Therefore different techniques are difficult to compare. In Table II, the results of the four main series are given, including our own results of subsequent fertility after hysteroscopic treatment of severe Asherman’s syndrome (principal series).

### Table I. Pregnancies after hysteroscopic treatment of severe Asherman’s syndrome

<table>
<thead>
<tr>
<th>Patient number</th>
<th>Age (years)</th>
<th>Parity &amp; gravidity</th>
<th>History</th>
<th>Symptoms</th>
<th>Number of procedures</th>
<th>Subsequent pregnancies</th>
<th>Conception</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>0P3G</td>
<td>2 D&amp;C for EA, 1 D&amp;C for MA</td>
<td>Infertility, amenorrhoea</td>
<td>1</td>
<td>First trimester miscarriage, STD</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>0P3G</td>
<td>1 D&amp;C for EA, 2 miscarriages without D&amp;C</td>
<td>RPL, hypomenorrhoea</td>
<td>1</td>
<td>Second trimester fetal loss (23 weeks), STD</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>0P0G</td>
<td>1 D&amp;C for polyps</td>
<td>Infertility, amenorrhoea</td>
<td>1</td>
<td>CTD</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>4</td>
<td>37</td>
<td>2P6G</td>
<td>2 CTD (1 placenta acrreta), 4 D&amp;C for MA</td>
<td>RPL, amenorrhoea</td>
<td>1</td>
<td>Term Caesarean hysterectomy for placenta acrreta</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>5</td>
<td>36</td>
<td>2P5G</td>
<td>1 D&amp;C for EA, 1 D&amp;C for MA, 1EP</td>
<td>Infertility, hypomenorrhoea</td>
<td>2</td>
<td>STD</td>
<td>IVF</td>
</tr>
<tr>
<td>6</td>
<td>33</td>
<td>1P3G</td>
<td>1 D&amp;C for MA, 1EP</td>
<td>Infertility, amenorrhoea</td>
<td>2</td>
<td>STD</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>7</td>
<td>35</td>
<td>0P1G</td>
<td>1 miscarriage without D&amp;C</td>
<td>Infertility, amenorrhoea</td>
<td>2</td>
<td>Second trimester TOP, multiple fetal abnormalities</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>8</td>
<td>34</td>
<td>0P1G</td>
<td>2 D&amp;C for polyps</td>
<td>Infertility, amenorrhoea</td>
<td>2</td>
<td>CTD</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>9</td>
<td>34</td>
<td>1P3G</td>
<td>2 D&amp;C MA</td>
<td>Infertility, hypomenorrhoea</td>
<td>3</td>
<td>Second trimester fetal loss (19 weeks), CTD</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>10</td>
<td>34</td>
<td>0P4G</td>
<td>1 hysteroscopic treatment of IUA</td>
<td>RPL, hypomenorrhoea</td>
<td>3</td>
<td>First trimester miscarriage</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>11</td>
<td>34</td>
<td>0P2G</td>
<td>1 D&amp;C for EA, 1 miscarriage without D&amp;C, 1 myomectomy (hysterotomy)</td>
<td>Infertility, amenorrhoea</td>
<td>3</td>
<td>Spontaneous</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>29</td>
<td>2P3G</td>
<td>1 D&amp;C for post-partum bleeding</td>
<td>Infertility, hypomenorrhoea</td>
<td>4</td>
<td>Caesarean section at 30 weeks for chorioamnionitis with severe haemorrhage (placenta acrreta) and hypogastric arteries ligation</td>
<td>Spontaneous</td>
</tr>
</tbody>
</table>


### Table II. Fertility after hysteroscopic treatment of severe Asherman’s syndrome (principal series)

<table>
<thead>
<tr>
<th></th>
<th>Number of patients</th>
<th>Patients with intrauterine pregnancy</th>
<th>Patients with live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valle and Sciarra (1988)</td>
<td>47</td>
<td>27 (57.4)</td>
<td>15 (31.9)</td>
</tr>
<tr>
<td>Protopapas et al. (1998)</td>
<td>7</td>
<td>2 (28.7)</td>
<td>2 (28.7)</td>
</tr>
<tr>
<td>This series</td>
<td>28</td>
<td>12 (42.8)</td>
<td>9 (32.1)</td>
</tr>
</tbody>
</table>

Values in parentheses are percentages.
principal aim of the treatment should be resumption of normal menses, but obstetric outcome remains disappointing.

Severe obstetric complications in subsequent pregnancies are described by many authors. Deaton et al. reported a spontaneous uterine rupture during pregnancy after hysteroscopic treatment of Asherman’s syndrome complicated by a fundal perforation (Deaton et al., 1989). Friedman et al. described three severe complications in a series of 33 patients with mild to severe IUA (Friedman et al., 1986): in 26 subsequent term pregnancies there was a uterine saculation, a uterine dehiscence and a placenta accreta. Placenta accreta is the most common severe complication reported after the treatment of 351 patients with IUA by laparotomy from 1948 to 1975 (Jewelewicz et al., 1976). In our series, concerning only severe IUA, two pregnancies out of nine with live births (22.2%) were complicated with placenta accreta, and one of these two patients had a past history of abnormal placentation.

Another finding was a high rate of second trimester fetal losses. In three patients with this condition, one patient had a one-step procedure and two had undergone three surgical procedures. Two patients out of three became pregnant again and had an uneventful pregnancy after cervical cerclage at 12 weeks’ gestation. Therefore we think that cervical cerclage should be discussed in patients with multiple stage procedures.

Hysteroscopic treatment of severe Asherman’s syndrome appeared to be effective for the restoration of a functional uterine cavity. All patients achieved a normal uterine cavity and normal menses. The overall pregnancy rate after treatment was 42.8%, and was 62.5% in women <35 years. Live birth rate was 32.1%. However these pregnancies were at high risk for haemorrhage with abnormal placentation. Because risk factors for IUA and for placenta accreta are similar, and because treatment of severe Asherman’s syndrome is probably an added risk factor for abnormal placentation, subsequent pregnancies should be managed appropriately in a tertiary care reproductive centre.

References

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