Residual uterine septum of less than 1 cm after hysteroscopic metroplasty does not impair reproductive outcome

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The objective of this study was to ascertain if incomplete correction leaving a residual uterine septum of ≤1 cm affects fertility outcome. Reproductive outcome in 17 women with a residual septum of between 0.5 cm and 1 cm after hysteroscopic metroplasty was compared to that in 51 women with no residual septum or one of <0.5 cm. Septal lysis was performed with microscissors or resectoscope. One month after operative hysteroscopy, abdominal ultrasonography was performed on all the women and those with a residual septum of >1 cm then underwent a second operative hysteroscopy to complete the lysis. The cumulative pregnancy and birth rates were calculated and the curves compared using the log-rank test. The cumulative 18 month probability of becoming pregnant was 44.5% in the patients with residual septum and 52.7% in those with no residual septum (not significantly different), and the cumulative 18 month probability of giving birth to a child was 27.5 and 36% respectively (also not significant). The presence of a residual uterine septum of between 0.5 and 1 cm as shown by ultrasonography appears not to worsen the reproductive prognosis compared with that in women in whom the septum has been completely or almost completely corrected. Key words: hysteroscopic metroplasty/residual uterine septum/septate uterus

Introduction

Hysteroscopic incision of the uterine septum is considered the best surgical procedure in patients with septate uterus (Corson, 1992; Fedele et al., 1993; Cararach et al., 1994; Goldenberg et al., 1995). Hysteroscopic incision of the uterine septum is generally considered complete when a normal cavity is obtained, the hystroscope can be moved freely from one tubal ostium to the other, and bleeding occurs from small vessels of the fundal myometrium.

Unfortunately, residual septa are frequently found at repeat hysteroscopy even though the first operation was considered complete (Fedele et al., 1993). On such occasions the operator is faced with the decision of whether always to eliminate a residual septum by reincision, whether to remove only the most extensive ones, or whether to leave them all. There are still no data indicating that a small residual septum compromises the patient’s reproductive prognosis. Recently transvaginal and transabdominal ultrasonography have made it possible to obtain very precise measurements of uterine septa also in relation to the general architecture of the viscera (Fedele et al., 1988, 1991). The aim of the present study was to investigate if incomplete correction of a uterine septum affects the recovery of fertility.

Materials and methods

Patients

From September, 1989 to December, 1992 hysteroscopic metroplasty was performed in 72 consecutive patients with repeated abortions with complete septate or subseptate uterus at our Center for the Study and Treatment of Endometriosis. No patient had had a live birth before metroplasty. Before surgery the following investigations were performed in all cases: basal body temperature; endometrial biopsy, hysterosalpingography and three progesterone and prolactin assays in the luteal phase, as well as semen analysis of the partner. In couples with previous miscarriages antiphospholipid antibodies and karyotype in peripheral leukocytes were determined in both the woman and her partner. This subgroup of women also underwent one assay of Triiodothyronine, Thyroxine, Thyroid Stimulating Hormone and Free Triiodothyronine as well as a glucose tolerance test.

Metroplasty

Incision of the septum was performed in the proliferative phase of the cycle. No pharmacological preparation was taken by 18 patients whereas 38 received danazol 600 mg/day for 3–6 weeks before surgery and 16 underwent metroplasty during gonadal suppression with gonadotrophin-releasing hormone agonists (GnRHa). Metroplasty was performed in 51 women under laparoscopic control and in 21 under ultrasound control as these patients had already undergone laparoscopy previously. Septal incision was made with microscissors in 36 patients and electroresectoscope in 36. In the women with complete septate uterus the cervical portion of the septum was spared to avoid possible subsequent cervical incompetence. None of the patients had an intrauterine contraceptive device fitted or oestrogen treatment postoperatively.

Follow-up

Each patient underwent abdominal ultrasound examination in the late secretory phase of the cycle following septal lysis. Ultrasonography was performed with an Ansaldo AU 560 equipment (Ansaldo, Genova, Italy), using a probe of 3.5 MHz. In the case of a retroverted uterus a transvaginal probe of 6.5 MHz was used.

The investigation was done with half-full bladder, and fundal scans were performed using planes containing both the internal uterine os and the tubal ostia (Fedele et al., 1988). All transvaginal and transabdominal ultrasound scans were performed by the same author. Septal lysis was considered complete when the uterine fundus was...
Table 1. Characteristics of the patients

<table>
<thead>
<tr>
<th></th>
<th>Women with residual septum &gt;0.5 cm and ≤ 1 cm (n = 17)</th>
<th>Women without residual septum or with residual septum ≤ 0.5 cm (n = 51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)*</td>
<td>32.2 ± 5.3</td>
<td>31.6 ± 4.3</td>
</tr>
<tr>
<td>No. of previous abortions*</td>
<td>3.2 ± 1.1</td>
<td>3.3 ± 0.7</td>
</tr>
<tr>
<td>Complete septate uterus</td>
<td>4 (23%)</td>
<td>13 (26%)</td>
</tr>
<tr>
<td>Subseptate uterus</td>
<td>13 (77%)</td>
<td>38 (74%)</td>
</tr>
<tr>
<td>Hysteroscopic procedure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microscissors</td>
<td>7 (41%)</td>
<td>27 (53%)</td>
</tr>
<tr>
<td>Electroresectoscope</td>
<td>10 (59%)</td>
<td>24 (47%)</td>
</tr>
<tr>
<td>Medical preparation</td>
<td>12 (71%)</td>
<td>39 (77%)</td>
</tr>
<tr>
<td>Other infertility factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endometriosis</td>
<td>1 (6%)</td>
<td>5 (10%)</td>
</tr>
<tr>
<td>Adhesions</td>
<td></td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Myomas*</td>
<td>1 (6%)</td>
<td>4 (8%)</td>
</tr>
</tbody>
</table>

*Mean ± SD.

*b* All cases were stage I or II according to revised AFS classification (American Fertility Society, 1985): endometriosis was not corrected during laparoscopy.

*c* Volume >2 cm (not removed during laparoscopy).

perfectly aligned with an ideal line passing through the tubal ostia or when the residual septum did not exceed 0.5 cm.

The patients in whom ultrasonography demonstrated a residual septum > 1 cm on the midline had hysteroscopy repeated and the residual septum was resected with microscissors in the proliferative phase of the subsequent cycle.

Data analysis

The cumulative pregnancy and birth rates of the patients with residual septum of >0.5 and ≤1 cm and of those with residual septum ≤0.5 cm were calculated by the product limit method and the curves compared using the log rank test (Peto et al., 1977). In the product limit method, the data are regarded as grouped in a large number of short time intervals, with each interval as short as accuracy of recording permits (Armitage and Berry, 1994). Unlike the life table method, it is not necessary to establish intervals at which the various probabilities are evaluated; instead, the probability of an event is computed each time the event is observed. The event dates used in computing the probabilities of becoming pregnant and of giving birth were the date of metroplasty and, respectively, the date of the last period and the date of delivery. Tests of statistical significance for contingency tables were based on usual $\chi^2$ values, comparing observed and expected numbers of events.

Results

Four patients did not undergo follow-up ultrasonography and were excluded from the study. The main characteristics of the remaining 68 patients are reported in Table I. At postoperative ultrasonography 38 women had no residual septum or one <0.5 cm, 17 women had a residual septum of ≤1 cm and >0.5 cm, and 13 women had one >1 cm which was removed by a second hysteroscopic section. Thus a total of 51 patients had a residual septum of <0.5 cm. In all these patients complete septum removal (no residual septum of >0.5 cm) after the second operative procedure was confirmed by ultrasonography.

A small fundal perforation occurred in three patients during the first hysteroscopy but did not require any treatment.

All the patients attempted to conceive after surgery. The cumulative pregnancy and birth rates of the patients with residual septum of >0.5 mm and ≤1 cm and of those with residual septum ≤0.5 mm are shown in Figures 1 and 2. The cumulative 18 month probability of becoming pregnant was 44.5 and 52.7% in the two groups respectively (based on seven and 25 pregnancies respectively; log-rank test, not significant). The cumulative 18 month probability of giving birth to a child was 27.5% in the patients with residual septum and 36% in those without (based on four and 16 births respectively; log-rank test, not significant). A spontaneous abortion occurred in one (14.3%) patient with residual septum and in four (16%) without (not significant). A breech presentation and a preterm birth were observed in one woman without residual septum,
whereas two women with residual septum and six without underwent Caesarean section.

Discussion
Notwithstanding the accuracy and apparent completeness of the first surgical procedure to remove a uterine septum, a persistent residual septum is frequently observed, and was in fact demonstrated in 30 of our 68 patients (44.1%). One possible cause is adhesion of the uterine walls after septal incision. In our study reproductive outcome in the patients with residual septum of not over 1 cm was similar to that in patients with normal or near-normal uterine morphology after surgery.

Our study undoubtedly has some limits represented by the heterogeneous preoperative reproductive history of the patients and the two surgical procedures used, as well as the still undefined accuracy of ultrasonography. Furthermore, the small number of cases investigated does not give the study sufficient power at the usual levels of $\alpha = 0.05$ and $\beta = 0.80$ to exclude differences of $<40$–$45\%$ between the two groups of patients. However, the series was large considering that the malformation studied is relatively rare, and that patients were recruited over 4 years during which the indications and surgical procedures evolved. Furthermore, the product limit method seems to be the best statistical approach to evaluate the modifications of reproductive prognosis correctly.

It is difficult to understand why a residual septum of under 1 cm apparently does not cause problems similar to those of the subseptate uterus. It may be postulated that the periphery of the septum is more fibrous and thus less vascularized and less suitable for implantation and placental development than the centre of the septum, which is constituted of normally vascularized myometrium. On the other hand, these results are in line with those obtained after abdominal metroplasty, when good reproductive results are obtained even when the post-surgical uterine morphology is not perfect (Capraro et al., 1968; Rock and Jones, 1977; Musich and Behrman, 1978).

If ultrasonography is shown to be reliable in detecting small differences in uterine septum, and if our findings are confirmed in other studies, we conclude that a second hysteroscopic surgical procedure would not be necessary in patients with residual septum of $<1$ cm. However, adequate ultrasound follow-up is indispensable to evaluate precisely which patients should undergo re-operation.

References

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