Medical Journal of the
Islamic Republic of Iran

Volume 13
Number 2
Summer 1378
August 1999

HYSTEROSCOPIC METROPLASTY: REPORT OF 76 CASES

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ABSTRACT

Congenital Mullerian abnormalities, particularly the septate uterus, may result in recurrent abortion, premature labor and infertility. The purpose of this study is to report the surgical and reproductive outcome in two groups of patients who underwent hysteroscopic metroplasty (HMP).

Between Aug. 1993 and March 1998, 76 women underwent HMP in Shiraz University of Medical Sciences' affiliated hospitals. They were divided into two groups. Group one received no postoperative (post-op) additional therapy. Group two received post-op estrogen, and an IUD was also placed to prevent post-op endometrial adhesion. They were analyzed with respect to post-op complications and reproductive outcome. Seven of these patients had a complete uterine septum which extended through the cervix and to the vagina. All of the seven cervical septums were incised with good obstetrical outcome. There were a total of 45 pregnancies during 6 months or more post-op in the two groups. Differences between the reproductive outcome of the two groups was not statistically significant (p=0.90066) and the general results were as follows: term delivery rate was 35 (72.7%), 23 (51%) delivered vaginally, and 12 (26.5%) delivered by cesarean section (C/S) for obstetric indications, 4 (8.8%) were spontaneous abortions and one immature delivery at 16 wks due to premature rupture of membranes (PROM). Intraoperative and post-op morbidity was negligible. We concluded that with HMP, septa can be incised successfully, post-op hormonal therapy and IUD placement are not needed, the cervical septum can be incised without any post-op complication, and a good reproductive outcome can be expected.

MJIRI, Vol. 13, No. 2, 101-105, 1999
Keywords: Uterus, abnormalities, management, hysteroscopic metroplasty.

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INTRODUCTION

Abnormal development of Mullerian ducts, particularly the septate uterus, may result in early and late pregnancy loss and primary infertility.[1-3] The probability of reproductive problems range from 20-90%.[4] The prevalence of septate uterus is approximately 3% among the female population.[5] The exact mechanism by which the septate uterus causes pregnancy wastage and infertility is not clear. Some authors believe that the septum is composed of fibromuscular tissue

characterized by being more collagenous and less cellular with poorly developed vasculature and endometrium. It is thought that this unique tissue may be responsible for the increased incidence of recurrent spontaneous abortion, premature delivery and primary infertility,[6] while others found that the septum has the same histological structure as other parts of the myometrium.[7] The association of the septum and primary infertility may be related to implantation failure based on relative deficiency of estrogen and progesterone receptors. Before the development of modern operative hysteroscopy, the accepted surgical techniques required laparotomy with a uterine incision and, depending on the individual technique, either removal (Strassman or Jones) or section (Tompkins) of the septum.[8] Hysteroscopy has been used for the diagnosis and management of intra-uterine adhesions, resection of submucosal myoma, endometrial ablation, and unification of septate uterus.[9-18] The purpose of the present study is to report the surgical complications and subsequent pregnancy outcome in two groups of patients undergoing hysteroscopic metroplasty (HMP) over 6 years and to see the effect of post-op additional therapy.

PATIENTS AND METHODS

Between August 1993 and March 1998, 76 patients were found to have congenital Mullerian abnormalities on hysterosalpingography (HSG) consistent with either a septate or a bicornuate uterus. They had been referred from GYN clinics of SUMS hospitals and private clinics as cases of recurrent pregnancy loss or infertility. Fifty-nine of these patients were fertile, and mean gravidity was 2.3. These had conceived 176 pregnancies. Of all pregnancies, 102 resulted in spontaneous abortion, and 74 in premature deliveries. Premature delivery was defined as delivery before 36 weeks and pre-term delivery as delivery before 38 weeks. Total pregnancy loss was 86.5%, and only eight infants survived.

Seventeen of them were infertile, in whom complete infertility work up was normal, so they were known as unexplained primary infertility. Table I shows the indications for metroplasty.

Table I. Indications for metroplasty.

Indication	No.	%
Abortion	23	30.2
Premature delivery	11	14.4
Abortion and premature delivery	25	34.2
Infertility	17	22.3
Total no. of patients	76	100

Patients were randomly and every other one (accidentally) allocated in to two groups. Group one received no additional therapy. An IUD Cu T 380 A was placed postoperatively in group two, and they also received conjugated estrogen 1.25 mg twice daily for 6 weeks with medroxy-progesterone acetate (MPA) 10 mg in addition for the final 10 days of estrogen therapy. Table II shows preoperation pregnancy outcome in the two groups. Intravenous pyelography (IVP) was performed in all patients preoperatively. In order to reduce the chance of intraoperative bleeding, Danazol 3 tab/day for 2 months or GnRh-a was given for 2 months preoperatively.[21] All patients were operated in the early follicular phase. WBC, sed rate, U/A and U/C was also requested. All patients were referred for hysteroscopy. Hysteroscopies were performed under general anesthesia.[19] At the time of the procedure, laparoscopy was also carried out; patients who were included in this study had normal external uterine shape, although fundal diameter was frequently wider than normally anticipated. At hysteroscopy, 7 patients were found to have septa that extended through the cervix and into the vagina, in which the vaginal and cervical portion of the septum was incised with Metzenbaum scissors and the corporeal portion with microscissors under hysteroscopic guidance.

The procedure was carried out under direct vision of a laparoscope as an external operative guide to the hysteroscope.

Microscissors was used as a cutting instrument as it was recommended previously to be more effective and have less

Table II. Preoperative pregnancy outcome in group I (out of 33 patients) and group II (out of 43 patients).

Pregnancy outcome	Group I		Group II	
	No.	%	No.	%
Abortion	51	57.9	51	57.9
Premature delivery	37	42.1	37	42.1
Total no. of pregnancies	88	100	88	100

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Table III. Age distribution in both groups.

Age	Group I		Group II	
	No.	%	No.	%
15 - 19	3	9	7	16.2
20 - 24	9	27	9	20.9
25 - 29	9	27	8	18.6
30 - 34	8	24.2	12	27.9
35 - 45	4	12	7	16.2
Total	33	100	43	100

risk of complications than the resectoscope.[19] Septa were completely incised and the procedure completed as in the classical method.[20] Operating time was defined as the interval between beginning of the cervical dilatation and removing the hysteroscope. If perforation occurred during the procedure, it was diagnosed by a higherrate of distending media flow. Site of perforation was also detected by laparoscope, and the procedure was stopped and the patient was observed for 24 hours and then dicharged. Patients were discharged from the hospital according to their condition. WBC, sed rate, U/A and U/C were requested 15 and 30 days post-op, IUD was removed after 6 weeks and medication was also discontinued at this time. HSG was requested 2 months postoperatively for both groups. If resection was adequate and there was no synechia they were allowed to attempt to conceive in subsequent cycles. Cervical circlage was performed in patients who had clinical or radiologic evidence of cervical incompetence. Patients were followed by our team or colleagues who had referred the patients.

Chi-square test and homogeneity test were used as statistical methods.

RESULTS

The maximum follow up duration was 3 years. Age distribution in groups one and two is shown in Table III. When retrospectively analyzed we found that thirty-three patients undergoing metroplasty as group one (mean ± SD of age 27.51 ± 11) were the same by age, gravidity, reproductive outcome before surgery and type of uterine anomaly as 43 women treated as group two (mean ± SD of age: 27.34 ± 6.68). Age distribution differences were not statistically significant (p=0.736573). Mean distending media used was 2000 mL. Mean operative time was 40 minutes (range 15 to 90 minutes). No major hysteroscopic, laparoscopic or anesthetic complication occurred; 7 cases had a small uterine perforation who were managed as mentioned and discharged after 24 hours without any additional treatment. No significant intraoperative or post-op bleeding occurred. IVPs were normal in 72 cases and the others had pelvic kidney (2 cases), or double ureter (2 cases). Procedure was stopped in 5 cases because distending media pressure was not adequate and this problem resulted in haziness of the operating field. These patients underwent repeated HMP after two months and the residual septum was resected. Mean hospital stay period was 15 hours. Patients with complete and incomplete uterine septum had the entire septum incised. Cervical septum was also incised as well as other various forms of septa. Analysis of post-op complications and reproductive outcome was limited to 45 (60%) of the 76 patients. Patients lost to follow-up or those who voluntarily desired not to attempt conception post-operatively were excluded. A post-op HSG after complete septal incision demonstrated that 71 patients had a normal uterine cavity and 5 of them had a residual fundal notch who again underwent HMP in another session. Finally the post-op HSG demonstrated a normal uterine cavity in all cases. Cervical circlage was performed in 3 cases. There has been no case of Asherman syndrome or any degree of adhesions

Table IV. Reproductive outcome in group I and group II (differences not significant, p = 0.90066).

Reproductive outcome	Group I		Group II	
	No.	%	No.	%
Term vaginal delivery	9	47.3	11	42.3
Pre-term vaginal delivery	1	5.26	2	7.6
Term cesarean delivery	3	15.78	5	19.2
Pre-term cesarean delivery	2	10.5	2	7.6
Immature delivery	0	0	1	3.8
Abortion	1	5.8	3	11.5
Ongoing pregnancy	3	15.78	2	7.6
Total no. of patients conceived in the two groups	19	100	26	100

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in group one but 2 cases in group two developed endometrial synechia (not statistically significant). Mean preoperative WBC in group one was 6800 and post-op WBC was 7200 in the same group. Pre- and post-op WBC in group two were 6250 and 8100, respectively. Sed rate for group one preoperatively was 10 and post-op was 14 while in group two pre- and post-op sed rate were 12 and 18, respectively. Although there are some differences in WBC and sed rate between the two groups, these are in normal range and differences are not statistically significant. From 76 patients more than 6 months from operation, who were not lost to follow-up, 45 patients conceived.

Five of these patients had primary infertility prior to operation. The reproductive outcome is shown in Table IV.

As we can see there is no significant difference between the reproductive outcome in the two groups (p=0.90066). The pre-term vaginal deliveries were at 35+, 36 and 37 weeks due to PROM, and premature labor. The causes of cesarean section were fetal distress, PROM, active phase arrest, breech presentation and other obstetrical causes. Four of seven women who had cervical septum and had conceived after HMP delivered at term and none of them had premature delivery. Overall pregnancy loss decreased from 86.5% preoperatively to 11% post-op. Fetal wastage, which is defined as the sum of immature delivery plus abortion, was 5.2% in group one and 15.3% in group two (not statistically significant). In all patients the placentas were removed without difficulty and were reported as normal in appearance.

DISCUSSION

The standard treatment for Mullerian anomalies has been surgical since Ruge performed a blind transcervical division of a septum in a patient with pregnancy wastage in 1884.[22]

Various types of abdominal metroplasty was the routine procedure for correcting Mullerian abnormalities, including septate uterus. These operations required laparotomy and therefore prolonged hospitalization. Additionally, invasion of the uterine cavity by bisection or incision creates a situation giving rise to the possibility of uterine or adnexal adhesions after the operation Furthermore, the patient becomes a candidate for C/S. In 1974 Edstrom reported 2 cases of hysteroscopic uterine septum incision.[26] Since that time HMP became the procedure of choice for septate uterus in patients with recurrent pregnancy loss.

Seventy-six women were operated for recurrent pregnancy loss and infertility in the present study. 17 of these cases had unexplained infertility. Since septate uterus is considered as the cause of primary or secondary unexplained infertility, we included all 17 infertile patients in our study.[20] Five of 17 (29.4%) of them conceived. This result is similar to Colacoric's group who also had a conception rate of 29%.[2] Although HMP cannot be considered as problem solving in these patients, it is recommended because of simplicity and lack of complications.

Decherney and Poland recommended an IUD for prevention of post-op endometrial synechia but Charles and March observed no difference between the IUD group versus no post-op intervention.[12,27]

Regarding PID, Valle and Sciarra reported 12 cases and concluded that the rate of PID is higher in the IUD group.[11]

In our cases normal post-op HSG and normal WBC and sed rates in two groups of patients shows that an IUD is not necessary for prevention of adhesions and the chance of PID is not higher in the presence of an IUD. Reproductive outcome in the two groups in the present study was the same (Table IV, p = 0.90066). Although fetal wastage in group two was higher (15.3%) than in group one (5.3%), the difference is not statistically significant. Obstetric outcome in our patients appears to be similar to the 67.4% success rate reported by Colacoric and the 64% in Goldenberg's patients.[2,3]

Furthermore the need for C/S is based on obstetrical indications rather than the history of metroplasty. Although many authors believe that the risk of uterine rupture after HMP is negligible, Obaugh reported one case of uterine rupture after HMP.[20] Therefore any physician providing care for patients with HMP should be aware of the potential for uterine rupture during pregnancy. It is noted that patients with Mullerian abnormality may be at increased risk for an incompetent cervix and/or premature labor even after the septum is excised. We did cervical circlage in patients in whom cervical incompetence was proved. Jones has advised against resecting cervical septa because of the risk of an incompetent cervix.[29] So based on this idea the septum should be incised above the cervical portion, which is a difficult procedure. Gupio Ragni, in his original article, reported 7 cases with complete cevical septum incision and good post-op anatomic and obstetric outcome.[30] We also incised the cervical septum in 7 patients and four of them conceived and delivered vaginally at term, similar to Gupio Ragni's group who reported 4 vaginal term deliveries out of 7 patients, and also similar to Vercillini's results.[30,31]

There were 7 uterine perforations during the procedures which were diagnosed promptly and were observed for 24 hours and discharged without any early or late complication.

In conclusion, HMP has less perioperative and post-op morbidity than abdominal procedures and eliminates the requirement for C/S. Reproductive outcome was excellent in both groups and there was no significant difference between them (p=0.90066). Post-op Asherman syndrome and PID in both groups is negligible and not significantly different, so hormonal therapy and IUD placement is not needed. The cervical septum can be incised without any

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complications and with a good reproductive outcome.

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