



Research Article

Hysteroscopic Metroplasty For a Septate Uterus: A Tertiary Center, 10-Year Experience

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Introduction

Uterine septum is a common congenital anomaly of the female reproductive tract [1]. The reported population prevalence ranges from 0.4 to 5% in general for uterine abnormalities, and rates in women with recurrent miscarriage are significantly higher [2]. In a review of 22 studies with more than 573,000 women screened for these malformations, Nahum et al. reported the distribution of uterine anomalies as follows: bicornuate 3%, septate 34%, didelphic 11% arcuate 7%, unicornuate 5% and hypo/aplastic, 4%. These anomalies may be discovered during routine pelvic examinations, cesarean deliveries, laparoscopies for tubal sterilization, or infertility evaluations [2]. In general, congenital uterine anomalies have commonly affected women with recurrent miscarriage. Septate uterus is caused when a resorption defect leads to a persistent complete or partial longitudinal uterine cavity septum. This might result in multiple complications, such as diminished fertility as well as increased risks for adverse pregnancy outcomes, including miscarriage, preterm delivery, and malpresentation. The poorly vascularized uterine septum likely causes abnormal implantation or defective early embryo development and miscarriage.

Many studies have reviewed the effect of hysteroscopic metroplasty and shared their experience regarding the outcomes from a fertility point-of-view. Our objective in this study is to share

our experience with patients with uterine septa and their fertility outcomes at the In Vitro Fertilization (IVF) Unit at King Abdulaziz Medical City (KAMC), National Guard Health Affairs, Riyadh, Kingdom of Saudi Arabia.

Materials and Methods

This is a retrospective study. We reviewed data from May 2005 to March 2015, in the IVF Unit at KAMC. More than 200 files were reviewed, and 127 cases were identified with uterine septa and continued their follow-up either in the IVF unit or the general obstetrics and gynecology clinic. A case report form was developed to collect all the relevant data from patient files. This form included around 20 questions, covering obstetrical history, current assessment of the patient, operative details, post-surgery outcomes and fertility outcomes. This study was analyzed using IBM SPSS version 23. Simple descriptive statistics were used to define the characteristics of the study variables through a form of counts and percentages for the categorical and nominal variables while continuous variables were presented by mean and standard deviations. To establish a relationship between categorical variables, this study used the chi-square test. While comparing the two group means, an independent t-test was used. These tests were done with the assumption of normal distribution. Finally, a conventional p-value < 0.05 was the criteria to reject the null hypothesis (Table 1).

Results

Demographics	N	Min	Max	Mean	SD
Patient Age	127	20	45	31.12	5.6
Gravida	127	0	8	0.69	1.3
Para	127	0	4	0.1	0.5
Abortion	127	0	8	0.59	1.2
		Count		%	
Total		127		100	
Malpresentation	Yes	9		7.1	
	Not documented	3		2.4	
	Not applicable	115		90.6	
Premature Delivery	Yes	10		7.9	
	Not documented	3		2.4	
	Not applicable	114		89.8	
Preoperative Medication	Yes	51		40.2	
	No	73		57.5	
	Not documented	3		2.4	

SD: Standard deviation

Table 1. Demographic and clinical characteristics of the sample.

Table 1: demonstrates an overview of our patient demographic details; the youngest patient was 13 years old and the oldest was 45 years old. The mean parity in our data was 0.10, indicating low fertility outcomes for such patients. Approximately 7.1% of our patients had a misrepresented fetus during their previous pregnancy, 7.9% had a premature delivery, and the remaining patients had not had a chance to follow-up on their pregnancy (Table 2).

Variables	N	Min	Max	Mean	SD
Duration of Infertility	126	1	16	5.42	3.6
		Count		%	
Total		127		100.0	
Type of Infertility	Ovulatory disorder	5		3.9	
	Uterine septum	109		85.8	
	Tubal blockage	1		.8	
	Hyperprolactinemia	2		1.6	
	Ovulatory disorder and tubal blockage	2		1.6	
	Uterine septum and tubal blockage	3		2.4	
	Uterine septum and hyperprolactinemia	2		1.6	
	Ovulatory disorder, uterine septum and hyperprolactinemia	1		.8	
Ovulatory disorder and uterine septum	2		1.6		

Diagnostic Tools	Ultrasound	78	61.4
	MRI	4	3.1
	HSG	37	29.1
	Interventional	4	3.1
	Ultrasound and MRI	4	3.1
Abbreviations: HSG, hysterosalpingography; MRI, magnetic resonance imaging; SD, standard deviation.			

Table 2: Type of infertility

One year was the minimum duration of infertility and 16 years being the maximum (mean, 5.5 years). The usual practice for such patients referred to our IVF unit is to go for laboratory diagnostic tests and radiological studies to identify the cause of infertility. As shown in Table 2, 86% of patients had a uterine septum, followed by 2.4% with a uterine septum combined with tubal blockage. A low percentage of patients (0.8%) had just tubal blockage, followed by ovulatory disorder combined with uterine septum and hyperprolactinemia.

The usual imaging modalities practiced in the IVF unit for diagnosing such patients begins with ultrasound, both transabdominal and transvaginal. If unclear or showing an unexclusive finding, other modalities will be used. The most frequent and efficient modality is ultrasound, at (61.4%), and the least common were MRI (3.1%), interventional (3.1%), as well as ultrasound and MRI companied (3.1%). Interventional diagnostic modality indicates the use of an office hysteroscopy. This was used on only four patients that were at risk with other modalities (such as pelvic inflammatory disease [PID]), or that had unclear findings that required the use of an office hysteroscopy (Table 3).

Variables	N	Min	Max	Mean	SD
Operative Time	127	10	126	50.16	23.85
Estimated Blood loss	127	30	60	49.92	2.0
		Count		%	
Total		127		100.0	
Type of Septum	Complete	11		8.7	
	Incomplete	113		89.0	
	Small and submucosal fibroid	3		2.4	
Surgical Management	Hysteroscopy	113		89.0	
	Laparoscopy and hysteroscopy	13		10.2	
	Laparotomy, laparoscopy and hysteroscopy	1		0.8	
Instrumental Used	Rectoscope	1		0.8	
	Operative hysteroscopy	112		88.2	
	Laparoscopy diet test and operative hysteroscopy	14		11.0	
Complication	No complication	123		96.9	
	Uterine perforation	4		3.1	

Table 3: types of septum and type of procedure.

Table 3 shows the intraoperative findings and all the relevant data. Operative times reached 180 minutes with a mean of 51 minutes. Estimated blood loss was minimal in most cases, reaching a maximum of 60 mL. Intraoperative findings were divided into two parts: complete septum and incomplete septum, in addition to separate category for the small septum with submucosal fibroid. Most our patients were found to have an incomplete septum (113n 89%) and the complete septum count for (11n 8.7%). The lowest type of uterine anomaly was with those patients who had a small septum and submucosal fibroid. For surgical management, 89% had only hysteroscopy, 10.2% had hysteroscopy and laparoscopy, and

0.8% (one case) had hysteroscopy, laparoscopy and laparotomy. This unique case was complicated by a uterine perforation that warranted multiple surgical procedures.

From an instrument point of view, operative hysteroscopy was the most frequent instrument used (88.2%) followed by a laparoscopy diet test and operative hysteroscopy (11%) when an intraoperative finding indicated the need for a laparoscopy entrance. A rectoscope was used only in one case. Uterine perforation was the only complication recorded (3.1%). Most of our patients tolerated the surgery and discharge with no complication in their stable condition (table 4).

Variables	N	Min	Max	Mean	SD
Time from Surgery to Conception	52	14	260	85.31	56.9
		Count		%	
Total		127		100.0	
Conception	Yes	52		41.1	
	No	75		19.6	
	No follow-up	50		39.3	
Type of Conception	Spontaneous	29		22.8	
	Assisted	23		18.1	
	Not applicable	75		59.1	
Mode of Delivery	NVD	25		19.7	
	C/S	10		7.9	
	Not applicable	92		72.4	
Outcomes of Conception	Live	35		67.3	
	Abortion	17		32.7	
	Not applicable	75		- - -	
Cervical Cerclage Needed	Yes	2		1.6	
	No	50		39.4	
	Not applicable	75		59.1	
Abnormal Implantation of Placenta	Yes	1		.8	
	No	51		40.2	
	Not applicable	75		59.1	
Abbreviations: C/S, cesarean section; NVD, normal vaginal delivery.					

Table 4: obstetric outcome.

Table 4 demonstrates the fertility outcomes of our patients. Fifty-two cases (40.9%) were able to conceive, while the rest could not. Follow-up was through the IVF Unit or General Obstetrics and Gynecology clinic in KAMC. A high percentage of the patients that did not conceive were not eligible for follow-up in KAMC or missed their appointment in the unit. Minimum duration after surgery to confirm the conception was 14 weeks and maximum 260 weeks with a mean of 85 weeks. Twenty-nine patients conceived spontaneously, and 23 patients needed assisted methods. As outcomes of these conceptions, 35 had a live-birth baby and 17 ended with first and second trimester miscarriages. Of those who conceived, 25 had a normal vaginal delivery without any complication and 10 patients delivered by cesarean section. Two patients required cervical cerclage. One case had abnormal placental implantation and had a straight forward cesarean section where the uterus was preserved (Table 5).

Variables		Total	Outcomes of Conception		p-value
			Live	Abortion	
Patient Age		31.1 ± 5.6	28.83 ± 5.3	30.18 ± 5.02	0.384
Operative Time (minutes)		50.2 ± 23.9	55.1 ± 25	46.8 ± 21.4	0.243
Type of Infertility	Uterine septum	47	30 (63.8%)	17 (36.2%)	0.748
	Tubal blockage	1	1 (100.0%)	0 (0.0%)	
	Ovulatory disorder and tubal blockage	1	1 (100.0%)	0 (0.0%)	
	Uterine septum and tubal blockage	1	1 (100.0%)	0 (0.0%)	
	Uterine septum and hyperprolactinemia	1	1 (100.0%)	0 (0.0%)	
	Ovulatory disorder and uterine septum	1	1 (100.0%)	0 (0.0%)	
Type of Septum	Complete	9	7 (77.8%)	2 (22.2%)	0.637
	Incomplete	43	28 (65.11%)	15 (34.88%)	
Instrument Used	Operative hysteroscope	45	28 (62.2%)	17 (37.8%)	0.047 ^a
	Laparoscopy diet test and operative hysteroscope	7	7 (100.0%)	0 (0.0%)	

^a Significant using the chi-square test at < 0.05 level.

Table 5: obstetric outcomes.

In correlation, 47 of our patients who conceived had a uterine anomaly as the primary reason for their referral to our IVF unit. Most had a small or complete septum. The mean age of the patients was 29 years.

Discussion

Resection of the septum may restore the normal function of the endometrium. Although current evidence is not strong enough to justify surgical intervention in patients with unexplained infertility, the reported pregnancy rates for patients in self-controlled studies are between 29% and 71%. Indication of hysteroscopic metroplasty in the unit was based either on multiple abortions or diagnostic modalities. Moreover, this resulted in good outcomes. Approximately 40.1% became pregnant while 39.3% had no follow-up with the unit. In correlated with others, Querleu et al. found that around 72% from the indicated group had successful early pregnancies [3]. However, in our study of the final outcomes post-surgery, 67.3% of those who got pregnant had a live birth and

32.7% had miscarriages. This shows an improvement on previous reports; Fedele et al. found that 39% had live birth rates and 67% had miscarriages [4].

Regarding the mode of delivery, all the patients who became pregnant were informed and counselled during their antenatal care visit about the possibility of normal vaginal delivery, except one patient, who had abnormal placental implantation. About 71.4% had a normal vaginal delivery while 28.6% had a cesarean section. This is higher than what has been reported by Yilmaz et al, where the cesarean section rate reached 58%, and 42% had a normal vaginal delivery [5]. Nevertheless, many patients in our study chose to have a cesarean section due to maternal request and the preciousness of the pregnancy after years of infertility.

Intraoperative blood loss was minimum and did not exceed 100 ml. In addition, most of our patients had the surgery in the One-Day Surgery Unit (ODSU) and were discharged on the same day in good health and with stable conditions.

The data obtained from our retrospective study show that hysteroscopic metroplasty can improve the reproductive performance of a septate uterus significantly and should be considered and recommended highly as a corrective approach for these patients.

Weaknesses and strengths

A large percentage of our patients did not meet the criteria of eligibility in KAMC-MNGHA, it would have affected the study's final results. We recommend an extension of their eligibility even after the surgery, to keep the follow-up.

This is the first study in the Kingdom of Saudi Arabia reviewing hysteroscopic metroplasty with a large number of patients.

Conclusion

In conclusion, hysteroscopic metroplasty significantly improves reproductive performance in patients with unexplained

infertility and a septate uterus, although postoperative reproductive performance remains better in patients that were able to conceive previously. For these patients, the procedure should be highly considered as a corrective approach.

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