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INTERNATIONAL JOURNAL OF
Sexual and Reproductive Health Care

ISSN: 2690-0815 DOI: https://dx.doi.org/10.17352/ijsrhc

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Received: 27 March, 2018
Accepted: 20 April, 2018
Published: 23 April, 2018

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Keywords: Uterine septum; Hysteroscopic metroplasty; Recurrent miscarriage; Unexplained infertility

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Research Article

The Reproductive Outcome in patients having Primary Infertility or Recurrent Miscarriages after performing Hysteroscopic Septal Resection

Abstract

Objective: To assess the reproductive outcome after hysteroscopic septal resection in women with unexplained infertility or recurrent miscarriage.

Design: Prospective clinical trial.

Setting: Zagazig university hospitals, Egypt.

Patients: 47 patients (20 patients with primary infertility and 27 patients with recurrent miscarriage diagnosed to have uterine septum)

Intervention: hysteroscopic septal resection.

Main outcome measures: pregnancy rate and its outcome (miscarriage, preterm birth, term birth and live-birth rates).

Results: There was significant improvement in reproductive outcome in patients with primary infertility and uterine septum after hysteroscopic metroplasty; pregnancy rate was 55% (11 pregnancies out of 20 patients). Abortion and preterm labor rates were low (5 and 10% respectively) while term delivery and live-birth rates were high (40 and 45% respectively).

Also, there was significant improvement in the reproductive outcome in patients with recurrent pregnancy loss, there was highly significant reduction in the abortion rate to 11.1% (p= 0.00) after hysteroscopic metroplasty but there was non-significant reduction in preterm birth from 11.1% to 7.4% (p= 0.63). There was highly significant rise in term delivery rate that increased from 3.8% to 51.9% (p=0.00007) and highly significant increase in live-birth rate from 7.4% to 55.6% (p=0.0001).

Conclusion: performing hysteroscopic metroplasty could markedly improve the reproductive outcome in patients having recurrent miscarriage in the form of reduction in abortion rate and increase in term delivery and live-birth rates. There was also significant improvement in pregnancy rate among patients with unexplained primary infertility.

Introduction

Anomalies of the reproductive tract are common and present in about 3-5% of the general population and in about 3% of infertile women [1]. In general, they are asymptomatic [2], but they can also be associated with recurrent abortions or infertility [3]. They are diagnosed in more than 25% of females that are having repeated pregnancy loss [4]. Uterine septum forms about 2-3% of the most commonly diagnosed congenital uterine malformation in the general population and it is associated with obstetrical complications and infertility [5].

The main indication for the management of patients that are having uterine septum is recurrent miscarriage. However, a group of patients with uterine septum may present with infertility which is usually discovered during the infertility work-up. The minimally invasive techniques that are found to have plethora of benefits when compared with the traditional procedures, e.g. lower costs, shorter hospital stays period, and speedy recovery. The development of operative hysteroscopy has facilitated the management of such malformations that were previously managed by laparotomy. Hysteroscopic metroplasty in infertile patients is applied mainly as a

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prophylactic procedure for prevention spontaneous abortions [6].

There are lots of literature data proving that hysteroscopic metroplastic procedure significantly improves pregnancy outcome in women having poor obstetrical outcome [7]. Even though, its role in patients with unexplained infertility is still unclear because of insufficient literature. Some retrospective studies have shown improvement of pregnancy outcome after hysteroscopic metroplasty [8].

The aim of this study was to assess the reproductive outcome after hysteroscopic septal resection in women with recurrent miscarriages or primary infertility.

Material and methods

Forty seven women with septate uterus of varying lengths who presented with recurrent abortions and/or preterm delivery and/or infertility were recruited from October 2014 and August 2016 at the Department Obstetrics and Gynecology of Zagazig University hospitals for the study.

Patients were allocated in two groups; group I (all patients with history of unexplained primary infertility for at least 1 year) and group II (all patients with history of 2 or more spontaneous 1st or 2nd trimester abortions with or without history of preterm birth).

In all patients of primary infertility with uterine septa (group I), an infertility workup was done and other causes of infertility were ruled out. In all patients of recurrent miscarriages with uterine septa (group II), investigations was done to exclude other causes of recurrent miscarriages. The exclusion criteria were the presence of endocrine disease, uterine myoma, adnexal disease and abnormal semen parameters in the husband.

In all the cases, a diagnostic hysteroscopy and 3D ultrasonography were performed to confirm the diagnosis. The indications for hysteroscopic metroplasty were septate uterus with a history of unexplained primary infertility, recurrent miscarriages and/or preterm delivery.

Written informed consent was obtained from all women after explanation of the procedure before surgery. Surgery was scheduled to be done in early proliferative phase of menstrual cycle. Hysteroscopic septal resection was performed under general anesthesia for all patients by the same operator.

The cervix was initially dilated with Hegar's dilator up to size '10'. A 10 mm working element along with its sheath and 4 mm 30° telescope (Karl Storz, Germany) equipped with a hysteroscopic monopolar loop were introduced into the uterine cavity.

Glycine (1.5%) was used as the distending medium by hysteromate 3700 at an inflow pressure of 70–100 mmHg. The inflow and outflow fluid volumes were measured to ensure that the difference never exceeded 1 liter.

Cutting current was set at 60–80 W. The septum was divided in a cephalad direction till both tubal ostia became clearly visible. The resection of septa was stopped at the point when hysteroscope could be moved from one cornual end to another without intervening obstruction, and both tubal ostia could be viewed simultaneously when the hysteroscope was placed in the middle of the cavity. Concomitant laparoscopy was done in all cases of infertility to assess the tubal status and any other abnormality. Laparoscopy was not performed in cases of recurrent abortion. The occurrence of any complications was recorded.

A second-look office hysteroscopy was performed after 2 months of surgery to assess the normality of the cavity. Patients were advised to try for pregnancy spontaneously.

The duration of follow-up for these patients ranged from 12 to 18 months. Patients were contacted routinely and followed up every 2 months. During follow-up, the variables which were taken as outcome of this study included pregnancies and their outcome (miscarriage, preterm delivery, term delivery and live birth).

Collected data were coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS) version 20.0 software for analysis. According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean ± SD. The following tests were used to test differences for significance; differences between frequencies (qualitative variables) and percentages in groups were compared by Chi-square test and differences between parametric quantitative independent groups by t test in paired by paired t. P value was set at <0.05 for significant results & <0.001 for high significant result.

Results

Patients were of comparable age (24.15±3.22 years in group I and 25.26±3.3 years in group II) and body mass index (25.11±3.59 kg/m2 in group I and 25.31 ±3.03 kg/m2 in group II) in both groups. Mean duration of infertility in group I was 3.4±0.75 years.

The main reproductive history in patients with recurrent miscarriages before septal resection is shown in table 1.

In patients with primary infertility (group I), pregnancy rate was 55% after hysteroscopic septal resection while 45% were unable to achieve pregnancy. Miscarriage and preterm birth rates were 5% and10% respectively. In contrast, term delivery and live birth rates were 40% and 45% respectively. However, in patients with recurrent miscarriage (group II), pregnancy rate was 70.37% after hysteroscopic septal resection while 29.63% were unable to achieve pregnancy. Miscarriage and preterm birth rates were 11.1% and 7.4% respectively. In contrast, term delivery and live birth rates were 51.9% and 55.6% respectively. There was no significant difference between both groups after hysteroscopic septal resection regards pregnancy rate, miscarriage, preterm delivery, term delivery and live birth rates as shown in table 2.

When comparing reproductive performance before and after hysteroscopic septal resection in group II (patients with

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history of recurrent abortion and uterine septum); there was significant reduction in abortion rate, and significant increase in term deliveries and live-births (Table 3).

There were no operative or postoperative complications such as uterine perforation, hyponatremia, hemorrhage or intrauterine synechia in both groups.

Discussion

In this study hysteroscopic metroplasty was done to improve obstetric outcome in patients with recurrent pregnancy loss and prophylactically in patients with unexplained primary infertility.

In this study there was significant improvement in reproductive outcome in patients with primary infertility and uterine septum after hysteroscopic metroplasty; pregnancy rate was 55%. Miscarriage and preterm labor rates were low (5 and 10% respectively) while term delivery and live-birth rates were high (40 and 45% respectively). Also, there was significant improvement in the reproductive outcome in patients with recurrent pregnancy loss, there was highly significant reduction in the abortion rate to 11.1% (p= 0.00) after hysteroscopic metroplasty but there was non-significant reduction in preterm birth from 11.1% to 7.4% (p= 0.63). There was highly significant rise in term delivery rate that increased from 3.8% to 51.9% (p=0.00007) and highly significant increase in live birth rate from 7.4% to 55.6% (p=0.0001).

This was in agreement with Güven et al., in 2012, who studied the effect of hysteroscopic metroplasty in 18 women with primary infertility and 22 women with history of recurrent pregnancy loss and found that pregnancy rate was (66.6% and 77.2%, respectively) and miscarriage rate was (11.1% and 18.1%, respectively) [6].

Also, it was in agreement with Ayas et al., in 2011, who studied the effect of hysteroscopic metroplasty in 98 women with primary infertility and 83 women with one or more miscarriages (37 and 46 patients respectively). They found that pregnancy rate was 43.8%, miscarriage rate was 16.7%, preterm delivery rate was 22.2%, term delivery rate was 61.1% and live birth rate was 80.4% in patients with primary infertility. Also, in patients with one or more previous miscarriages, pregnancy rate was (70.2% and 82.6%, respectively). Miscarriage rate for those who had experienced 1 previous miscarriage decreased from 88.1% to 13.6% (P < 0.001); for those who had experienced 2 or more previous miscarriages, it decreased from 96.5% to 17.1% (P < 0.001). Preterm delivery rate was (22.7% and 12.2% respectively), term delivery rate was (63.6% and 70.7% respectively) and live birth rate was (78.6% and 76.1% respectively) [9].

Tehraninejad et al., in 2013 have performed their retrospective descriptive study on 263 patients, among all their cases; 248 patients were having infertility (79% of them were having primary infertility and 21% secondary infertility) and fifteen patients presented with previous histories of recurrent miscarriage about 3 or more miscarriages between 2005 and 2009. All participating patients underwent hysteroscopic septum resection by using the monopolar knife electrode. The rate of miscarriage has been markedly reduced from 20.2 to 4.9% and rate of term deliveries have been increased from 2.5 to 33.5% [10].

Many previous studies have been done to detect the effect of hysteroscopic septal resection on patients with primary infertility and uterine septum. They found significant improvement in pregnancy rate [11-16]. Our results were in agreement with these studies.

Pabuccu and Gomel in 2004 have performed their prospective study and they followed 61 patients that were having septate uterus and unexplained infertility after performing hysteroscopic metroplasty for a period of 14-month, and they have found the rate of pregnancy become 41.5%, and 73% of them had a successful pregnancy and had live births, but 17% of all pregnancies were finished with spontaneous abortion [11].

Mollo et al. in 2009, compared the patients reproductive outcome with unexplained infertility and septate uterus after hysteroscopic metroplasty and patients with unexplained infertility and normal uterine cavity and he found that

Table 1: Reproductive history before septal resection in group II:

		Group II (n: 27)
Pregnancies (N)	2	14 (51.9%)
	3	11 (40.7%)
	4	2 (7.4%)
Miscarriages (N)	2	17 (63.0%)
	3	9 (33.3%)
	4	1 (3.7%)
Pre-term deliveries (N)		3 (11.1%)
Term deliveries (N)		1 (3.7%)
Live-birth		2 (7.4%)

Table 2: Reproductive outcome after hysteroscopic septal resection:

	Group I N=20	Group II N=27	X^2	P
No pregnancy	9 (45%)	8 (29.6%)	1.17	0.27
Pregnancy	11 (55%)	19 (70.4%)		
Abortions	1 (5%)	3 (11.1%)	0.55	0.45
Preterm deliveries	2 (10%)	2 (7.4%)	0.09	0.75
Term deliveries	8 (40%)	14 (51.9%)	0.64	0.42
Live-birth	9 (45%)	15 (55.6%)	0.51	0.47

Table 3: pregnancy outcome in patients with recurrent abortion before and after septal resection:

	Before	After	P
Pregnancy	27 (100%)	19 (70.4%)	0.002*
Abortion	27 (100%)	3 (11.1%)	0.00**
Preterm delivery	3 (11.2%)	2 (7.4%)	0.63
Term delivery	1 (3.8%)	14 (51.9%)	0.00007**
Live-birth	2 (7.4%)	15 (55.6%)	0.0001**

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pregnancy and live birth rates in patient after hysteroscopic metroplasty were significantly higher (38.6% and 34.1% versus 20.4% and18.9%, respectively) [12].

Pai et al. in 2009 studied the effect of hysteroscopic metroplasty on 72 patients with unexplained infertility and septate uterus and he found pregnancy rate of 45.8%. 12% of their patients were having spontaneous abortion and 15% of them were having preterm delivery [13].

Selvaraj P and Selvaraj K in 2010 performed Hysteroscopic septum resection on seven patients with history of secondary infertility and 19 patients with primary infertility. Pregnancy rate was (86% and 32% respectively) and the live birth rate was 67% in each group [14].

Haxhihyseni et al., in 2014 studied the effect of performing hysteroscopic metroplasty in twenty eight females that are having primary infertility and found that pregnancy rate was 100% within one year of follow up. Miscarriage rate was 7.14%, preterm delivery rate was 10.71% and term delivery rate was 82.14% [15].

Bhat et al., in 2015 in their retrospective study, analyzed the reproductive outcome of hysteroscopic metroplasty on 105 patients with uterine septum and history of infertility using versapoint. The pregnancy rate was noted to be around 96.5% following the procedure, miscarriage rate was around 3.8% and live birth rate was around 82% [16].

Regarding patients with recurrent miscarriage and uterine septum, many previous studies have found marked improvement in the reproductive outcome after performing the hysteroscopic metroplasty [17-20] and were in agreement with our results.

Grimbizis et al., 2001 studied the effect of hysteroscopic metroplasty in patients with recurrent pregnancy loss and found that the rate of abortion was markedly decreased from 44.3% to 16.4%, but the rate of preterm delivery was significantly decreased from 22.4% to 6.4%. In contrast, he found significant rise in term delivery from 33% to 76.3% and live birth rates from 50.1% to 83.2% [17].

Saygili et al., in 2003 studied the reproductive outcome of 361 patients with septate uterus after hysteroscopic metroplasty, and found marked reduction in the rate of abortion from 91.4% to 10.4% while term deliveries was increased to 58% [18].

Fedele et al., in 2006, studied the reproductive outcome of cases before and after performing hysteroscopic metroplasty and they have found that there are marked reduction in the rate of abortion from 80% to 20% and a marked elevation of the rate of term delivery from 5% to 80% [19].

Roy et al., in 2011 analyzed reproductive outcome of 170 cases after hysteroscopic metroplasty during 8.5 years and they have found a marked reduction of the rate of unsuccessful pregnancies from 91.5% before metroplasty to 12.5% after performing such procedure, and a significant increase in rate of term delivery from 2.5% to 79.5% [20].

Conclusion

Performing hysteroscopic metroplasty could markedly improve the reproductive outcome in patients having recurrent miscarriage in the form of reduction in abortion rate and increase in term delivery and live-birth rates. There was also significant improvement pregnancy rate among patients with unexplained primary infertility.

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