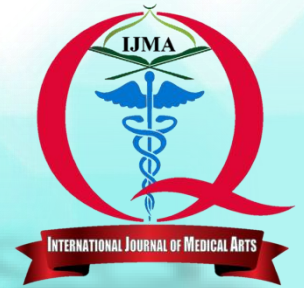


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Original Article

Reproductive Outcome Following Hysteroscopic Myomectomy in Patients with Infertility

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Abstract

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Background: The uterine myoma is the most frequent benign tumor in women of childbearing age. It has been linked to infertility and recurrent pregnancy loss. Many studies have examined the reproductive outcomes of myomectomy based on the size, location, and number of fibroids removed. When it comes to intrauterine lesions, hysteroscopy is the diagnostic procedure of choice.

Aim of the study: This study aims to evaluate the reproductive outcome following hysteroscopic myomectomy in patient with infertility.

Patients and Methods: This retrospective case control study included 39 women with infertility who underwent hysteroscopic myomectomy to evaluate the reproductive outcome. According to the pregnancy outcomes, the patients were divided into two groups, Group 1 which included patients with successful results who continue pregnancy and had a live birth [n=30], Group 2 which included patients with unsuccessful results who got pregnant and aborted or not got pregnant [n=9].

Results: As regards the pregnancy outcomes, the pregnancy was occurred successfully in 30 [76.92%] women however was not occur in 9 [23.08%] women. For those who became pregnant, the pregnancy has occurred spontaneously in 24 [80%] women, and on ICSI in 6 [20%] women. The time between hysteroscopic myomectomy and pregnancy was 9 ± 4.6 months with a range of 3 – 24 months. The full-term pregnancy represents 28[71.7%] however, 2[5.1%] were considered as preterm. A comparison between the pregnant and non-pregnant women revealed that, no statistically significant difference between the two groups in terms of their Age and infertility period [P =0.6 for both].

Conclusion: When submucous fibroids are the cause of a woman's infertility, hysteroscopic myomectomy is a safe and effective way to improve the obstetric result.

Keywords: Fertility; Myomectomy; Pregnancy; Outcome.



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INTRODUCTION

It is estimated that 9 percent of all reproductive age couples have infertility, with a contribution of 20 to 35 percent attributable to female causes. An evaluation of the uterine cavity via hysteroscopy is currently regarded as the "gold standard" in the diagnosis and treatment of female infertility [1]. Submucosal myomas, adenomyosis, chronic endometritis, endometrial polyps, intrauterine adhesions, endometrial hyperplasia, thin endometrium, and uterine malformations such as the uterine septum, T-shaped uterus, arcuate uterus, and unicornuate uterus were discovered during hysteroscopy in infertile women [2].

Twenty percent to fifty percent of women of childbearing age have uterine myomas, making them the most prevalent benign tumor in this age group. Myomas, which can occur in the uterus and are sometimes known as leiomyomas or fibroids, are benign monoclonal tumors that originate in the myometrial smooth muscle cells [3].

Almost half of all women over the age of 35 experience this, and the prevalence increases with age. This can cause a number of gynecological symptoms, such as dyspareunia, dysmenorrhea, pelvic pressure, or menorrhagia, and it can also lead to a number of obstetrical complications, such as miscarriage at an early or late stage of pregnancy [4].

The risk of having a baby prematurely is increased. Some research has linked uterine myomas to an increased risk of infertility, while other research suggests that uterine fibroids of any grade [from 0 to 5] may have a deleterious impact on fertility, especially in women for whom there is no obvious cause of infertility [5].

Contrarily, hysteroscopy is the gold standard for diagnosing intrauterine lesions. It is still uncertain whether or not hysteroscopy is beneficial in the early evaluation of infertility. Although systematic hysteroscopy prior to IVF is commonly practiced, there is a lack of proof that it actually increases the likelihood of a successful pregnancy. Having a hysteroscopy performed after multiple failed IVF cycles has been shown to increase the success rate of subsequent pregnancies [6]. So, the aim of the present study is to evaluate the reproductive outcome following hysteroscopic myomectomy in patient with infertility.

PATIENTS AND METHODS

This retrospective case control study included 39 women with infertility who underwent hysteroscopic myomectomy to evaluate the reproductive outcome. The patients were chosen from the medical records of Obstetrics and Gynecology department of Al-Azhar University hospital [New Damietta] in the duration from January 2017 to January 2021. Our study followed the Helsinki declaration principals. Ethical approval was obtained from the institutional review board of Damietta faculty of medicine [Al-Azhar University]. According to the pregnancy outcomes, the patients were divided into two groups, Group 1 which included patients with successful results who continue pregnancy and had a live birth [n=30], Group 2 which included patients with unsuccessful results who got pregnant and aborted or not got pregnant [n=9]. We included the patients according to the following criteria:

The inclusion criteria were: Patient with primary and secondary infertility, Patients with submucous fibroid completely

within the uterine cavity [FIGO 0] or with at least 50% of the fibroid volume within the uterine cavity [FIGO 1], Submucous fibroids less than 5 cm diameter and Females with hysteroscopically diagnosed as submucous fibroid and uterine size not more than 8 weeks gravid uterus.

The exclusion criteria were: Other causes of female infertility such as uterine septum, intrauterine adhesions, Adnexal disease, endocrine disease, bilateral tubal block and Male factors of infertility.

Data collection: All of the following data were collected from the medical records; Age, infertility type, infertility duration in months, time from hysteroscopic myomectomy to pregnancy, gestational age at delivery, and reproductive outcome. All patients were subjected to a telephone questionnaire which inquired about their obstetrical history after surgery. The following variables were considered as reproductive outcomes of this study: pregnancies including their numbers, results [live birth, miscarriages, preterm delivery, and term delivery], gestational age at delivery. Data related to miscarriage [date, number, week of pregnancy and surgical treatment] and postoperative adhesion formation were also collected. The pregnancy rate was defined as the number of conceptions including live births and fetal losses, to the number of women in the samples. Pregnancy was considered at term when gestation had lasted 37-40 weeks of gestation; it was defined as pre-term when delivery occurred 24-36⁺⁶ weeks of gestation.

Statistical analysis: Statistical analysis was performed using SPSS statistical software, version 23 [IBM, Chicago, Illinois, USA]. The normality of the data was tested by the Kolmogorov-Smirnov test. Qualitative data were presented as numbers and percentages and were compared by the Chi square test, while quantitative data were presented as mean and standard deviations and were compared by the independent t test. As a result, the p-value will be considered significant at the level of <0.05.

RESULTS

A total number of 39 women were included in our study. As regards the pregnancy outcomes, the pregnancy was occurred successfully in 30 [76.92%] women however was not occur in 9 [23.08%] women [Table 1]. The mean age for those with successful pregnancy was 31.73 [6.13] years which is relatively similar to that of unsuccessful pregnancy [P=0.6] [Table 1]. The mean [SD] infertility period was 41.16 [33] months for those of successful pregnancy versus 35.2 [19.35] months for those of unsuccessful pregnancy [P= 0.6] [Table 1].

As regards the type of infertility, 53.33% of those with successful pregnancy were diagnosed as primary infertility, and 46.67% were diagnosed as secondary infertility. For those with unsuccessful results, 44.44% were diagnosed as primary infertility, and 55.56% were diagnosed as secondary infertility, with no statistically significant difference between the two groups [P =0.6] [Table 2]. The full-term pregnancy represents 28[71.7%] however, 2[5.1%] were considered as preterm in those with successful pregnancy. Abortion represent 5.1% of those with unsuccessful pregnancy [Table 3]. For those who became pregnant, the pregnancy has occurred spontaneously in 24 [80%] women, and on ICSI in 6 [20%] women [Table 4]. The time between hysteroscopic myomectomy and pregnancy was 9 ± 4.6 months with a range of 3 – 24 months [Table 5].

Table [1]: Pregnancy occurrence and success rate.

		Successful results	Unsuccessful results	p. Value
Pregnancy Outcome		30 [76.92%]	9 [23.08%]	<0.0001*
Age [years]	Mean [SD]	31.73 [6.13]	30.7 [3.2]	0.63
	Min – Max	19 - 42	26- 35	
Infertility period	Mean [SD]	41.16 [33]	35.2 [19.35]	0.64
	Min – Max	12 – 120	12- 76	

Table [2]: Type of infertility of included patients

Type of infertility	Successful results [continue pregnancy and live birth] [N=30]	Unsuccessful results [no pregnancy and abortion] [N=9]	P value
Primary	16 [53.33%]	4 [44.44%]	0.64
Secondary	14 [46.67%]	5 [55.56%]	

Table [3]: Pregnancy status of included subjects.

Pregnancy Status	N [%]
Successful results[continue pregnancy and live birth]	30 [76.9%]
• Term	28[71.7%]
• Preterm	2 [5.1%]
Unsuccessful results	9 [23.1%]
• No pregnancy	7 [17.95%]
• Abortion	2 [5.1%]

Table [4]: Type of pregnancy of included patients who got pregnant and had a live birth.

Variables	Value	
	n.	%
Spontaneous pregnancy	24	80%
Pregnancy on ICSI	6	20%

Table [5]: The time between hysteroscopic myomectomy and pregnancy [per month] in study group which got pregnant.

Study group which got pregnant [N=32]	
Mean [SD]	9 [4.6]
Min - Max	3 – 24

DISCUSSION

In the current study, we found that the mean age of women with successful results was 31.73 [6.13] years old; There was no significant difference between patients continued pregnancy and others who failed to complete pregnancy regarding age. In agreement with our findings, the study of **Ioannis et al.** [7] reported that mean patient age was 30.1±5.8 years [range 23.5–35.5]. Patients’ age is not correlated with pregnancy rate or the number of deliveries at term of patients in the current study.

There is no statistical difference in fertility rates between patients of different ages [24–36 years] who underwent hysteroscopic myomectomy for submucous myomas. In another study of **Kim et al.** [8] concerning subserous and intramural myomas was found that an age of more than 35 years and an association with other infertility factors decrease pregnancy rates.

In the current study, we found that Infertility period was 41.16± [33] month in Successful results and was 35.2 ± [19.35] months in

Unsuccessful results, there was no significant difference between patients continued pregnancy and others who failed to complete pregnancy regarding infertility period. In the study of **Rudic Biljic-Erski et al.** [9] reported that duration of infertility was 2.6±1.4 years, and 1.7±0.6 years in women with schussed and failed pregnancy respectively.

In the present study; we found that there was no significant difference between patients continued pregnancy and others who failed to complete pregnancy regarding type of infertility. **Li et al.** [10] reported that among the 30 subjects who had a history of infertility, the mean [±SD] duration of infertility prior to surgery was 5.9 ± 5.2 years. Nineteen women had primary infertility whereas 11 women had secondary infertility.

In our study the total number of patients was 39 patients 30 [76.9%] patients got pregnant; 2[5.1%] was preterm, while 28 [71.7%] were term and abortion occurred with 2 [5.1%], 7[17.95] was not pregnant. In comparison with the study of **Arnaud et al.**, [11], which reported that among the 91 operated patients, 81 [89%] were finally

assessed for reproductive outcome. During the follow-up period 43 patients became pregnant after myomectomy. In another study done by **Rudic Biljic-Erski et al.** [9] included 56 consecutive infertile patients with a submucous fibroid, who underwent a hysteroscopic myomectomy. In the first postoperative year, 17 [30.4%] of 56 women who underwent hysteroscopic myomectomy became pregnant. In 13 [76.5%] cases, pregnancy occurred spontaneously, while in four [23.5%] the pregnancy occurred after intrauterine insemination.

Spontaneous abortion occurred in four [7.1 %] cases in the first trimester. A retrospective study of **Namazov et al.** [12] found that 41.6% of cases became pregnant when the submucous fibroid was the only cause of infertility, while 26.3% became pregnant when there was one additional factor for infertility, and 6.3% became pregnant if two or more additional infertility factors were present. Another retrospective study of **Jayakrishnan et al.** [13] found a pregnancy rate of 29.7% after hysteroscopic myomectomy, which was higher when the submucous fibroid was the only cause of infertility [40%], if it was completely in the endometrial cavity [33.3%], and when its size was >3 cm [50%]. **Fernandez et al.** [14] found that the pregnancy rate after hysteroscopic myomectomy was 85.8%, and there were no significant differences in pregnancy rate and outcomes according to type, size, number, and localization of fibroid.

The pregnancy rate was 82.05% after type 0 fibroid, 87.09% after type 1, and 88.2% after type 2 fibroid. Furthermore, **Yanaihara et al.** [15] reported that pregnancy rate within six months after hysteroscopic polypectomy was 57.4% for polyps located at the uterotubal junction, 28.5% for posterior wall polyps, 18.8% for lateral wall polyps, and 14.8% for anterior uterine wall polyps.

Regarding type of pregnancy in patients who get pregnant and live birth, 24 patient conceived spontaneously and 6 patients after ICSI. **Ioannis et al.** [7] reported that of the 12 patients, who conceived, 10 conceived spontaneously and 2 patients who were over 35 years old conceived after ovarian stimulation with intrauterine insemination.

Conclusion: Women with infertility and submucous fibroids can benefit from hysteroscopic myomectomy, a safe and effective procedure that can improve the reproductive outcome.

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