

# Pregnancy Rates And Loss Before And After Abdominal Myomectomy: A Retrospective Analysis

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## Abstract

**Background:** The aim of the study was to establish the impact of abdominal myomectomy on pregnancy rates and loss.

**Methods:** Data of 35 infertile patients who underwent abdominal myomectomy and wished to conceive after surgery were evaluated retrospectively. The characteristics of the patients, myomata and associated infertility factors such as tubal, ovulatory and male factor were collected in a systematic way.

**Results:** Conception rate was 25.7% before myomectomy and 68.5% after the surgery. The pregnancy loss and live birth rate was 71.4% and 28.6% premyomectomy and 9.1% and 90.9% postmyomectomy.

**Conclusions:** Our results suggest that abdominal myomectomy might improve reproductive outcome in patients with intramural and subserosal myomas presenting with infertility and pregnancy loss.

**Key words:** abdominal myomectomy; pregnancy rates; pregnancy loss

## Abdominal Myomektomiden Sonraki Gebelik Ve Gebelik Kayıpları: Bir Retrospektif Analiz

### Özet

**Amaç:** Çalışmanın amacı abdominal myomektomilerin gebelik ve gebelik kayıpları oranları üzerindeki etkilerini değerlendirmektir.

**Gereç-yöntem:** Gebe kalmak isteyen ve abdominal myomektomi yapılan 35 infertil hastanın verileri toplandı ve retrospektif olarak incelendi. Hasta karakteristikleri, myomların özellikleri ve birlikte eşlik eden tubal, ovuluar, erkek faktörü gibi infertilite faktörleri sistematik bir şekilde toplandı.

**Bulgular:** Gebe kalma oranı abdominal myomektomi öncesi sırasıyla %25.7 ve cerrahi sonrası % 68.5 idi. Gebelik kayıpları ve canlı doğum ise sırasıyla myomektomi öncesi % 71.4 ve 9.1% ve myomektomi sonrası 28.6% ve 90.9% idi.

**Sonuçlar:** Sonuçlarımız, abdominal myomektomilerin intramural ve subserozal myomlara sahip infertilite ve gebelik kayıplarına sahip hastalarda reproduktif performansı geliştirdiğini düşündürmektedir.

**Anahtar sözcükler:** abdominal myomektomi, gebelik oranları, gebelik kayıpları

## Introduction

Myomas are the most common pelvic tumors in women occurring in 20-40% of women during the reproductive years (1). It has been suggested that submucous myomas that distort the uterine cavity do result in subfertility and increase the risk of miscarriage and so should be removed (2,3). In the majority of cases, submucous myomas may be removed by hysteroscopic techniques with very encouraging results (4).

In the case of intramural or subserosal myomas the situation is more controversial. There is considerable debate on whether these myomas have adverse effects on reproductive outcome. Some studies have suggested that they compromise assisted conception (5) but others have reported that they do not affect results (6). Although systematic use of myomectomy is a subject of debate, especially in cases of intramural or subserosal myoma, the authors recommend that it should be carried out when no other causes of infertility factors has been found and in the case of pregnancy loss (1, 7,8).

Studies demonstrated that the conception rate following myomectomy has been reported with pregnancy rates ranging from 44 to 62% (9-11). It has been reported that the conception rate after myomectomy in women with unexplained infertility was higher than in those with other infertility factors (8). The presence of concomitant infertility factors appears to have an important effect on the conception rate. However, few studies have considered the reproductive performance prior to myomectomy, including the presence of infertility and miscarriage and hence have not examined how myomectomy alters the reproductive performance especially in women with unexplained infertility.

In this study, we wanted to analyze our reproductive outcome after myomectomy in women with unexplained infertility that had intramural or subserosal myomas.

## Materials and Methods

This study included the analysis of 35 abdominal myomectomies that were performed at Harran University Department of Obstetrics

and Gynecology. All the patients fulfilled the following inclusion criteria: i) they had laparotomy and myomectomy using microsurgical techniques for intramural or subserosal myomas; ii) they wished to conceive shortly after the surgery; iii) they had no other significant infertility factors i.e. tubal disease, ovulatory factors or abnormal semen analysis of the partner.

For the 35 patients in the study, data were collected for demographic characteristics, age, indications for surgery, existence of menometrorrhagia, duration of infertility, primary or secondary infertility, number and outcome of pregnancies or including pregnancy loss before myomectomy, associated infertility factor like endometriosis, tubal, peritoneal factor, ovulatory and male factor, number, size and location of the fibroids and existence of uterine cavity deformation.

Infertility was defined as absence of all conception after at last 12 months. Pregnancy loss was considered to be if there were  $\geq 2$  first trimester miscarriages or  $\geq 1$  mid-trimester or third trimester loss. Each patient was evaluated preoperatively by ovarian functions (including hormone profile), transvaginal ultrasonography, hysterosalpingography and partner's semen analysis.

None of the myomas had involved or distorted the uterine cavity. A myoma was considered subserosal if  $>50\%$  of the myoma protruded out of the serosal surface of the uterus.

#### *Abdominal laparotomy*

A low transverse abdominal incision was made. A linear uterine incision as small as possible was made on the most prominent part of leiomyoma. When possible, incisions were made on the anterior uterine wall and as many myomata as possible were removed through single approach in order to minimize potential adhesion formation. Myomas situated on the posterior uterine wall were removed through a fundal hood incision to prevent adhesions between the uterus and the bowel.

After identification of the myoma capsule, enucleation was possible following the cleavage plane. The uterus was then sutured in one or two planes according to the depth and the size of the myomata. The myometrium was closed using interrupted absorbable sutures of Vycril 1/0 (Polyglactine; Ethicon, Rome, Italy) and the uterine serosa was closed with a continuous or separated suture of Vycril 2/0,

3/0. After washing the pelvis with saline solution, no absorbable adhesion barrier or saline dextrane macromolecular solutions were left in the peritoneal cavity.

After surgery, patients were called by telephone and questionnaire was performed that included; if pregnancy obtained after myomectomy, how long attempts at pregnancy lasted, the date it began and how it was achieved (e.g. spontaneous, stimulation, insemination, IVF) and its outcome (e.g. spontaneous miscarriage, birth). Pregnancies that were obtained by ovulation induction, insemination or IVF were excluded from the study.

*Statistics:* Results were expressed as means  $\pm$  SD. Parameters before and after myomectomy were compared by Student's t test and Wilcoxon signed rank test.

#### **Results**

Abdominal myomectomy was successfully performed in 35 patients. The mean age of the patients was  $32.8 \pm 4.9$  years (range, 23-40 years). The main characteristics of 35 patients in sample population were given in Table 1.

**Table 1.** Characteristics of women who underwent myomectomy

	Characteristics	Number	%
Primary indication	infertility	19	54.3
	miscarriage	9	25.7
	menorrhagia or pelvic mass	7	20
Parity	0	30	85.7
	1	4	11.4
	2	2.9	2.9
Infertility	primary	20	57.1
	secondary	9	25.7
	none	6	17.1
Pregnancy loss	0	28	80.0
	1	1	2.9
	2	4	11.4
	$\geq 3$	2	5.7
Location of myoma	intramural	20	57.1
	subserosal	15	42.9
Number of fibroids present	1	17	48.6
	2	7	20
	3	5	14.3
	$\geq 4$	6	17.1
Diameter of myoma	$<5$ cm	11	31.4
	$\geq 5$ cm	24	68.6

The mean size of the myomas was  $5.5 \pm 1.8$  cm ranged from 3-12 cm. All the patients were assessed for their reproductive outcome and the median duration of follow-up period was 28.6 months ranged between 12-48 months. During the follow-up period 24 patients became pregnant after myomectomy. The number of patients that conceived before myomectomy and after myomectomy was significantly different (9 versus 24 patients, respectively,  $p < 0.0001$ ). We had a total number of 21 pregnancies before myomectomy and 55 pregnancies after myomectomy ( $p < 0.0001$ ) (Table 2). The outcomes of pregnancies are summarized in Table 2. Prior to myomectomy 15 pregnancies were lost and after myomectomy only 5 pregnancy loss was observed. There were also significant differences in live birth rates before and after myomectomy in the study ( $p < 0.0001$ ).

**Table 2.** A comparison of the reproductive performance of 35 patients before and after myomectomy

	Before myomectomy	After myomectomy	p
	n (%)	n (%)	
Subjects in the study	35	35	
Subjects became pregnant	9	24	<0.0001
Total number of pregnancies	21	55	<0.0001
Pregnancy loss	15 (71.4)	5(9.1)	<0.05
Live birth	6 (28.6)	50(90.9)	<0.0001

### Discussion

The association between myomas and infertility has been the subject of debate. Many women with myomas conceive easily, but also some of them have problems in conceiving. It is generally accepted that the anatomical location of a myoma is an important factor with submucous, intramural and subserosal myomas implicated in decreasing order of importance in causing infertility. A number of mechanisms have been proposed to explain the possible adverse effect of myomas on infertility. Myomas may obstruct the tubal ostia, affecting the gamete transport. They may be associated with implantation failure, or gestation discontinuation due to focal endometrial vascular disturbance, endometrial

inflammation or secretion of vasoactive substances.

Myomectomy by any route is also a controversial subject. Morbidity, complications, the possibility of iatrogenic damage to reproductive organs and the increased risk of cesarean section in case of delivery after the operation all play a role in limiting the consensus on myomectomy (12-15). Myomectomy might also have negative effect on pregnancy rates. Several authors postulated that adhesions might be responsible for reduced fertility after myomectomy (10, 12, 16, 17). The American Collage of Obstetrician's and Gynecologists' criteria for myomectomy include secondary infertility with a history of second trimester loss and preservation of infertility in women with either hypermenorrhea leading to anemia or a large lower abdominal mass. Extensive myomectomies are not justified in patients who no longer want to have children because the associated morbidity and mortality are comparable to those of hysterectomy (18).

From this retrospective study, we found that, abdominal myomectomy improved conception rates in women with subserosal and intramural myomas. Our results were in agreement with previously reported data that showed that abdominal myomectomy improved the pregnancy rates in that group of women (19, 20). A recent meta-analysis reported that the conception rate for intramural and subserosal myomas ranged from 58% to 65% (8). However, previous infertility investigations have been incomplete and as infertility is often multifactorial, the precise role of myomectomy is difficult to establish. In our studies all of the patients underwent infertility investigations such as male factor, tubal or ovulatory factor.

In this study we found that pregnancy loss rates were significantly reduced after myomectomy. A reduction of miscarriage rate from 41% premyomectomy to 19% postmyomectomy has been reported (7). Another study demonstrated that the preoperative pregnancy loss (60%) was reduced postoperatively to 24% (19). The results suggest that myomectomy should be considered in women with a history of pregnancy loss, but possible risks of operation including adhesion formation, intrauterine synechiae, blood transfusion and unexpected hysterectomy should be balanced against potential benefits.

Live birth rates were also significantly improved after abdominal myomectomy. That result was supported by other studies (19, 20). Live birth rates were increased from 31% to 75% following myomectomy in one study (20). Li et al. reported that live birth rates ranged from 40% to 76% after abdominal myomectomy (19).

In conclusion, our retrospective study shows that abdominal myomectomy increases pregnancy and live birth rates and reduces the pregnancy loss. Our results suggest the efficacy of conservative surgery for uterine fibroids in women with unexplained infertility. We also still believe that unbiased comparison with expectant management is needed before drawing definitive conclusions on the effectiveness of a time-honored conservative surgical procedure such as myomectomy.

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