

Postmyomectomy Reproductive Outcome in Women above 35 years

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ABSTRACT

The aim of this retrospective study was to assess the conception rate, reproductive outcome and complications after myomectomy in women aged above 35 years. Myomectomy was performed using abdominal and laparoscopic technique.

Myomectomy was performed in 50 women in this study. By abdominal method in 35 cases (75%) and laparoscopic-assisted method in 15 cases (30%). Overall conception rate is 20% which occurred after one to one and half year postmyomectomy. Multiple regression analysis showed that age was the only factor which influenced the conception rate: < 35 years, 70% (21/30); > 35 years, 20% (10/50; $p < 0.005$). Risks for spontaneous abortions (8%), pre-eclampsia (10%), preterm labor (4%) and gestational diabetes (10%) are increased.

All cases were delivered by cesarean section. No case of uterine rupture is seen. The retrospective study suggests that myomectomy after 35 years has only a slight increase in the reproductive performance in women presenting with infertility and has a higher risk for pre-eclampsia, gestational diabetes, preterm labor and NICU admission of the newborns.

Keywords: Myoma, Fibroids, Laparoscopy, Myomectomy, Infertility, Pregnancy.

INTRODUCTION

Fibroids are the commonest benign tumors of the female genital tract.¹ A prevalence of 50% occurs in the reproductive age group. Not all of them are symptomatic. Only half of these women will be symptomatic in their lifetime. Fibroids are prevalent in women and increase with age in their premenopausal phase. After menopause, fibroids shrink due to lower hormonal activity, supporting the role of ovarian steroids.^{2,3}

Fibroids are implicated as a possible cause of infertility. Other mechanisms that have been postulated for infertility and recurrent pregnancy loss are distortion of the uterine cavity, causing subacute endometritis and mechanical compression.⁴⁻⁶

Myomectomy is performed on symptomatic patients who desire to preserve their fertility or for infertile patients whose fibroids are picked up by the ultrasound.^{7,8} Removal of fibroids for fertility enhancement is done if:

- Tubo-ovarian anatomy is disturbed
- Very large sized fibroid
- Associated with increased vascularity
- Pressing any tubal ostia
- Prior to IVF/ICSI.

Although the efficiency of myomectomy in restoring fertility has never been proved by a random clinical trial, there are several arguments indicating that myomas bear some responsibility for infertility:⁹⁻¹¹

1. There is lower fertility rate in women presenting a myoma^{2,5}
2. The association between myoma and infertility has been reported by two observational surveys^{3,29}
3. The rate of implantation for pregnancy obtained by IVF is lower in women with intramural myomas.

OBJECTIVE

Since the data concerning fertility, reproductive outcome and complications following myomectomy is inadequate in women aged above 35 years, a retrospective study of 5 years (2005-2009) is undertaken at King George Hospital, a government hospital affiliated to Andhra Medical College, Visakhapatnam, India, during 11 March 2008 to 10 March 2009.

METHODS

A retrospective study is done for the assessment of conception rate, reproductive outcome and complications after abdominal myomectomy and laparoscopic-assisted myomectomy (LAM) among patients admitted to the King George Hospital, Gynecology and Obstetrics Department, who are aged above 35 years (35-39 years) during 2005 to 2009. Surgical records and case sheets were checked up for relevant data and investigative work-up and operative notes. During the same

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period, relevant data for women below 35 years (25-34 years) who underwent myomectomy by similar procedures were also taken into account to match as control group.

For each patient operated in a context of infertility, a pre operative work-up was made systematically, including study of ovarian function (baseline FSH, LH, estradiol and prolactin and thyroid function tests); partner's semen analysis; transvaginal ultrasonography; examination of the uterine cavity by diagnostic hysteroscopy or hysterosalpingography. The following preoperative data were systematically collected: Characteristics of myomas existence of adnexal adhesions; tube appearance, permeability, aspect of the mucosa, existence and extent of endometriosis.

Laparoscopic-Assisted Myomectomy: The Surgical Technique

A 10 mm trocar with a 0° laparoscope (Karl Storz, Tuttlingen, Germany) is inserted through a subumbilical curvilinear incision. Entrance into the abdominal cavity is made after pneumoperitoneum is created by veress needle.

Once the trocar is safely introduced into the abdominal cavity, the cavity was insufflated. Intra-abdominal pressure at 15 mm is maintained. A uterine manipulator is used to permit uterine movements through the cervix.

Three suprapubic trocars are used. One 5 mm trocar is inserted 3 cm below the umbilicus. Two other trocars are inserted in both iliac fossae, lateral to the inferior epigastric vessels. The patient is placed in 30° Trendelenburg position. All the pelvic structures are visualized and abdomen is also explored in a clockwise direction. The number, size and location of the myomas are noted. The course of the ureter is traced.

Using a monopolar needle, the serosa overlying the myoma is incised and cleavage plane is identified. Myoma is fixed with a drill, and excision of the fibroid is performed. Hemostasis is secured through bipolar and the suture of the uterine wall is done through two layers. Myomas were removed and extracted from the pelvis using a morcellator, through laparoscopic port sites.

Abdomen is deflated, and incisions are closed with 4-0 Prolene or Vicryl rapid.

Abdominal Myomectomy

Laparotomy is done through a suprapubic curvilinear incision. The skin and subcutaneous tissue are opened, rectus is incised and parietal peritoneum is opened. A 3 to 6 cm linear incision is performed on the most prominent part of the myoma. Enucleation was done after identifying pseudocapsule. Careful dissection would help to enucleate and bleeders are coagulated and desiccated. Hemostasis is secured through bipolar. The uterine wall is closed in one or two layers with interrupted sutures. The abdominal incision is closed with mattress sutures.

All the patients had antibiotic prophylaxis (cefoxitin 1gm IV) preoperatively. All the laparoscopic procedures and most of the abdominal myomectomies were performed under general anesthesia.

The variables used for analysis were the following: Age, duration of infertility, primary or secondary infertility; existence of uterine cavity deformation; total number of myomas; type (pedunculated, sessile or intramural), size (greatest diameter) and location of the largest myoma existence of a male factor and existence of an ovulatory factor (anovulatory cycles low or normal FSH, or hyperprolactinemia, or polycystic ovary); existence of tubal pathology (hydrosalpinx, phimosis, proximal anomalies); tubo-ovarian adhesions (whatever the degree of severity); existence of endometriosis according to the revised American Fertility Society classification; history of surgery for infertility associated with the myomectomy and, if so, what type. A written questionnaire was given to those traced, in the regional language and asked to fill-up information about their postoperative period.

RESULTS

The results are expressed as means \pm SD. Parameters before and after myomectomy were compared by student's t-test. Results were analyzed by 2×2 contingency table analysis and stepwise multiple regression analysis with the help of the departmental biostatistician.

Myomectomy was successfully performed in all 50 women in the study. Mean duration of follow-up is 2 years (20-33 months). Abdominal myomectomy in 35 cases (70%) and laparoscopic-assisted myomectomy (LAM) in 15 cases (30%) was performed in 50 patients aged over 35 years as a fertility enhancing procedure (Fig. 1).

Overall, 10 of 50 (20%) subjects conceived after myomectomy. The possible impact of age (35 or 36 years), infertility, location and number of fibroids on the outcome was further analyzed by contingency table analysis (Table 1). Women aged < 35 years had a significantly ($p < 0.005$) higher chance of conception (70%) than women aged > 35 years (20%). A history of infertility also influenced the chance of conception after myomectomy. Those without a history were significantly more likely to conceive than those with a history of infertility. The location, number and size of fibroids did not appear to have any significant impact on the conception rate.

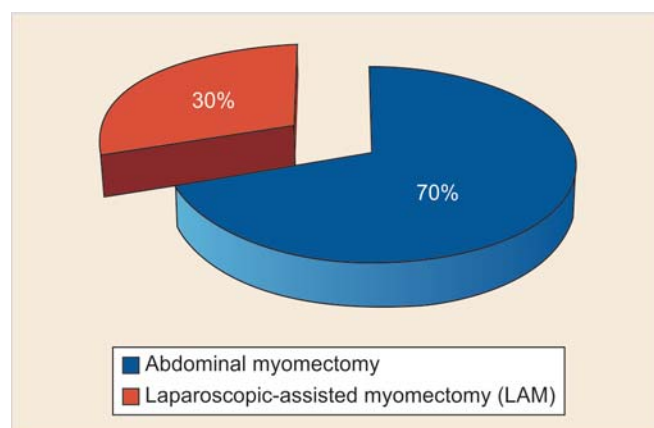


Fig. 1: Type of myomectomy

Table 1: Impact of age and nature of fibroids on the reproductive outcome

		Live birth	Miscarriage	Total pregnant	p-value
Age (years)	< 35 years (25-34)	15	6	21	< 0.005
	> 35 years	8	4	12	< 0.005
Overall size of fibroid/uterus	Small	5	2	7	NS
	Big	16	5	21	—
Location of fibroid (above 35 years)	Intramural (12 cases)	2	2	4	NS
	Subserosal (23 cases)	5	1	6	NS
	Subserosal and intramural (15 cases)	1	1	2	NS

NS: Not significant

Patient Characteristics

Patient characteristics are reported in Table 2.

Among these, 42 patients (84%) were traced after collecting the data from the records and written answers were analyzed and a detailed interview was taken. Though eight of the patients were included in the study, five of them no longer came for the follow-up as they could not be traced. One of them had bilateral tubal obstruction, second had azoospermia in the partner, and the third case had anovulation with high FSH levels.

These patients demonstrated a conception rate of 20% after myomectomy and majority of these conceptions occurred within 1 to 1 and 1/2 year of the surgery. Median duration of follow-up for patients who did not conceive was 2 years. The outcome of pregnancies is reported in Table 3.

The average number of removed myomas was 2.2 ± 1.7 . The largest myoma was measuring 6.5 ± 2.2 cm.

Twenty-three (46%) out of the 50 cases presented with subserous myomas. Fifteen (30%) presented with subserous intramural and 12 (24%) of them with intramural myomas. None of the fibroids had involved or distorted the uterine cavity. A fibroid was considered subserosal, if > 50% of the fibroid protruded out of the serosal surface of the uterus.

Around 35 patients (70%) tried for a pregnancy; 28 of them (56%) needed a new intervention like IUI/IVF postoperatively.

Out of them only 10 patients became pregnant after myomectomy.

Table 2: Features of patients in the study

	n	%
Myomectomy done	50	100
Lost to follow-up	5	10
Tried to get pregnant	35	70
Pregnant patients	10	20
No. of pregnancies	10	20

Table 3: Outcome of pregnancies

	n	%
No. of pregnancies after myomectomies	10	20
Pregnancies after abdominal myomectomies	5	10
Pregnancies after laparoscopic myomectomies	5	10
Spontaneous abortion	4	8
Preterm labor	2	4
Deliveries	6	12

Out of 35 cases of abdominal myomectomy, five cases (14%) obtained pregnancy and with laparoscopic myomectomy five more cases (33%) obtained pregnancy.

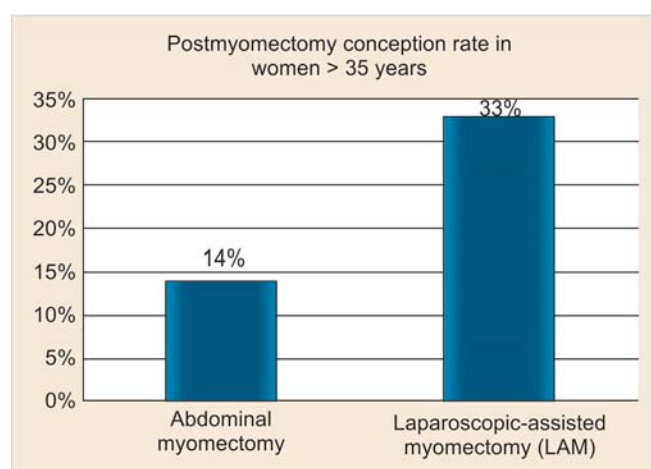
Among the 50 study group, 15 women had primary infertility whereas 10 women had secondary infertility; 10 (20%) conceived following myomectomy. All women who conceived in this group were < 40 years of age (mean age 37 years). Of the subjects who did not conceive, 12 were of 39 years of age. Consequently, the conception rate for women > 35 to < 40 years was 20% (10/50). Figure 2 shows the conception rates in both the types of myomectomy.

Out of the 35 who tried to obtain pregnancy, eight of them had spontaneous conception. Of the 28 (56%), who tried to achieve pregnancy with alternate methods, like IVF/ICSI, two conceived after undergoing IVF at private hospitals.

Out of the 10 (20%) patients who obtained pregnancy, four (8%) had spontaneous abortions.

Two patients (4%) presented with the risk of abortion at 12 weeks and they subsequently presented as preterm labor at 32 weeks, and continued with tocolysis. They underwent cesarean section at completed 37 weeks, and six (12%) had delivery by cesarean section. All the cesareans were elective mainly because of the age of the patient, length of infertility, presence of a uterine scar and pregnancy complications.

Five (10%) patients had developed pre-eclampsia and gestational diabetes. Figure 3 shows the complications during pregnancy.

**Fig. 2:** Conception rates with abdominal myomectomy and laparoscopic-assisted myomectomy

All the babies delivered by cesarean section were admitted in NICU for a couple of days and were returned to the mothers after reaching optimum weights.

The results are:

- Infertility seen in 80%
- Lost to follow-up 12%
- Pregnancy rate 20%
- Abortion rate 8%
- Scar rupture 0%
- Cesarean section—all those who delivered
- Normal delivery 0%.

No uterine rupture or dehiscence of the uterine walls is noted. Figure 4 shows postmyomectomy results of the study.

DISCUSSION

Fertility after myomectomy in women aged above 35 years is lower. Multiple factors can be taken into account, like tubo-ovarian adhesions and tubal factors.¹²⁻¹⁴ Drawbacks of the study are:

- Sample size is small
- As it is a retrospective study, it could not gather many relevant preoperative and postoperative history
- Preoperative uterine cavity assessment was not done in few cases as surgeons were not the same always

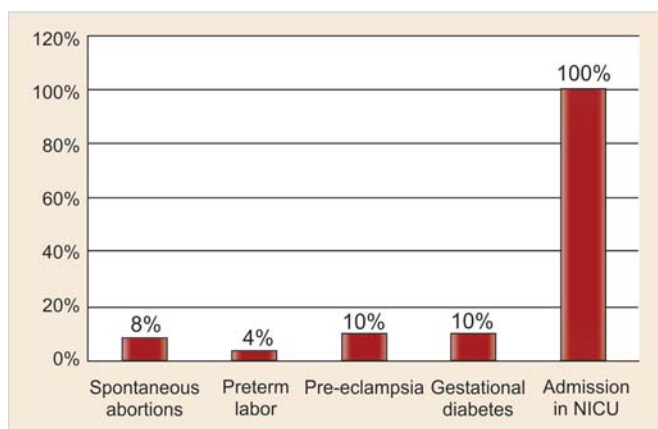


Fig. 3: Complications during pregnancy

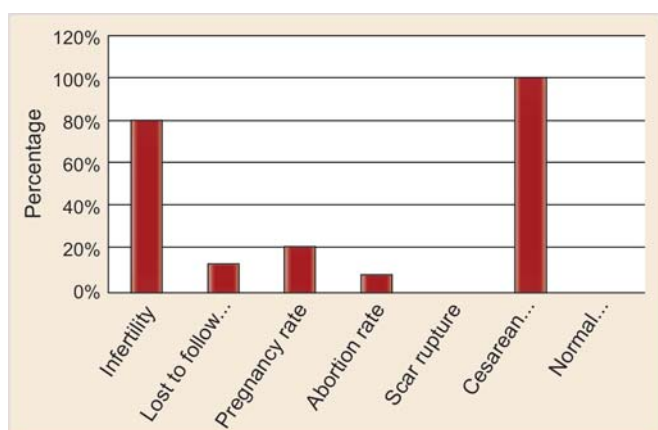


Fig. 4: Postmyomectomy results in women > 35 years

- Data on postoperative fertility is collected through oral questionnaire.

Intramural myomas themselves are known to hamper fertility.¹⁵⁻¹⁷ However, in this study, the fertility after myomectomy for intramural myomas was lower than that of other types of myomas. This result can be explained by the fact that these intramural myomas were associated with an increased risk of postoperative adhesions.

The distortion and enlargement of the endometrial cavity by submucous and intramural leiomyomas with an intracavitary component affect implantation.¹⁸ Implantation failure may also be explained by focal endometrial vascular disturbances, endometrial inflammation and secretion of vasoactive substances.¹⁹ Leiomyomas may also cause dysfunctional uterine contractility and interfere with sperm and ovum transport. Likewise, intramural leiomyomas may also obstruct tubal ostia.

While many women with fibroids conceive, some may not. Some studies have demonstrated laparoscopic myomectomy had benefits higher than abdominal myomectomy.²⁰⁻²² Myomectomy operations frequently result in pelvic adhesions, which may impair fertility.^{23,24}

The main concerns after LAM are high rate of abortion, premature delivery and high rates of cesarean section. Despite these adverse events, more than half of the patients become pregnant after the surgery.¹

In this study, we wanted to evaluate the conception rates at the age of 35 and above, after myomectomy. Women aged < 35 years had a significantly ($p < 0.005$) higher chance of conception after myomectomy than women > 35 years. The stepwise multiple regression analysis showed that the chance of conception following myomectomy was primarily influenced by age. A history of infertility did not significantly influence the chance of conception after the age fact had been taken into consideration. We have demonstrated that both the procedures did not show any major difference in achieving conception rates. Review literature demonstrates²⁵ that most of the patients conceive between 12 and 36 months after surgery and our study also showed a rate very similar. In the study, abortion rate 8% is lower than that reported by Dubuission et al.⁷ The majority of abortions occurred during first trimester just as other investigators reported.²⁶ The number, location and size did not significantly affect the miscarriage rate following myomectomy.

Uterine fibroids cause many complications in the third trimester, like premature rupture of membranes, intrauterine growth retardation, postpartum hemorrhage.^{27,28} Many researchers demonstrated that high percentage of cesarean sections after myomectomy.²⁸ We too preferred a cesarean section, mainly due to the fact of advanced age and number of infertile years. As a matter of fact, we wanted to minimize maternal and fetal risks also.

Complications like gestational hypertension, preterm labor, gestational diabetes pre-eclampsia were more common in the aged antenatal,²⁹ and our study showed pre-eclampsia and gestational diabetes in 10% of the study population who are aged > 38 years.

No cases of uterine rupture are seen in our study. Age appeared to have a clinically significant impact on pregnancy.³⁰ The nature of fibroid did not affect as successful removal restored the normal uterine anatomy.

In our study, the reproductive outcome of women aged above 35, following myomectomy is low. Age and multiple coexisting factors lower the pregnancy rate.

CONCLUSION

In patients with infertility due to fibroids, myomectomy is the preferred mode of treatment. Pregnancy rates postmyomectomy are variable. After the age of 35 years, several factors that were proposed, like nulliparity and infertility, seem to be poor factors for conceiving but significantly did not influence the conception. Myomectomy is beneficial for patients who are infertile due to uterine cavity distortion. Women above 35 years are more susceptible to pre-eclampsia, gestational diabetes and preterm labor. Babies born to these women have increased NICU admission.

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