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# Recurrence Rate after Laparoscopic Myomectomy

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## Abstract

**Study Objective.** To determine the recurrence rate of myomas after laparoscopic myomectomy.

**Design.** Retrospective review (Canadian Task Force classification II-2).

**Setting.** Tertiary referral center.

**Patients.** One hundred fourteen women (age 25–51 yrs, median 38 yrs) who were followed for an average of 37 months (range 6–120 mo).

**Intervention.** Laparoscopic myomectomy.

**Measurements and Main Results.** Follow-up data were obtained by chart review and from returned questionnaires. Variables were date of surgery, first diagnosis of recurrence, and last follow-up visit. There were 38 (33.3%) recurrences after an average interval of 27 months. Twenty-four of these women did not require treatment. Eight underwent a second laparoscopic myomectomy, and one had a third. One patient had myomectomy and then hysterectomy, and six patients chose hysterectomy to treat the first recurrence. Cumulative risk of recurrence (Kaplan-Meier curve) was 10.6% after 1 year, 31.7% after 3 years, and 51.4% after 5 years.

**Conclusion.** Although laparoscopic myomectomy is associated with less morbidity than removal by laparotomy, our results suggest that recurrence of myomas may be higher with the laparoscopic approach. Of 38 women with recurrent myoma, however, only 14 (36.8%) required additional surgery.

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Myomectomy is often preferred over hysterectomy as treatment of uterine fibroids when women desire future childbearing and in response to a growing number of women who wish to preserve their reproductive organs. Patients are concerned about the possible negative impact of hysterectomy on their psychologic

and sexual well-being,<sup>1</sup> and many who enter the work force postpone childbearing into their late thirties, when myomas are most likely to occur.<sup>2</sup> These women are interested in fast recovery and early return to work. Laparoscopic myomectomy meets these expectations,<sup>3–5</sup> but unlike myomectomy by laparotomy,<sup>6–8</sup> little has been

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published about the long-term efficacy of the laparoscopic approach.

**Materials and Methods**

To determine the recurrence rate of leiomyoma after laparoscopic myomectomy, we retrospectively reviewed the charts of 114 women who underwent the procedure between May 1985 and November 1994 and were available for follow-up (Table 1). Location and type of leiomyoma were determined by pelvic examination, ultrasonography, and laparoscopic assess-

**TABLE 1. Characteristics of 114 Patients**

Characteristic	Median	Range
Age (yrs)	38	25-51
Gravidity	1	0-6
Parity	0	0-6
Indications for myomectomy, % (no.)		
Pain and pelvic discomfort	76.32 (87)	
Abnormal uterine bleeding	51.75 (59)	
Infertility	28.95 (33)	
% (no.) of myomata removed in each patient (median 2, range 1-9)		
1	46.49 (53)	
2	14.03 (16)	
3	6.1 (7)	
4	7.01 (8)	
5	3.5 (4)	
>5	22.8 (26)	
Size of myomas (cm), no. (%)		
0-2.5	68 (21.3)	
2.6-5	140 (43.9)	
5.1-7.5	72 (22.5)	
7.6-10	11 (3.4)	
>10	28 (8.7)	
Total	319	
Depth of infiltration, % (no.)		
Pedunculated	6.26 (20)	
Subserosal	47.96 (153)	
Intramural	32.91 (105)	
Intraligamentous	5.32 (17)	
Cervical	3.44 (11)	
Submucosal	4.07 (13)	
Associated pathology, % (no.)		
Endometriosis	50.88 (58)	
Adhesions	42.10 (45)	
Adnexal mass	13.16 (15)	
Intrauterine abnormalities	8.77 (10)	
Other	7.89 (9)	

ment. Hysteroscopy was performed to evaluate the uterine cavity, and intracavitary myomas were removed hysteroscopically. As was expected, most women had more than one myoma. All visible leiomyomas were removed.

Surgery was performed by techniques of video-laserscopy described elsewhere.<sup>3,9</sup> Briefly, during the myomectomy portion, for pedunculated leiomyoma, the pedicle was coagulated with bipolar coagulator and transected at its junction to the uterus with the carbon dioxide (CO<sub>2</sub>) laser. Superficial subserosal leiomyomata were excised after 3 to 5 ml of diluted vasopressin (20 U in 60-100 ml normal saline or lactated Ringer's solution) was injected under the capsule of the leiomyoma and a longitudinal or transverse incision was made through serosa with superpulse or ultrapulse mode of the CO<sub>2</sub> laser. The leiomyoma was removed from its capsule with two grasping forceps with teeth and a suction-irrigator probe. The myoma site was coagulated and edges of serosa were reapproximated using low-level heat with the bipolar electrocoagulator.

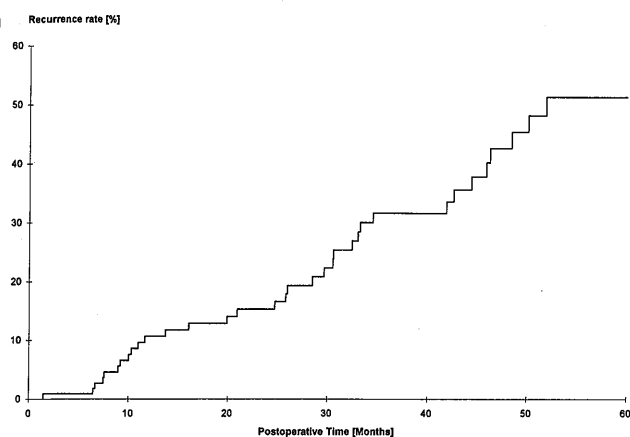
At sites of deep subserosal or intramural leiomyomata leaving a large (> 3 cm) gap, myometrium was repaired in multilayers and edges of the serosa were reapproximated with interrupted 4-0 polydioxanone suture. For intraligamentous leiomyomata, an incision was made on the anterior leaf of the broad ligament away from the bladder dome.

The technique described for subserosal and intramural lesions was performed to remove the leiomyoma from its capsule. The defect in the broad ligament was not closed. Depending on size, leiomyomata were removed from the abdominal cavity either intact or in pieces by posterior colpotomy, through suprapubic anterior wall incisions, or through the operating channel of the laparoscope using an 11-mm grasping forceps.

Follow-up data were obtained by review of patients' charts, returned questionnaires, or telephone interviews. Cumulative risk of recurrence was determined by Kaplan-Meier curve (Figure 1).<sup>10</sup> Variables were date of surgery, first diagnosis of recurrence, and last follow-up visit. Relevant risk factors for recurrence were isolated by discriminant analysis.

**Results**

Average operating time was 2.3 hours (range 1-6 hrs). Median estimated blood loss was 200 ml (range <25-1200 ml); 7.0% of patients required blood



**FIGURE 1.** Cumulative recurrence rate after 114 laparoscopic myomectomies using Kaplan-Meier curve.

transfusions. Complications were two cases of postoperative fever above 100.5° F after the first 24 hours, which were treated with antibiotics, and one of bladder perforation, which was repaired laparoscopically with a single layer of interrupted sutures.<sup>11</sup> In two women the operation was converted to laparotomy due to size and location of myomas. One hundred eight (94.7%) patients were discharged within 24 hours after the procedure; the longest stay was 4 days (1 patient).

Mean follow-up was 37 months (range 6–120 mo). Recurrence was defined as any myoma diagnosed postoperatively by either pelvic or ultrasound examination or during subsequent surgery. There were 38 (33.3%) recurrences after an average interval of 27 months (range 1.5–71.2 mo). Twenty-four of these women did not require treatment. Eight underwent a second laparoscopic myomectomy, and one woman had three. One patient had myomectomy and then hysterectomy, and six chose hysterectomy to treat the first recurrence. Cumulative risk of recurrence was 10.6% after 1 year, 31.7% after 3 years, and 51.4% after 5 years.

Associated risk factors were number of myomas and depth of penetration. Patients without recurrence had an average of 2 ( $2.5 \pm 2.29$ ) fibroids, those with recurrences had 4 ( $4.07 \pm 2.85$ ) myomas ( $p < 0.01$ ). Recurrence rates for pedunculated, subserosal, and intramural myomas were 0.0% (0/4), 11.8% (4/34), and 44.9% (22/49,  $p < 0.01$ ), respectively. Myoma size, patient age, parity, and postoperative pregnancies had no influence on recurrence.

## Discussion

Early hospital discharge and rapid recovery<sup>3-5</sup> led to increased interest in laparoscopic myomectomy. Concern regarding formation of de novo adhesions after laparotomy<sup>12</sup> resulted in further support for laparoscopy in women desiring to preserve fertility. However, little is known about long-term outcomes of laparoscopic myomectomy. A major concern regarding the adequacy of this procedure is difficulty diagnosing and removing large, deep, infiltrating myomata. Smaller intramural myomas are hard to visualize and may be overlooked, leaving fibroid in situ, which may result in higher recurrence rates. Our results seem to support this contention.

The best method to determine recurrence after laparoscopic myomectomy is a prospective, randomized study comparing two groups. However, this was not feasible for our study, as there was no justifiable reason for performing myomectomy by laparotomy in any of these women. Therefore, we compared our findings with those reported in the literature. After laparotomy, reported myoma recurrence rates were between 4% and 30% depending on length of follow-up.<sup>6,7</sup> A large longitudinal study analyzing follow-up of 622 women after laparotomy reported 27% recurrence after 10 years,<sup>7</sup> compared with 31.7% after 3 years and 51.4% after 5 years in our series. Patient age and number of myomas in that study were similar to ours. As expected, postoperative interval and number of myomas were positively associated with risk of recurrence, which is consistent with other reports.<sup>7,13</sup> During follow-up of our patients, it should be noted that of 38 women who experienced recurrence, only 14 (36.8%) required subsequent surgery.

Laparoscopic myomectomy is associated with less patient morbidity than laparotomy<sup>3-5</sup>; however, our results suggest that recurrence may be higher after laparoscopy. Because we removed all visible leiomyomata, the only explanation we have is that some small lesions could have been missed due to direct hand palpation of the uterus. We have replaced laparoscopic myomectomy in women who have numerous, deeply infiltrating, or very large myomas with laparoscopic-assisted myomectomy.<sup>14</sup> By preparing the surgical site laparoscopically and removing myomas and suturing the defect through minilaparotomy, we hope to achieve more complete removal of myomas, comparable with that achieved by laparotomy.

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