

Cesarean myomectomy: Safe operation or surgical folly?

In many countries cesarean myomectomy is now viewed as a safe and effective procedure in carefully selected clinical situations



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Uterine leiomyomata (fibroids) are the most common pelvic tumor of women. When women are planning to conceive, and their fibroid(s) are clinically significant, causing abnormal uterine bleeding or bulk symptoms, it is often optimal to remove the uterine tumor(s) before conception. Advances in minimally invasive surgery offer women the option of laparoscopic or robot-assisted myomectomy with a low rate of operative complications, including excessive blood loss and hysterectomy, and a low rate of postoperative complications, including major pelvic adhesions and uterine rupture during subsequent pregnancy.¹⁻³ However, many women become pregnant when they have clinically significant fibroids, and at least one-third of these women will have a cesarean birth.

Important clinical issues are the relative benefits and risks of performing a myomectomy at the time of the cesarean birth, so called cesarean myomectomy. Cesarean myomectomy offers carefully selected

women the opportunity to have a cesarean birth and myomectomy in one operation, thereby avoiding a second major operation. Over the past 6 decades, most experts in the United States and the United Kingdom have strongly recommended against myomectomy at the time of cesarean delivery because of the risk of excessive blood loss and hysterectomy. Recently, expert opinion has shifted, especially in continental Europe and Asia, and cesarean myomectomy is now viewed as an acceptable surgical option in a limited number of clinical situations, including removal of pedunculated fibroids, excision of large solitary subserosal fibroids, and to achieve optimal management of the hysterotomy incision.

Decades of expert guidance: Avoid cesarean myomectomy at all costs

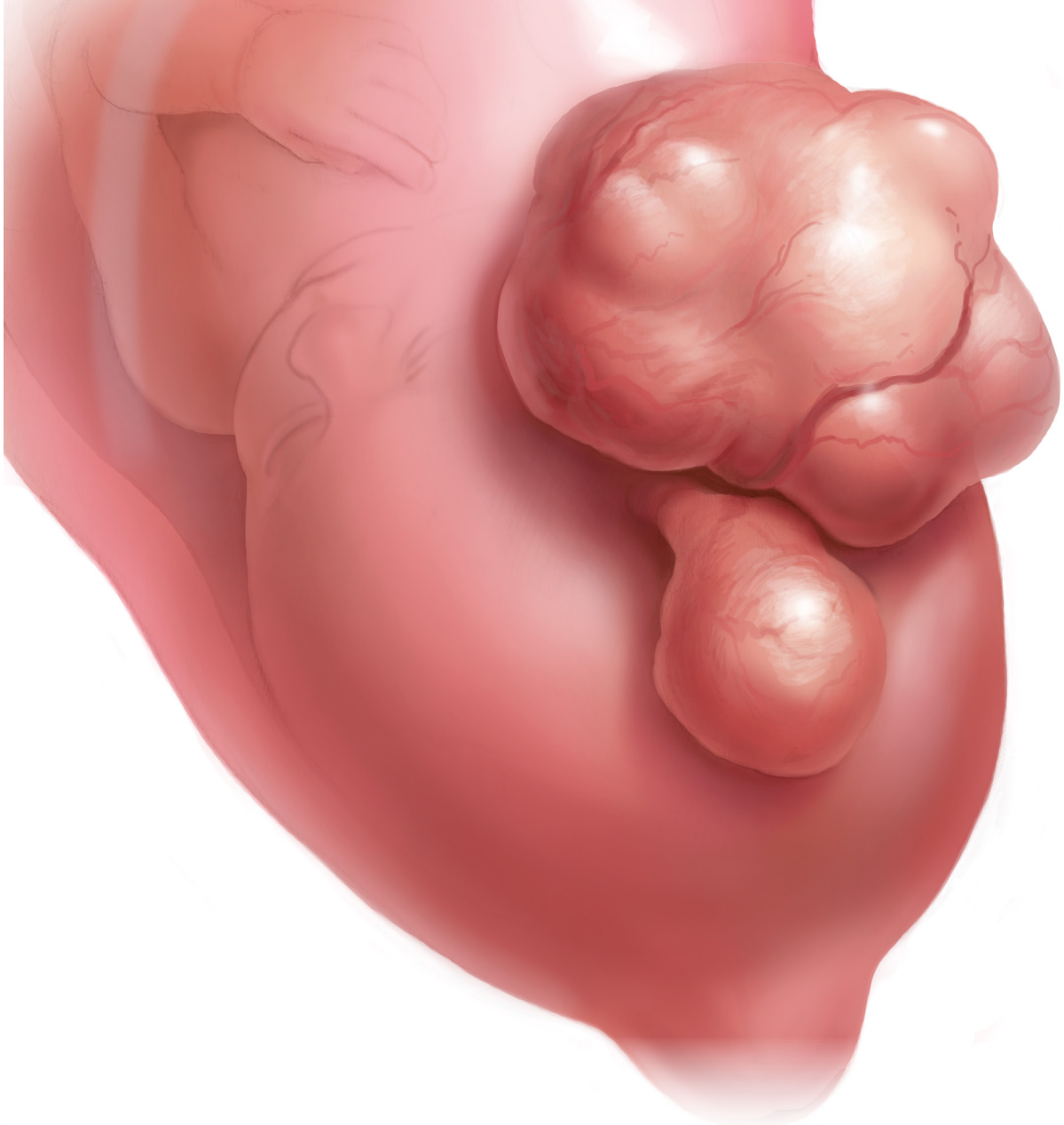
Dr. K.S.J. Olah succinctly captured the standard teaching that cesarean myomectomy should be avoided in this personal vignette:

Many years ago as a trainee I removed a subserosal fibroid

during a cesarean section that was hanging by a thin stalk on the back of the uterus. The bearing I received was severe and disproportionate to the crime. The rule was that myomectomy performed at cesarean section was not just frowned upon but expressly forbidden. It has always been considered foolish to consider removing fibroids at cesarean section, mostly because of the associated morbidity and the risk of haemorrhage requiring hysterectomy.⁴

Dr. Olah quoted guidance from *Shaw's Textbook of Operative Gynecology*,⁵ "It should be stressed that myomectomy in pregnancy should be avoided at all costs, including at caesarean section." However, large case series published over the past 10 years report that, in limited clinical situations, cesarean myomectomy is a viable surgical option, where benefit may outweigh risk.⁶⁻¹⁴ The current literature has many weaknesses, including failure to specifically identify the indication for the cesarean myomectomy and lack of controlled prospective clinical trials. In almost

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all cases, cesarean myomectomy is performed after delivery of the fetus and placenta.

The pedunculated, FIGO type 7 fibroid

The International Federation of Gynecology and Obstetrics (FIGO) leiomyoma classification system identifies subserosal pedunculated fibroids as type 7 (FIGURE, page 8).¹⁵ Pedunculated fibroids are attached to the uterus by a stalk that is $\leq 10\%$ of the mean of the 3 diameters of the fibroid. When a clinically significant pedunculated fibroid, causing bulk symptoms, is encountered at cesarean birth, I recommend that it be removed. This will

save many patients a second major operation to perform a myomectomy. The surgical risk of removing a pedunculated is low.

The solitary FIGO type 6 fibroid

Type 6 fibroids are subserosal fibroids with less than 50% of their mass being subserosal. The type 6 fibroid is relatively easy to enucleate from the uterus. Following removal of a type 6 fibroid, closure of the serosal defect is relatively straightforward. In carefully selected cases, if the type 6 fibroid is causing bulk symptoms, cesarean myomectomy may be indicated with a low risk of operative complications.

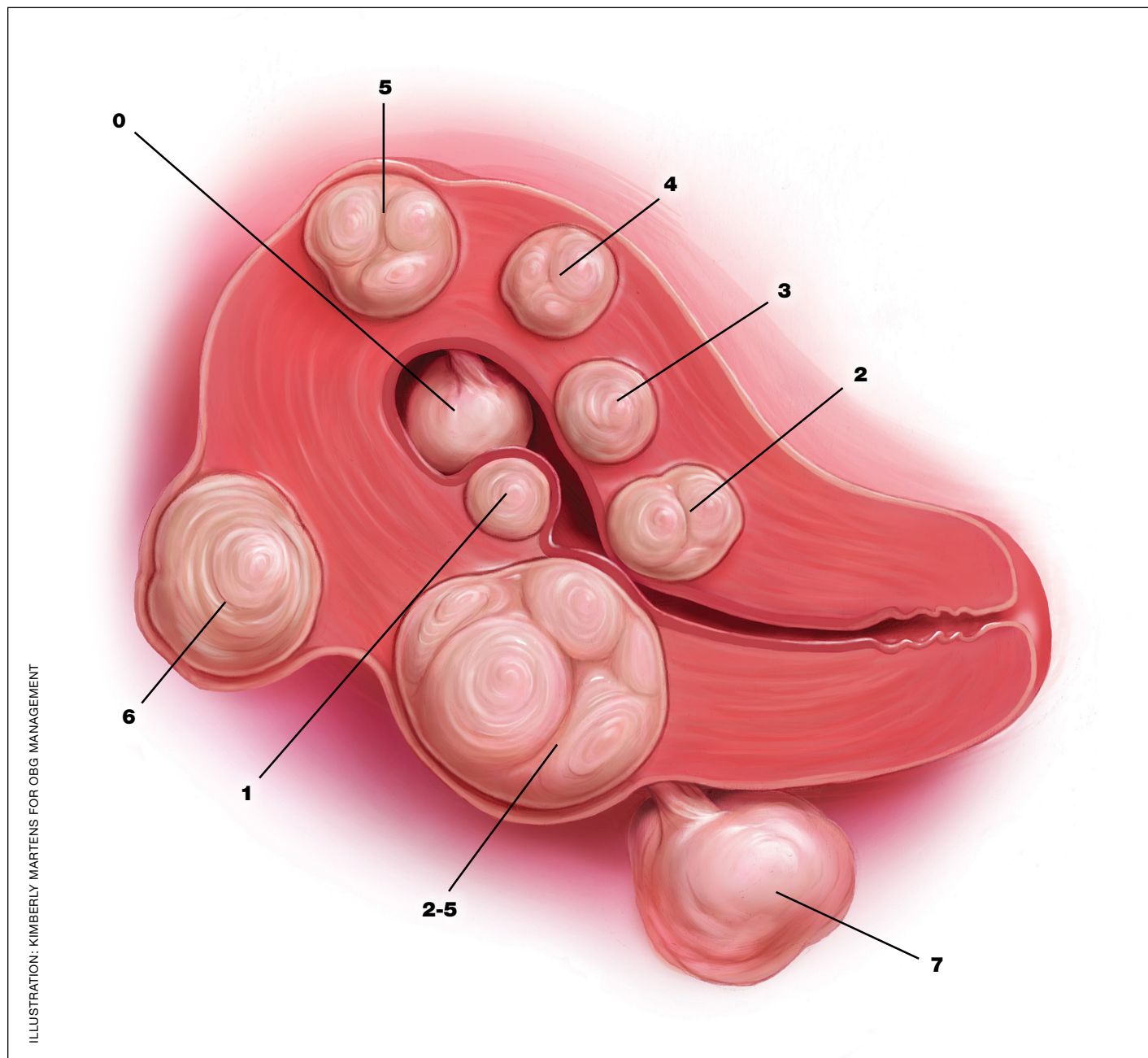
The FIGO type 2-5 fibroid

The type 2-5 fibroid is a transmural fibroid with significant mass abutting both the endometrial cavity and serosal surface. Excision of a type 2-5 fibroid is likely to result in a large transmyometrial defect that will be more difficult to close and could be associated with greater blood loss. Although data are limited, I would recommend against cesarean myomectomy for type 2-5 fibroids in most clinical situations.

Myomectomy to achieve optimal management of the cesarean hysterotomy incision

Many surgeons performing a cesarean birth for a woman with

FIGURE FIGO classification of uterine fibroids¹⁵



Abbreviation: FIGO, International Federation of Gynecology and Obstetrics.

clinically significant fibroids will plan the hysterotomy incision to avoid the fibroids. However, following delivery and contraction of the uterus, proper closure of the hysterotomy incision may be very difficult

without removing a fibroid that is abutting the hysterotomy incision. Surgeons have reported performing myomectomy on lower uterine segment fibroids before making the hysterotomy incision in order to

facilitate the hysterotomy incision and closure.¹⁶ Myomectomy prior to delivery of the newborn must be associated with additional risks to the fetus. I would prefer to identify an optimal site to perform a hysterotomy,

Polyp	Coagulopathy
Adenomyosis	Ovulatory dysfunction
Leiomyoma	Endometrial
Malignancy & hyperplasia	Iatrogenic
	Not otherwise classified

Leiomyoma subclassification system

Submucous	0	Pedunculated intracavitary
	1	<50% intramural
	2	≥50% intramural
Other	3	Contacts endometrium; 100% intramural
	4	100% Intramural
	5	Subserous and ≥50% intramural
	6	Subserous and <50% intramural
	7	Subserous pedunculated
Hybrid (contact both the endometrium and serosal layer)	8	Other (specify eg, cervical, parasitic)
	2-5	Two numbers are listed separated by a hyphen. By convention, the first refers to the relationship with the endometrium while the second refers to the relationship to the serosa. One example is: Submucous and subserous, each with less than half the diameter in the endometrial and peritoneal cavities, respectively

deliver the newborn and placenta, and then consider myomectomy.

Complications associated with cesarean myomectomy

The evidence concerning the

complications of cesarean birth plus myomectomy compared with cesarean birth alone in women with fibroids is limited to case series. There are no reported controlled clinical trials to guide practice. The largest single case series reported on 1,242 women with fibroids who had a cesarean birth plus myomectomy compared with 3 control groups, including 200 women without fibroids who had a cesarean birth, 145 women with fibroids who had a cesarean hysterectomy. The investigators reported no significant differences in preoperative to postoperative hemoglobin change, incidence of postoperative fever, or length of hospital stay among the 4 groups.⁸ The authors concluded that myomectomy during cesarean birth was a safe and effective procedure.

A systematic review and meta-analysis reported on the results of 17 studies which included 4,702 women who had a cesarean myomectomy and 1,843 women with cesarean birth without myomectomy.¹⁷ The authors of the meta-analysis noted that most reported case series had excluded women with a high risk of bleeding, including women with placenta previa, placenta accreta, coagulation disorders, and a history of multiple myomectomy operations. The investigators reported that, compared with the control women, the women undergoing cesarean myomectomy had a statistically significant but clinically insignificant decrease in mean hemoglobin concentration (-0.27 g/dL), a significant increase in mean operative time (+15 minutes) and a significant increase in the length of hospital stay (+0.36 days). There was an increase in the need for blood transfusion (risk ratio, 1.45; 95% confidence interval, 1.05-1.99), but only 3% of women undergoing cesarean myomectomy received a blood transfusion. There was no significant

difference between the two groups in the incidence of postoperative fever. The authors concluded that cesarean myomectomy is a safe procedure when performed by experienced surgeons with appropriate hemostatic techniques.

Techniques to reduce blood loss at the time of cesarean myomectomy

A detailed review of all the available techniques to reduce blood loss at the time of cesarean myomectomy is beyond the scope of this editorial. All gynecologists know that control of uterine blood flow through the uterine artery, infundibulopelvic vessels and internal iliac artery can help to reduce bleeding at the time of myomectomy. Tourniquets, vascular clamps, and artery ligation all have been reported to be useful at the time of cesarean myomectomy. In addition, intravenous infusion of oxytocin and tranexamic acid is often used at the time of cesarean myomectomy. Direct injection of uterotonics, including carbocetin, oxytocin, and vasopressin, into the uterus also has been reported. Cell saver blood salvage technology has been utilized in a limited number of cases of cesarean myomectomy.^{8,18,19}

Medicine is not a static field

Discoveries and new data help guide advances in medical practice. After 6 decades of strict adherence to the advice that myomectomy in pregnancy should be avoided at all costs, including at caesarean delivery, new data indicate that in carefully selected cases cesarean myomectomy is an acceptable operation. ●



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Dr. Barbieri reports no financial relationships relevant to this article.

CONTINUED ON PAGE 36

EDITORIAL

CONTINUED FROM PAGE 9

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