

Removal of uterine fibroids during cesarean section: a difficult therapeutic decision

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Summary

Purpose of investigation: Myoma excision during cesarean delivery has traditionally been discouraged, however controversy persists among studies of myomectomy being performed during cesarean section. In this study, medical records of patients who underwent cesarean section at our institution were evaluated retrospectively. **Methods:** A total of 70 cases of cesarean myomectomy done during this period were included (group 1) and compared with the patients who underwent cesarean section alone (group 2). **Results:** Mean surgical time of the myomectomy group was 58.1 ± 23 minutes which was significantly increased ($p < 0.01$). Mean postoperative hemoglobin value was 9.6 ± 1.5 in the myomectomy group and 10.8 ± 1.01 in controls ($p = 0.01$). Length of hospital stay was significantly longer in the myomectomy group ($p < 0.05$). **Conclusion:** This study shows that myomectomy during cesarean section is a feasible procedure without any serious complications. The procedure is related with increased blood loss that does not require blood transfusion.

Key words: Leiomyoma; Pregnancy; Cesarean section; Hemorrhage; Pregnancy complications.

Introduction

Leiomyomas or fibroids are the most common pelvic tumors in women, with a reported incidence of 20-25% [1]. Fibroids affect mainly women in reproductive age and are mostly asymptomatic. The estimated prevalence of fibroids in pregnancy is 1-4% [2, 3]. Myomectomy at the time of cesarean section has traditionally been strongly discouraged. The most common reasons for this practice are uncontrollable hemorrhage associated with myomectomy which may require hysterectomy and increased postoperative morbidity [2, 3]. The experience of myomectomy at cesarean section is still limited and not used as a routine procedure, however several recent reports suggest myomectomy during pregnancy and cesarean section in experienced hands is possible and safe [1, 4, 5].

The aim of the study was to determine whether myomectomy at the time of cesarean section leads to increase incidence of intrapartum and postpartum complications in a retrospective controlled study design.

Material and Methods

This study was conducted at Dr. Zekai Tahir Burak Training and Research Hospital in a period of six years from 1st January 2004 to 31st December 2009. The study protocol was approved by the local ethical committee of the institution. The study was conducted in accordance with the basic principles of the Declaration of Helsinki. Seventy patients with uterine myomas who were treated by cesarean myomectomy were compared retrospectively with 70 women without uterine fibroids who had routine cesarean section during the same period. In all, 140 women were enrolled in the study. The inclusion criteria were: (1) presence of leiomyoma located anterior of the uterine body

documented by antepartum ultrasound or by intraoperative findings; (2) no evidence of antenatal bleeding; (3) no other surgical procedures at the time of cesarean section besides myomectomy; (4) no co-morbid conditions with evidence of coagulopathy. All operations were performed under regional (either spinal or epidural) anesthesia. The number and sizes of uterine fibroids removed were documented in the operation notes. When there was more than one myoma the biggest myoma diameter was measured. Myomectomy for all types of myoma was performed at cesarean section after the delivery of the fetus. Sixty-eight patients were delivered by lower uterine segment incision while two patients were delivered through a classical uterine incision because of the fibroid in the cervico-isthmus junction making the lower uterine segment inaccessible. Irrespective of the location of the fibroid, a conventional method of incision over the myoma followed by enucleation was employed. The dead space was obliterated in layers by interrupted sutures with 1-0 vicryl. The serosa was sutured using a continuous absorbable suture (2-0 or 3-0 vicryl). Uterine incision for cesarean section was closed in two layers with 1-0 vicryl and the abdomen was closed after ensuring hemostasis. A standard uterotonic treatment was used in all patients. Twenty units (2 ml) of oxytocin per liter of infusate was added and this solution was administered after delivery of the placenta at a rate of 10 ml/min for 12 hours.

The cases and controls were compared for age of the patient, parity, hemoglobin levels before and 12 hours after the operation, change in hemoglobin values, incidence of blood transfusion, length of operation, frequency of postoperative fever and hemorrhage, and duration of postoperative hospital stay. Length of operation was calculated from skin incision to skin closure. Hemorrhage was defined as decrease in hematocrit of ten points from the preoperative value to the postoperative value or the need for intraoperative transfusion. Postoperative fever was defined as temperature greater than or equal to 38°C. Statistical analysis was performed with the SPSS/PC 15.0 package. The chi square test and Student's t-test were used for statistical analysis; $p < 0.05$ was considered statistically significant.

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Results

Obstetric characteristics of the groups in terms of age, parity, previous abortions and gestational age were similar (Table 1). A total of 73 fibroids were removed. Ninety-seven percent of the patients had only one fibroid removed. Table 2 shows the localization, number and type of myomas. Intramural fibroids were the most common form (45.2%) which were mostly located on the uterine fundus (36.9%). Thirty-one sub-serous myomas were removed, of which ten were pedunculated with a short stalk. In ten women the myomas were located to the lower uterine segment (14%). Two of these patients were delivered through a classical uterine incision. Most of the myomas were between 4-8 cm in size (57.5%). Seventy-one percent of the patients required two uterine incisions. Mean pre- and postoperative hemoglobin value, duration of operation, incidence of blood transfusion and incidence of postpartum fever are shown in Table 3. The length of mean operating time for cesarean myomectomy (58.1 min) was significantly longer than for the control group (32.1 min) ($p < 0.01$). Mean postoperative hemoglobin values significantly differed between the groups ($p = 0.001$). Mean change in hemoglobin values was significantly higher in the myomectomy group than the controls ($p < 0.01$). Mean duration of hospital stay was also significantly longer in the myomectomy group ($p = 0.02$). Emergency cesarean rates, incidence of postpartum atony, need for blood transfusion during the early postoperative period and frequency of postoperative fever and hemorrhage were not significantly different between the groups. Intraoperative blood transfusion, peripartum hysterectomy, hypogastric artery ligation or other procedures to control bleeding were not necessary in any case.

Discussion

Resection of myomas during pregnancy is generally contraindicated unless the myoma is pedunculated, however the management of fibroids encountered during cesarean section remains a therapeutic dilemma [2, 3, 6, 7]. The main concern associated with cesarean myomectomy is excessive hemorrhage which may require an emergency hysterectomy due to increase in blood supply of the uterus throughout pregnancy. On the other hand, it may be time to reconsider this topic. Fibroids complicating pregnancy occur more frequently now than in the past because many women are delaying childbearing to their late thirties, which is the time for greatest risk of myoma growth. Several studies performed over the last decade however, have clearly shown that myomectomy at the time of cesarean section is a safe and feasible procedure in experienced hands [1, 4, 8-12]. Kaymak *et al.* reported 40 cases of myomectomy at cesarean section [1]. In this study the incidence of hemorrhage in the myomectomy group was 12.5% as compared with 11.3% in the isolated cesarean group and the difference was not statistically significant. Ehigiegba *et al.* assessed the intraoperative and postoperative complications of cesarean myomectomy in 25 pregnant women [12]. Five required blood trans-

Table 1. — Patient characteristics.

	Cesarean + myomectomy (n = 70) (mean ± SD)	Controls (n = 70) (mean ± SD)	p
Maternal age (years)	31.9 ± 5.4	28 ± 4.3	NS
Parity	0.6 ± 0.7	0.8 ± 0.5	NS
Previous abortions	0.2 ± 0.5	0.3 ± 0.4	NS
Gestational age	38.1 ± 1.9	38.7 ± 1.2	NS

NS: not statistically significant.

Table 2. — Size, location and type of the removed fibroids.

		N	(%)
Type	Intramural	33	45.2%
	Subserous	31	42.4%
	Submucosal	9	12.4%
	Total	73	
Size	< 4 cm	12	16.5%
	4-8 cm	42	57.5%
	> 8 cm	19	26%
Location	Fundus	27	36.9%
	Corpus	25	34.1%
	Cervicoisthmic	10	14%
	Multiple	11	15%

Table 3. — Surgical outcomes of myomectomy and control groups.

	Cesarean myomectomy	Cesarean alone	p
Mean operative time (min)	32.81 ± 9.3	58.1 ± 23	< 0.01
Preoperative hemoglobin values (g/dl)	12.7 ± 1.06	12 ± 1.1	NS
Postoperative hemoglobin values (g/dl)	9.6 ± 1.5	10.8 ± 1.01	0.01
Mean difference in hemoglobin change (g/dl)	3.09 ± 1.24	1.25 ± 0.77	< 0.01
Emergency cesarean rate	20	31	NS
Incidence of atony	7 (10%)	4 (7.14%)	NS
Frequency of hemorrhage	12 (17.14%)	5 (7.14)	NS
Frequency of blood transfusion	10 (14.28%)	5 (7.14%)	NS
Frequency of postoperative fever	15 (21.4%)	8 (11.4)	NS
Length of hospital stay (days)	3.02 ± 1.58	2.40 ± 1.09	0.02

NS: not statistically significant.

fusions and none required a hysterectomy. They concluded that with adequate experience and the use of high dose oxytocin infusion (intra- and postoperatively), myomectomy at cesarean section is not as hazardous as many believe. Bhatla *et al.* Li *et al.* and Hassiakos *et al.* have also reported similar results with a good surgical outcome of cesarean myomectomy cases [4, 10]. In this present study, there was no difference in the incidence of postoperative fever and hemorrhage between the myomectomy group and the controls. The difference in hemoglobin levels before and 12 hours after the operation was statistically significant compared with patients who underwent cesarean section without myomectomy ($p < 0.05$). However ten patients who underwent cesarean myomectomy and five patients in the control group needed blood transfusions but the difference was not significant. Of the 70 cases in the study group, none had severe hemorrhage necessitating emergency hysterectomy or any further surgical interventions. Although estimated blood loss, based

on hemoglobin decrease, was higher in cases of cesarean myomectomy than average blood loss after an uncomplicated cesarean section, the present study shows that myomectomy during cesarean delivery may not be as dangerous as most obstetricians are trained to believe. Our results are in agreement with findings of other researchers. We recommend the use of standard dose oxytocin to obtain a sustained uterine contraction during the myomectomy and for 12-24 h after surgery as was used in this series [13].

In our set-up cesarean myomectomy added a mean of 26 min to the duration of surgery which is longer than the findings in previous reports [1, 4]. The duration of hospital stay in the myomectomy group was also significantly longer which ranged between two and 11 days with a mean of three days, although early postoperative morbidities did not differ from the patients who underwent an isolated cesarean section. Previous studies have yielded conflicting results regarding the effects of cesarean myomectomy on the mean hospital stay and mean operating time. Roman and Tabsh in a retrospective study involving 111 women with myomectomy at cesarean section and 257 women undergoing cesarean section alone noted no significant difference in operative time and length of hospital stay [11]. Previous studies have reported similar results. On the other hand, conflicting results of significantly longer operating time and longer hospital stay in cesarean myomectomy patients than controls have also been reported [1, 14].

Consequently, this study has clearly shown, like several other studies, that myomectomy during cesarean section is not always a hazardous procedure. The advantages include the fact that interval myomectomy is avoided including the risk of a second surgery and anesthesia, and is also cost saving. With the use of standard dose oxytocin infusion during the intra- and postoperative period, the procedure can be performed without any serious bleeding by experienced obstetricians.

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