

Evaluation of safety of caesarean myomectomy: A prospective study

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Abstract:

Background: Uterine myomas are the most common benign tumour of female reproductive tract and the prevalence of myomas in pregnancy has been reported to be 2% to 5%. Myomectomy during cesarean section has traditionally been discouraged due to risk of intractable haemorrhage and fear of hysterectomy. But recently large scaled studies indicated that cesarean myomectomy could be safely performed in majority of cases without any serious or life threatening complications.

Materials and Methods: This prospective study was done at Ibn Sina Medical College Hospital, Dhaka, Bangladesh between January 2016 and December 2016. Fifty patients were recruited into the study, 25 patients had undergone myomectomy during cesarean section and 25 patients had undergone only cesarean section.

Results: Average value of haemoglobin both pre and post-operatively was 12.31 ± 1.22 g/dl and 10.64 ± 1.51 g/dl for patients who had cesarean section with myomectomy and 11.61 ± 1.3 g/dl and 10.3 ± 1.7 g/dl in the other group in which cesarean section without myomectomy was performed. The difference in average haemoglobin for patients who had a cesarean section and myomectomy was 1.41 while those who had cesarean section alone was 1.32 ± 1.12 . This was not significant. The average duration of operation was longer in patient who had cesarean section and myomectomy (54.32 ± 18.06 mins) than those who had cesarean section alone (38.54 ± 8.42 mins). The incidence of hemorrhage was $5.45 \pm 1.23\%$ and $5.23 \pm 1.03\%$ respectively and the mean length of postoperative hospitalization was 2.42 ± 1.45 and 2.17 ± 0.70 days and no hysterectomy was needed in any group. Blood transfusion was given in 6 patients with 3 patients in each group. Sixty eight percent of the fibroids were subserous and in the body of the uterus.

Conclusion: Cesarean myomectomy is a safe and effective procedure and does not increase the incidence of intraoperative and postoperative complications.

Key words: Myoma, Cesarean section, Myomectomy.

Introduction

Uterine fibroids, also known as uterine myomas or leiomyomas are benign smooth muscle tumours of the uterus. Uterine myomas are the most common benign tumours of female reproductive tract and the prevalence of myomas in pregnancy has been reported to be 2% to 5%^{1,2}. The overall incidence of fibroid uterus is about 40-60% by the age of 35 years³. Attributed to the delayed age of childbearing in women, myomas currently tend to occur more frequently in pregnancy^{4,5}. The use of ultrasonography plays a great role in diagnosing myoma even in small size.

Uterine fibroids are generally asymptomatic in pregnancies; however, 10-40% of them may be associated with obstetric complications and adverse obstetric outcomes⁶. This spectrum includes, the location and size (>5 cm) of the myoma that frequently presents with abortion, malpresentation, placental abruption, intrauterine growth restriction (IUGR), placenta previa, abnormal placental invasion, preterm labour, preterm rupture of membrane (PROM), postpartum haemorrhage or bleeding requiring blood transfusion⁵.

Combining myomectomy with cesarean section has been traditionally discouraged mainly due to the risk of haemorrhage associated with surgery as a result of increased vascularity of the pregnant uterus and uterine atonicity^{7,8}. But if these two procedures can be performed safely and simultaneously, the risk of anaesthetic complications, multiple surgeries, adhesion, cost of the operative procedure, and hospital stay could be reduced. However, recent studies have revealed that myomectomy during cesarean section can be a safe procedure with careful case selection.^{6,9}

The aim of this study was to evaluate the safety of cesarean myomectomy especially regarding intraoperative and postoperative complications.

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Materials and Methods:

This prospective study was done at Ibn Sina Medical College Hospital, Dhaka, Bangladesh between January 2016 and December 2016. This study group consisted of 25 patients who had undergone myomectomy during cesarean section and the control group was composed of 25 patients who had undergone cesarean section only. In both groups, patients with multiple pregnancies, placental abruption, abnormal placental invasion, bleeding clotting disorders, HELLP syndrome and immune thrombocytopenic purpura (ITP) as well as patients with a history of medical therapies causing bleeding disorders (aspirin, heparin, LMWH, warfarin, etc.) and any additional surgical procedure other than intraoperative myomectomy were excluded from this study.

Patient characteristics including age, gravida, body mass index, gestational age at birth, indications for cesarean section, number of previous cesarean deliveries, presence of systemic diseases, bleeding diathesis and other prior surgical procedures were noted. The size, location and number of myomas were recorded after evaluation with ultrasonographic examination and finally noted after cesarean section. The patients were then evaluated in terms of preoperative and postoperative hemoglobin (Hb), duration of surgery, massive haemorrhage, need for blood transfusion, postoperative obstetric complication & need for intensive care.

Before going cesarean section with myomectomy informed consent was taken and arrangement for possible blood transfusion was made. Due approval was obtained from the Local Ethics Committee of Ibn Sina Medical College.

Surgical Technique

The final decision for myomectomy procedure has been given during the surgery. Intraligamentary and cervical fibroids were excluded. All the procedures were performed under general anesthesia. Initially, a cesarean section was performed through the Pfannenstiel incision. Myomectomy was performed after the closure of the lower uterine segment. A linear incision was made with monopolar electro-surgical scalpel from the uterine serosa to the surface of the myoma and the myoma was hooked and extracted from its capsule. Additional techniques such as uterine artery tourniquet or intramural vasopressin infusion were not administered before the myomectomy. The myometrium was closed in two layers using interrupted absorbable suture. Oxytocin infusion (20 IU in 1000cc isotonic solution) was started before myomectomy and continued for 24 h postoperatively. All the patients received prophylactic antibiotics.

Statistical analysis

Statistical analysis was performed using SPSS 22 (Statistical Package for Social Science; SPSS Inc, Chicago, IL, USA). Data were presented as mean \pm standard deviation. An independent samples t test was used to compare the differences between the two groups and a chi square test was used for the categorical variables. A p level of < 0.05 was considered significant.

Results:

Table-1: Characteristics of the patients

	Cesarean myomectomy (n=25)	Cesarean section only (n=25)	p-value
Age (years)	32.1 \pm 5.43	29.5 \pm 4.61	0.074
Gravida	3.3 \pm 1.79	2.56 \pm 1.86	0.158
Parity	2.13 \pm 1.42	2.34 \pm 1.46	0.608
Gestational age (weeks)	37.60 \pm 2.42	38.47 \pm 2.61	0.227
Duration of operation (minutes)	54.32 \pm 18.06	38.54 \pm 8.42	<0.001
Length of post-operative hospitalization (days)	2.42 \pm 1.45	2.17 \pm 0.70	0.441
Incidence of haemorrhage (%)	5.45 \pm 1.23	5.23 \pm 1.03	0.496
Blood transfusion (No of patients)	3(12.0%)	3(12.0%)	1.000

Table 1 compared different variables like age, gravida and parity between these two groups (Cesarean myomectomy vs cesarean section only). Duration of operation was significantly prolonged in cesarean myomectomy group (54.32 \pm 18.06 vs 38.54 \pm 8.42). It was statistically significant.

Table-2: Level of Hemoglobin in both groups

Hemoglobin level gm/dl	Cesarean myomectomy (n=25)	Cesarean section only (n=25)	p-value
Preoperative	12.31 \pm 1.22	11.61 \pm 1.3	0.759
Postoperative	10.64 \pm 1.51	10.3 \pm 1.7	0.458
Difference (median)	1.41 \pm 1.21	1.32 \pm 1.12	0.786

Table-2 compared both groups in terms of preoperative and postoperative hemoglobin level and no statistical significant difference was observed.

Table-3 : Size, types & location of Fibroids (n=64)

	Frequency (n)	Percentage %
Diameter		
<5cm	35	54.69 %
>5cm-< 10 cm	26	40.63 %
>10	3	4.69 %
Mean±SD	5.13±1.36	
Types		
Subserous	34	53.12 %
Intramural	28	43.75 %
Submucosal	2	3.13 %
Locations		
Fundus	9	14.06 %
Corpus	42	65.63 %
Lower uterine segments	6	9.38 %
Posterior	7	10.94 %

Table 3 presents the type, size and the number of fibroids removed during the cesarean section. A total of 64 fibroids of different sizes were removed from 25 patients. Most of the myomas are subserous (53.12 %).18 patients had multiple fibroids and 12 patients had myomas > 5 cm. The mean size of the removed myomas was 5.13±1.36 cm .

Table 4: Indications of cesarean section (n=50)

Indications	Number (n)	Percentage (%)
Previous cesarean section	10	20.0 %
Cephalopelvicdisproportion	8	16.0 %
Malpresentation	5	10.0 %
Fetal distress	12	24.0 %
Prolonged labour	4	8.0 %
Pregnancy induced hypertention	4	8.0 %
Maternal choice	7	14.0 %

Discussion

Uterine myomas are found in approximately in 3- 5% of pregnant women.¹⁰⁻¹³. 10% of women with fibroids in pregnancy develop complications related to the myoma. About 22% to 33% show sudden increase in size.¹⁴ Myomectomy at the time of C-section is one of the currently debated matters in the field of obstetrics due to the risks of bleeding and the fear of hysterectomy. Recently large scaled studies indicated that caesarean myomectomy could be safely performed in specifically selected cases (subserous, pedunculated or small diameter myomas< 5 cm). Larger fibroids (>5cm) are more likely to grow during pregnancy and

can cause miscarriages, obstructed labour , malpresentations, pressure symptoms, pain due to red degeneration, preterm labour, preterm premature rupture of membranes, retained placenta, postpartum haemorrhage and uterine torsion.¹⁴⁻¹⁶

Katz et al. found that 10-30% of women with myomas associated with pregnancy had complications as listed above.¹⁶ Cesarean section rates in women with myomas is approximately 73%, mainly due to obstructed labour and malpresentation.¹¹ Shavell et al. reported that pregnant woman with myomas exceeding 5 cm in diameter were at a higher risk compared to patients with smaller or no myomas ¹⁷. In Turkey, Ortac et al.¹⁸ reported no bleeding and no need for blood transfusion in patients with myomas exceeding 5 cm that had been operated with cesarean myomectomy.

According to Kaymak et al. 40 patients who underwent myomectomy at cesarean section were compared with 80 patients with myomas who underwent cesarean section alone. The mean size of fibroids removed was 8.1cm compared to 5.7cm in the controls. The authors found no significant difference in the incidence of haemorrhage (12.5% in the cesarean myomectomy group versus 11.3% in the controls) postoperative fever or frequency of blood transfusions between the 2 groups, and concluded that myomectomy during cesarean section is not always a hazardous procedure and can be performed by experienced obstetricians without any complications¹¹. Li Hui et al. performed a large retrospective case control study to assess the effectiveness, safety, complications and outcomes of myomectomy during cesarean section in Chinese women with fibroids antedating pregnancy . The study group of 1242 pregnant women with fibroids who underwent myomectomy during cesarean section was compared with 3 control groups . No significant differences were noted between the groups in the mean hemoglobin change, the frequency of haemorrhage,postpartum fever, or the length of hospital stay. These findings corroborate the fact that myomectomy during cesarean section is a safe, effective procedure not associated with significant complications¹⁹.Kwon et al' conducted a study to compare cesarean myomectomy patients with myomas> 5cm to those with myomas< 5cm in terms of preoperative and postoperative hemoglobin changes, length of hospital stay, postoperative fever and length of operation and found no significant difference between the groups²⁰. Park et al. compared 97 pregnant women who underwent cesarean myomectomy and 60 pregnant women with myomas that had undergone C- section only and identified no complications that were independent from the location of the myoma. And they reported that myomectomy could be safely performed at the same time of C-section²¹.

In our study, majority of the patients (53.12%) had subserous myomas, and were mainly located in the corpus (65.63%) and fundus (14.06%). A review of the literature shows that size of the myoma matters in cesarean myomectomy patients but does not exhibit any cut off value for this assessment. The mean diameter of myomas in our study was 5.13±1.36. Among the myomectomy cases, 35 (54.69%) had myomas with diameter < 5cm, 26(40.63%) with diameters between >

5cm to <10 cm and 3(4.69%) with diameter > 10 cm. The preoperative and postoperative Hb and incidence of haemorrhage in the present study were compared and no statistically significant difference was observed between the two groups.

Various methods have been recommended to prevent bleeding during cesarean myomectomy. The majority of studies in the literature have reported using high dose oxytocin intraoperatively and in the postpartum period²². Uterine tourniquet, electrocautery, bilateral uterine artery ligation and the other intraoperative techniques are also useful in reducing the amount of bleeding^{22,23,24}. Myomectomy added a mean operating time of 15 minutes to cesarean section. No patient had a hysterectomy or postpartum complications. The length of hospital stay was comparable in both groups.

Conclusion :

So considering the results of our study and with the knowledge in the literature, we can say that cesarean myomectomy is a safe option in hands of skilled, experienced surgeon in well equipped centre. Nevertheless further large scaled prospective should be done in this respect. The study was self funded and there was no conflict of interest.

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