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Original Research Article

A study on safety and feasibility of caesarean myomectomy: at a private institute

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ABSTRACT

Background: Myomectomy at the time of caesarean delivery is controversial because of the risk of intractable hemorrhage and increased postoperative morbidity. The incidence of myoma associated with pregnancy is reported at 0.3-5%, with a majority of myomas not requiring surgical intervention during pregnancy or delivery. Recent studies consider it to be safe in selected patients and thus allow women to have a better obstetric outcome in future pregnancies, and to avoid hysterectomy. It relieves symptoms associated with fibroids and negates the need for later surgery or sonographic follow-ups for the fibroid after delivery.
Methods: We performed a prospective cohort study of 15 patients with myomas who underwent myomectomy at the time of Caesarean section at MGM Hospital between January 2016 and December 2016. In a predesigned proforma, patient's details such as age, parity, antenatal course, gestational age at delivery, type of Caesarean section, size and location of the fibroids, blood loss, postoperative morbidity and perinatal outcome were noted.
Results: The incidence of hemorrhage in the study group was 20%. There was no significant increase in the incidence of postpartum fever (6.6%), operating time (50 min), and length of postpartum stay (5.6 days). No patient required hysterectomy. Size of fibroid did not appear to affect the incidence of hemorrhage, although intramural myomas were more associated with hemorrhage.
Conclusions: This study shows that myomectomy during caesarean section is a safe procedure and is not associated with major intraoperative and postoperative complications.

Keywords: Caesarean delivery, Fibroid, Myoma, Myomectomy

INTRODUCTION

Uterine myomas are the most common pelvic tumors of women over the age of 30 years. They are benign tumours of the uterine smooth muscle commonly found in a great proportion of women who live on the Asian-African Continent.[1] Given the fact that their growth is related to their exposure to circulating estrogens, fibroids obtain their maximum dimension during the reproductive period. Although the exact incidence is unknown, they generally affect women in the childbearing ages. At postmortem, an incidence of about 50% of women has been documented, while they have been encountered in 0.3% to 3% of pregnancies.[2-4]

The incidence of myoma associated with pregnancy is reported at 0.3-5%, with a majority of myomas not requiring surgical intervention during pregnancy or delivery.[5-8] In the pregnant women with coexisting fibroids, there are increased incidences of first trimester losses, pressure symptoms, pain from red degeneration (necrobiosis), torsion of a pedunculated variant,

malpresentations, preterm rupture of membranes and preterm labour during pregnancy, obstructed labour from a cervical or lower segment mass intrapartum and retained placenta, subinvolution of the uterus, postpartum endomyometritis, and postpartum haemorrhage in the immediatepostpartum period.[3,9-11]

Myomectomy at the time of caesarean delivery is controversial because of the risk of intractable hemorrhage and increased postoperative morbidity. But recent studies suggest that Caesarean myomectomy is safe to perform in selected patients and results in no significant post-operative morbidity.[6,12-18] If these two procedures can be safely performed at the same time, the risk of anaesthetic complications, multiple surgeries, adhesions and intra or postoperative haemorrhage, exorbitant costs of operative procedures, and hospital stay could be reduced. The procedure allows women to have a better obstetric outcome in future pregnancies, and to avoid hysterectomy in younger patients. It relieves symptoms associated with fibroids and negates the need for later surgery or sonographic follow-ups for the fibroid after delivery. This study was thus conducted to determine the safety and feasibility of caesarean myomectomy.

METHODS

We performed a prospective cohort study of 15 patients with myomas which resulted in pregnancy complications. All 15 patients underwent myomectomy at the time of Caesarean section at MGM Hospital between January 2016 and December 2016. In a pre-designed proforma, patient's details such as age, parity, antenatal course, gestational age at delivery, type of Caesarean section, size and location of the fibroids, blood loss, postoperative morbidity and perinatal outcome were noted.

Inclusion criteria

All of the women in the study fulfilled the following five criteria:

- Documented fibroid during the index pregnancy by antenatal ultrasound or at surgery
- Delivery by Caesarean section
- No evidence of antenatal bleeding
- No other procedure at Caesarean apart from myomectomy, and
- No pre-existing coagulopathy.

Informed consent was obtained from all patients preoperatively. Adequate blood and blood products were arranged preoperatively. Myomectomy was performed in the conventional fashion using an incision over the myoma, enucleating it, and obliterating the dead space in two to three layers using interrupted 1-0 Vicryl sutures (Ethicon). Anterior lower segment myomas encroaching on the proposed incision line were excised prior to delivery of the baby while the others were removed after the baby had been delivered. The Caesarean incision was closed in 2 layers with 1-0 Vicryl sutures. High dose oxytocin was used intraoperatively and postoperatively, and some patients required additional uterotonic agents. Blood loss was estimated from suction aspiration, and from weighing mops, swabs and drapes used during surgery. Prophylactic antibiotics were administered to all the patients. Primary outcomes analyzed were change in hematocrit, postpartum fever, operative time, and length of postoperative hospital stay. A review of literature was performed using PubMed, Medline, and Google.

RESULTS

During the study period of one year (Jan 2016 to Dec 2016) 15 antenatal patients were recruited for the study in accordance with the inclusion criteria as mentioned earlier. The median age of women in the study, was 30 years. The demographic and clinical profile of the patients (age, parity, gestational age at delivery, size of myomas, skin and uterine incisions used during surgery) are summarised in Table 1.

Table 1: Demographic and clinical profile of the patients.

No. of patients	15
Median age in years (range)	30 (20-38)
Median parity (range)	0 (0-3)
Median gestational age in weeks (range)	37 (28-39)
Median size of fibroid in cm (range)	4.5 (3.5-10)
Type of skin incision	
Pfanneisteil	10
Vertical	5
Type of caesarean section	
Low transverse	12
Classical	3

Median age, parity and gestational age at delivery were comparable to other studies.[19]

In present study, most of the patient underwent low transverse type of caesarean section, while 20% had classical section. Many studies show such preponderance of lower segment sections. One such study included caesarean sections done using the lower segment transverse incision in 105 out of 111 (94.6%) cases and 250 out of 257 (97.3%) controls (who had caesarean section without myomectomy), while the classical incision was employed in the remainder of the subjects.[19] An Israeli study noted that, in four out of 32 cases (12.5%), the caesarean sections were classical, and the remainder were done via a lower segment incision.[20] However, the myomectomy incisions were generally made on the anterior uterine wall.[1,21] When the size of the uterine myoma exceeded 6 cm, the operation time was observed to be longer in the caesarean myomectomy group.[22] The characteristics of fibroid encountered during surgery is shown in Table 2.

Table 2: Type of fibroids.

Characteristics	%
Intramural	33.3
Subserosal	26.6
Pedunculated	20
Submucosal	6.6
Multiple sites	26.6

The indications for myomectomy in the study group is summarised below in Table 3. Documented reasons in literature for the removal of uterine fibroids during caesarean section include the prevention of necrobiosis, pain during pregnancy, and unusual intraoperative appearance of the tumour, to gain access to the baby in patients in whom fibroids are obstructing the lower uterine segment, with pedunculated and anterior uterine fibroids, and when the fibroids cause difficulty with uterine wound closure thereby causing significant blood loss.[10,19,21,23-26]

Table 3: Indications of myomectomy.

Indication	%
Pedunculated subserous	13.3
Present on lower uterine segment/obstructing	20
Pain during pregnancy	6.6
Prevention of degeneration	13.3
Non-specified	46.6

Table 4: Antenatal course of index pregnancy.

Complication	%
Threatened abortion	6.6
Malpresentation	13.3
Placenta previa	13.3
PPROM*	6.6
Pressure symptoms	-
Pain (due to red degeneration)	6.6

*PPROM-Preterm premature rupture of membrane; No patient had this complication

The common antenatal complications recorded (as shown in Table 4) were abnormal lie/malpresentation (13.3%), placenta praevia (13.3%), and threatened abortion (6.6%). Some studies have concluded that future fertility and/or subsequent pregnancy outcome in patients is unaffected by caesarean myomectomy. Perinatal outcome was good in majority of the cases, as depicted in Table 5. Hemorrhage was defined as a decrease in hematocrit of 10 points from the preoperative value to the postoperative value or the need for intraoperative transfusion. Operative time was calculated from skin incision to skin closure. Fever was defined as postoperative temperature greater than or equal to 38.0°C. Despite majority of the patients having large myomas and 50% being intramurally located, hysterectomy was not required in any patient. Stepwise devascularisation was necessary in 3 cases. Myomectomy added 15 minutes to the operating time and 1.5 day to the hospital stay but there was no significant postoperative complication. None of the patients had postoperative sepsis.

Table 5: Perinatal outcome.

Outcome	Result
Term	80 %
Preterm	20 %
Birth weight (median) in kg	2.8
APGAR score (median)	9-10

Other documented perioperative concerns during caesarean myomectomy include postoperative anaemia, and puerperal sepsis.[21,27] Repeat operations following caesarean myomectomy have been documented mostly for excessive bleeding and one for haematoma formation below the scar.[20] These have sometimes resulted in hysterectomy. A retrospective case-controlled study found no differences in the mean hemoglobin change, the incidence of postoperative fever, and the length of hospital stay among all of the groups.[28]

Table 6: Outcome of caesarean myomectomy.

Outcome	%
Mean change in haematocrit	7.5
Incidence of hemorrhage	20
Frequency of blood transfusion	13.3
Incidence of post-operative fever	6.6
Mean operation time (in minutes)	50
Mean increase in post-partum stay at hospital (in days)	5.6

DISCUSSION

Uterine myomas are found in approximately 0.3-5% of pregnant women.[5-8] A great majority of myomas associated with pregnancy remain asymptomatic and do not require treatment, with about 22-32% showing increased growth.[29] 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.[29-31] Katz et al. found that 10-30% of women with myomas associated with pregnancy had complications as listed above.[31] Caesarean section rates in women with myomas are higher, up to 73%, mainly due to obstructed labour and malpresentations. The management of fibroids encountered at Caesarean section remains a therapeutic dilemma. Preservation of the uterus without loss of its function and compromising the mother's ability to bear more children is definitely a greater surgical achievement than a hysterectomy; hence, Caesarean myomectomy must be considered by experienced obstetricians wherever feasible. Some authors report a higher incidence of postpartum haemorrhage and puerperal sepsis if the fibroid is not removed at Caesarean section.[7-8] In addition, the uterus in the immediate postpartum

phase is better adapted physiologically to control haemorrhage than at any other stage in a woman's life; hence, it seems logical to perform Caesarean myomectomy.

Recent studies have described techniques to minimize blood loss at Caesarean myomectomy including uterine tourniquet, bilateral uterine artery ligation, and electrocautery.[32-34]

In our series, stepwise devascularisation was required to control atonic PPH in 3 patients; in all others, local infiltration of dilute adrenaline was used to minimize bleeding at myoma bed.

The experience of different authors who have performed Caesarean myomectomies is presented in Table 7 including the present series.

Table 7: A comparison of various studies on cesarean myomectomy.

Study	Avg. operating time	Blood loss	Post-op morbidity	Hysterectomy*
Kaymak[6]	40.7	12.5%	0.3%	-
Roman[13]	>60	12.6%	5.4%	-
Kwon[15]	na	700 ml	13%	-
Ahikari[16]	35±3.2	<500 ml	1%	-
Present study	55	<500 ml	7.5%	-

*Hysterectomy- none of the study has reported this complication.

According to Kaymak et al, 40 patients who underwent myomectomy at Caesarean section were compared with 80 patients with myomas who underwent Caesarean section alone. The mean size of the fibroids removed was 8.1 cms compared to 5.7 cms in the controls. The authors found no significant difference in the incidence of haemorrhage (12.5% in the Caesarean myomectomy group versus 11.3% in the controls), postoperative fever, or frequency of blood transfusions between the 2 groups, and concluded that myomectomy during Caesarean section is not always a hazardous procedure and can be performed by experienced obstetricians without any complications.[6]

Another study reported 22 myomectomies during Caesarean for large fibroids (>5 cm) and advocate it to minimise postoperative sepsis.[32] Burton et al. reported 13 cases of myomectomy at Caesarean section, only 1 case had intra-operative haemorrhage and they concluded it to be safe in selected patients.[35]

Li Hui et al. performed a large retrospective case-control study to assess the effectiveness, safety, complications, and outcomes of myomectomy during Caesarean section in Chinese women with fibroids antedating pregnancy.[28] The study group of 1,242 pregnant women with fibroids who underwent myomectomy during Caesarean section was compared with 3 control groups: 200 pregnant women without fibroids (Group A), 145 pregnant women with fibroids who underwent caesarean alone (Group B), and 51 pregnant women who underwent Caesarean hysterectomy (Group C). No significant differences were noted between the groups in the mean haemoglobin change, the frequency of haemorrhage, postoperative fever, or the length of hospital stay. These findings corroborate the fact that myomectomy during Caesarean section is a safe, effective procedure not associated with significant complications. Uterine fibroids could become symptomatic, and, then, therapy becomes inevitable. However, the most popular management options are "conventional" myomectomy and hysterectomy. If myomectomy could be safely done during caesarean deliveries, it could prevent the added morbidity of a separate procedure (laparotomy to remove fibroids, anaesthesia, and its possible complications) in the future, justifying the cost effectiveness of the approach.[36] This would be a significant benefit of the procedure in resource-constrained settings.[3] Puerperal uterine subinvolution could also be minimized as well as other known complications of fibroids such as menorrhagia, anaemia, and pain (e.g., from torsion or "red" degeneration during a subsequent pregnancy).[1] Also, since fibroids are sometimes located in the lower uterine segment, their nonremoval will only leave the surgeon with one alternative: a "classical" incision on the uterus with all of its attendant complications.

Apart from the above-stated advantages of caesarean myomectomy, another benefit is that it increases the chances of vaginal delivery in subsequent pregnancies when removed from the lower uterine segment.[37] The scar integrity following caesarean myomectomy has been shown to be better than that following interval myomectomy when assessed with serial ultrasound scan in subsequent pregnancies and at subsequent caesarean section.[38,39]

The results from the reviewed studies indicate that caesarean myomectomy is safe and offers no significantly increased risks to the patient than caesarean section alone. These surgeries have been largely performed on pedunculated and anterior fibroids individually less than 6cm and those obstructing the lower uterine segment or wound closure after extraction of the baby. However, if it is performed as an emergency procedure when the patient is already in labour or has ruptured the fetal membranes, there is an increased risk of sepsis occurring.[21] The

problem of haemorrhage with the need for blood transfusion, especially in our environment where unsafe blood transfusion due to transmission of Human Immunodeficiency Virus (HIV) and serum Hepatitides still occurs, is also of paramount concern.[40] Improving the outcome of this procedure would also require improved blood-banking services.

The limitations of this study are; Small sample size. Future obstetrical outcome was not evaluated.

CONCLUSION

In conclusion, safe practices of caesarean myomectomy appeal best in endemic zone of fibroids. However, the decision needs to be cautious and limited according to characteristics of myoma (proper and judicious patient selection) and other pre-requisites (blood bank facilities, etc. as in well-equipped tertiary settings), which could also have a positive bearing on future reproductive outcomes.

Keeping aside all controversies, we suggest that myomectomy during caesarean section could be gradually recommended. Persistent therapeutic dilemma calls for further research to come up with best practices guidelines for caesarean myomectomy in terms of; Appropriate selection criteria, Surgical techniques, Haemostatic options (eg: vaginal misoprostol, bupivacaine-epinephrine injection, and enucleation of the myomata by morcellation, Long-term obstetric consequences, Risk of uterine rupture in subsequent pregnancies.

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