

Caesarean Myomectomy to Prevent Immediate or Interval Myomectomy, Hysterectomy and Postpartum Hemorrhage

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ABSTRACT

Background & Objective: Uterine fibroids (UF) in pregnancy is a condition, where symptomatic or asymptomatic fibroids in the uterine cavity may cause complications in pregnancies. Placental abruption and preterm labor, occurs in late pregnancy, postpartum hemorrhage, caesarean section and retained placenta in perinatal period. This study aimed to reckon whether the surgical Caesarean myomectomy is still a gold standard in myoma removal in pregnant women.

Materials & Methods: This study was retrospectively conducted in pregnant women deliveries with uterine fibroids who underwent Myomectomy with lower segment caesarean section (LSCS). The caesarean myomectomy cases were compared with LSCS alone controls in 1:2 ratio. The primary outcome is to minimize blood loss and need for blood transfusion. The secondary outcome is the length of surgery duration and hospital stay.

Results: The outcome of case and control compared was 43 caesarean myomectomy with LSCS as case group and 86 LSCS Alone as control group. The incidence of hemorrhage in case group was 10 out of 43 while control was 2 out of 86 (2.32%) with P-value of 0.0017. The secondary outcome was the length of surgery duration and hospital stay which were found statistically significant between the case and control groups, with P-value = 0.0001 and 0.0072, respectively.

Conclusion: Caesarean Myomectomy can be the effective surgical option to enucleate uterine myoma, and preserve uterus and jettison from eventful or symptomatic uterine fibroids. To have the chances for prevention of immediate or interval - myomectomy / hysterectomy and control of post-partum menstrual over bleeding.

Keywords: Caesarean Myomectomy, Interval myomectomy, Late hysterectomy, Myoma, Uterine Fibroids



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Introduction

Leiomyomas (Uterine Myoma) are tumours found in the uterine smooth muscles, and they are benign in nature. The age at which the uterine tumour growth takes place is undefined; the issue is faced from the pre-menorrhea to post-menopause of women's life (1, 2, 3, 4). The sustained presence of fibroids in the uterine tract may be symptomatic or asymptomatic (5, 6, 7). Uterine fibroid syndromes occur rarely, featuring physical enlargement of the fibroids exerting additional pressure on urinary bladder and rectum; leading to increase urination frequency and rectal pressure respectively (8, 9, 10).

The etiology of leiomyoma is indeterminate. Fibroid may cause infertility among reproductive age group women. At times, it may cause severe or uncontrolled bleeding in post-menopausal women (11, 12, 13, 14). Incidence range was between 217 to 3745 cases /

100,000 women. The prevalence ranges were from 4.5 to 68.6 percent (15). The incidence of uterine fibroids in pregnancy has a growing phase and the scenario has shown a paradigm shift (12, 16). Bleeding and spontaneous miscarriage occur in early pregnancy; while, placental abruption and preterm labor, occur in late pregnancy; and PPH, caesarean section and retained placenta occur in perinatal period (17). Fibroid cell's growth factors and cell angiogenesis including cell apoptosis etc. are regulated by hormones and intrinsic chemical changes. The size of the fibroid varies and the risk increase with the size of fibroid (18).

FIGO Classification of uterine fibroids based on fibroid location (19).

- 0 pedunculated intracavity
- 1 submucosal, < 50% intramural

- 2 submucosal, $\geq 50\%$ intramural
- 3 100 % intramural, but in contact with the endometrium
- 4 intramural
- 5 subserosal, $\geq 50\%$ intramural
- 6 subserosal, $< 50\%$ intramural
- 7 subserosal pedunculated
- 8 others e.g. cervical

The uterine leiomyoma in gynecological care is management through several therapeutic options available, such as mifepristone, ulipristal acetate, aromatase inhibitors and anti-hormonal drugs (10, 20, 21, 22, 23). Surgical interventions include Myomectomy, Hysterectomy, endometrial ablation and other alternative surgical interventions are exploited. (24, 25). The uterine leiomyoma management in obstetrics care can be through myomectomy with LSCS (26). Apprehension of hemodynamic stability during caesarean which may end up in hysterectomy had raised the reluctance in performing caesarean myomectomy (27).

Immediate post-period may have events such as profuse bleeding, pain, uncontrolled bleeding, or hindrance of the uterine fibroid causing inability of the uterus muscle to contract. Such a case may need immediate surgical intervention post-operatively to treat the uncontrolled bleeding or late surgery becomes unavoidable and the only option in that stage. Increased fibroids in pregnancy had also increased the need for myomectomy in pregnancy deliveries. Earlier Caesarean myomectomy was reluctantly practiced for the reason for intractable hemorrhage, hysterectomy and increased postoperative morbidity, risk of blood transfusion and increased hospital stay.

The present study was an attempt to reckon whether the surgical Caesarean myomectomy is still a gold standard in myoma removal in pregnant women.

Materials and Methods

This retrospective study was conducted in a tertiary care obstetrics and gynecology hospital at Tirunelveli, South Tamilnadu, India. Data was collected from Jan 2015 to Oct 2018; cases planned for cesarean myomectomy were enrolled in this study. Laboratory criteria for haemoglobin levels in pre-partum and post-partum were perceived in the study.

Generally, in LSCS, the decision to perform caesarean section is made due to the many reasons that are found occurring during ANC period or perinatal phase of delivery. In caesarean myomectomy with LSCS, the caesarean section is performed due to uterine fibroids such as obstruction in the normal vaginal delivery path.

The routine ultrasonography (transvaginal) performed for the pregnant women's screening, shown 43 women with uterine fibroid and all underwent caesarean myomectomy. All pregnant patients with uterine fibroid were identified and educated about the condition right from the first trimester of pregnancy. They were also informed about the uterine fibroid growth and their possibilities to interfere with the normal vaginal delivery. They were asked to report to the hospital any time if there is a labor and/or an episode of even minor bleeding noticed.

Pregnant women with uterine fibroid(s) having satisfied the following inclusion criteria were considered for the study: Uterine fibroid in pregnancy identified by ultrasonography at antenatal care; All pregnant women with uterine fibroid with tendency to undergo caesarean myomectomy, irrespective of their parity; The Pregnant women with UFs, to deliver the baby by CM based on previous LSCS after attaining term pregnancy; Preterm pregnancy visiting emergency room with labor or severe bleeding; Patient having unfavourable fetal presentation because of their myoma irrespective of their previous obstetric history (maybe previous normal vaginal deliveries).

Pregnant women with uterine fibroid(s) who required other procedure apart from myomectomy during caesarean section; and/or had a history of coagulopathy were excluded from the study

Steps of caesarean myomectomy procedure:

1. Incision in the lower section to open the abdomen;
2. After the delivery of the baby, uterus was externalized to see the position of the myomas, fibroid mapping was done;
3. Myoma enucleated, vessel sealer was used to enucleate and seal;
4. The dead space was obliterated in two or three layers. Continuous suturing followed by interrupted suturing with 1-0 vicryl sutures;
5. Anterior lower segment myomas were removed before delivering the baby when seen obstructing the entry to the lower segment;
6. Followed by the delivery, the myomas in the other sections was removed;
7. The incision for caesarean is closed with 1-0 vicryl sutures, in two layers;
8. High dose oxytocin (40 IU, as 20 IU in 500 ml NS in two sittings) was used intraoperative and postoperative, and some patients required additional uterotonic agents like Inj. Carboprost Tromethamine 250 mcg IM and Rectal Misoprostol 800 mcg;
9. The mops, drapes and swabs used in the surgery, and suction aspiration, were weighed to quantitate blood loss;
10. Perfect haemostasis was ensured;

11. Abdomen closed as usual;
12. All patients received a prophylactic antibiotics.

A total of 43 pregnant women with h/o uterine fibroids who required caesarean section were considered in the study. Two groups were made, Case Group 1- caesarean myomectomy with LSCS in 43 deliveries and Control Group 2- LSCS alone in 86 deliveries and compared in 1:2 ratio.

Results

Out of 43 women enrolled as cases in the study a total of 51 fibroids were removed, out of which singleton fibroids, and doubleton fibroids were epitomized in 35

women (68.62%) & 8 women (31.37%) respectively. None had shown a triple, or multiple counts of fibroid.

The demography age distribution was found major of age group 26 to 30 years with 20 (46.51%) and followed by age group 20 to 25 and 31 to 35 years with 9 (20.93%) each.

22 (51.16%) were primigravida cases among caesarean myomectomy group. Of the caesarean section cases, 95% was done at term except in two cases of which one patient had preeclampsia and oligohydramnios at gestation age 29 weeks with 1 subserosal fibroid and another case at 30 weeks with 2 intramural fibroids ([Table 1](#)).

Table 1. Demographic data

	CASE , n=43	CONTROL, n=86
Age (Years)	Number (Percentage)	Number (Percentage)
<20	0 (0)	8 (9.3)
20-25	9 (20.93)	38 (44.18)
26-30	20 (46.51)	29 (33.72)
31-35	9 (20.93)	11 (12.79)
>35	5 (11.62)	0 (0)
Parity		
Primigravida	22 (51.16)	33 (38.37)
2	14 (32.55)	32 (37.2)
3	5 (11.62)	11 (12.79)
≥4	2 (4.65)	10 (11.62)
Gestation age at LSCS (weeks)		
<32	2 (4.65)	3 (3.48)
32-34	1 (2.32)	1 (1.16)
35-37	1 (2.32)	12 (13.95)
38-40	39 (90.69)	70 (81.39)

Out of 51 fibroids, 26 (50.98%) were found to be Intramural; 24 were located away from the incision site; the size of intramural fibroids ranged from 2 × 2 cm to 15 × 10 cm. Subserosal fibroids were 22 (43.13%) in number and except for one, all were

located away from incision site. Submucous fibroids were 3 (5.88%) in number and off the incision site. Out of all types of fibroids, 95% were found to be off the incision site ([Table 2](#)).

Table 2. Distribution of Leiomyomata

	Number	Percentage
Number of fibroids n = 51		
1	35	68.62
2	8	31.37
≥3	0	0
Types of fibroids n = 51		
Subserosal fibroids	22	43.13
Intramural fibroids	26	50.98
Submucosal fibroids	3	5.88

	Number	Percentage
Location of fibroids n = 51		
Off incision	48	94.11
On incision	3	5.88
Size of fibroids (cm) n = 51		
<3	11	21.56
4.0-6.0	29	56.86
7.0-9.0	3	5.88
10.0-12.0	7	13.72
>12	1	1.96

The most occurring fibroid was Intramural type and it accounted for 26 out of 51 fibroid. It is the largest fibroid among other types, eight fibroids were in the range of 10 × 8 and 15 × 10 with average operating time more than 80 minutes. These fibroids were almost located off the incision site.

Blood loss in caesarean myomectomy with LSCS women, was 10 out of 43 (23.25%); while in LSCS alone women was 2 out of 86 (2.32%) with P-value=0.0017. The secondary outcome was the length of surgery duration and hospital stay that were found to be statistically significant between the case and control

groups, with P-value = 0.0001 and 0.0072 respectively ([Table 3](#)).

Post-operative complication headache, wheezing, eclampsia were present in one, patient each; abdominal distention and abdominal distention with vomiting were present in two, patients each. Of 43 case group, 8 underwent bilateral internal iliac artery ligation procedure.

The co-morbid conditions of the case group were gestation diabetes mellitus in 9 patients, pregnancy induced hypertension in 3 patients, Hypothyroid and previous LSCS each in 2 patients, and heart disease, placenta previa and preeclampsia each in 1 patient.

Table 3. Caesarean Myomectomy and Caesarean alone - outcome comparison

Difference in preoperative and post-operative haemoglobin (mg/dL)										
Hb difference	Group	N	<1.0	1.1-2.0	2.1-3.0	3.1-4.0	>4.0	Mean	SD	P-value
	Cases	43	26 (60.46)	7 (16.27)	6 (13.95)	3 (6.97)	1 (2.32)	1.253	0.955	0.0017
	Controls	86	65 (75.58)	19 (22.09)	2 (2.32)	0 (0)	0 (0)	0.837	0.363	
Duration of Surgery (minutes)										
OT time	Group	N	<45	46-60	61-75	76-90	>91	Mean	SD	P-value
	Cases	43	7 (16.27)	18 (41.86)	8 (18.6)	7 (16.27)	3 (6.97)	63.84	18.15	0.0001
	Controls	86	32 (37.2)	30 (34.88)	20 (23.25)	3 (3.48)	1 (1.16)	49.42	13.16	
Duration of Hospital Stay (days)										
Discharge Day	Group	N	≤4	5	6	>7		Mean	SD	P-value
	Cases	43	23 (53.48)	11 (25.58)	6 (13.95)	3 (6.97)		4.74	1.03	0.0072
	Controls	86	13 (15.11)	45 (52.32)	16 (18.6)	12 (13.95)		5.41	1.25	

Discussion

Cesarean Myomectomy was seen in 3 - 12 % of pregnant women (28, 29). The incidence of uterine fibroid was disproportionate across the ethnic groups; Blacks have fivefold increase UF risk than White, Asian / Hispanic race. An estimate of reproductive age group getting UF incidence was from 5.4 to 77 percent (15).

The specific determinants of uterine myoma' s aetiology was anonymous. UFs were common in nullip-

arous women and increasing parity decreased the incidence and number of fibroids. (30). Such uterine fibroids left as such in LSCS may give rise to immediate post-partum complication like: failing to retraction involution of uterus and uterine atony, and late post-partum complication in menstruation cycles like disturbance, severe bleeding / pain. The morbidity rate of mother increase in uterine fibroids with increase in blood loss (12). Future pregnancies may also have

interference by the presence of uterine fibroids. Concurrent interventions were needed to enucleate, preserve uterus and barring from eventful or symptomatic uterine fibroid. Cesarean myomectomy was considered in preventing immediate or interval myomectomy, hysterectomy and postpartum haemorrhage.

The more delay in pregnancy age or advanced maternal age/late marriage among working women and postponing pregnancy had also contributed for a rise in uterine myoma in pregnancy. Incidence of UF frequency is relatively higher in nulliparous women than parous women. The obstetricians encountering such uterine myoma in pregnancy with complexity in pregnancies has more chance of undergoing LSCS. This complexity had impacted the mortality rate of mother.

The primary outcome was to learn the extent of preventing blood loss and reduce blood transfusion that occurs as a result of haemorrhage. Blood loss occurred in 10 out of 43 (23.25%) of the patient in cesarean myomectomy cases whereas 2 out of 86 (2.32%) in LSCS only, controls. In Cesarean myomectomy surgery, 6 patients received blood transfusion; in which one patient received 4 units of blood, and five patients received 2 units of blood, and had bilateral internal iliac artery ligation.

The secondary outcome was the length of surgery duration and hospital stay that has shown a clinically and statistically significant response. This implicates the post-partum recovery rate as well.

Our results suggest that CM performed in uterine fibroid pregnancies was an effective management option. The anatomical changes in the gravid uterus in pregnancy makes the capsule loosen that helps in technical handling to easily enucleating the myoma. The physiological changes in uterus enables immediate arrest

of haemorrhage while high dose of oxytocin and haemostasis is achieved. The Post-partum uterus is in sound condition both anatomically and physiologically in performing enucleation of myoma and maintaining hemodynamic. The gravid uterus during delivery, particularly in LSCS is in ideal condition to perform myomectomy than in uterus during other stages of women.

In this clinical based study, hysterectomy was averted in all caesarean myomectomy patients, as well as especially saving 22 (51.16 %) primigravida uteri for future pregnancy. Thus, reducing considerable post-partum mortality and morbidity with the prevention of post-partum blood loss like PPH and preserving uterus from post-partum, immediate, or interval, or late, myomectomy and hysterectomy.

Conclusion

Life threatening post-partum haemorrhage may occur when UF is left as such in C-section deliveries, requiring immediate hysterectomy; or menstrual over bleed prompting for late myomectomy or hysterectomy. Cesarean myomectomy is cost effective and avoids interval myomectomy. Thus, preserves uterus for future fertility.

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Conflict of Interest

The authors declared no conflict of interest.

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