

Original research article

## Outcome Analysis of Myomectomy During Cesarean Section -An Observational Study

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### Abstract

**Purpose:** Most obstetricians hesitate to perform myomectomy during caesarean section due to a theoretical risk of haemorrhage. The aim of this study is to determine the safety and feasibility of caesarean myomectomy

**Methodology:** From January 1, 2010, to January 1, 2019, this 9-year prospective observational study was carried out in a tertiary care teaching hospital in South Kerala, India. The research group, which consisted of all (114) pregnant patients who underwent caesarean myomectomy between January 2010 and January 2019, was compared to 77 non-pregnant patients with fibroids who underwent interval myomectomy during the same time period. The caesarean myomectomies and interval myomectomies done by the same experienced surgeon were taken for the study. Both the groups were compared for the following outcome variables: duration of the surgical procedure, drop in haemoglobin from the pre-operative to post-operative period, length of hospital stay, incidence of post-operative complications like the need for blood transfusion, sepsis etc.

**Results:** The incidence of haemorrhage in study group was 11.4% as compared with 27% in control group( $p=0.02$ ). The incidence of sepsis among the two groups was not statistically significant. No patient in either group required a hysterectomy. Mean length of surgery for caesarean myomectomy was 91.64 minutes compared to a mean of 109.97 minutes in open myomectomy, which was statistically significant( $p=0.000$ ). Average length of hospital stay in caesarean myomectomy was 6.05 days compared to a 6.52 days for open myomectomy, which was statistically significant ( $p=0.03$ ).

**Conclusion:** In selected patients, caesarean myomectomy is a safe procedure in tertiary centres with experienced surgeons.

**Key words :** caesarean myomectomy, interval myomectomy, safety, efficacy

## Introduction

Uterine fibroids are benign smooth muscle tumors of uterus. They are found in about 20 - 50% of women in the reproductive age group<sup>1</sup>. The reported incidence of fibroids in pregnancy is approximately 0.1 to 10.7% of all pregnancies<sup>2</sup>. Different complications have been reported in pregnancy complicated with fibroids like antepartum hemorrhage, acute abdomen, preterm labor, fetopelvic disproportion, malposition of the fetus, retained placenta, postpartum hemorrhage (PPH), red degeneration, dysfunctional labor, and intrauterine growth restriction. These complications are more commonly seen with large submucosal and retroplacental fibroids<sup>3</sup>. With the exception of small, pedunculated fibroids, the conventional teaching advises against myomectomy during cesarean delivery due to theoretical risks of intractable hemorrhage and increased postoperative morbidity. However, recent studies suggest that cesarean myomectomy is associated with a clinically insignificant increase in operative time, blood loss, and hospital stay, especially with multiple and large size myomas<sup>4,5,6</sup>. In an attempt to find out the safety and efficacy of cesarean myomectomy, we observed our nine-year experience with the procedure in our institution.

## Aims and Objectives

1. To study the outcome of myomectomy during cesarean section.
2. To compare the safety, feasibility, and outcome of myomectomy during cesarean section with myomectomy in non-pregnant women.

## Methodology

This 9-year prospective observational study, from January 1, 2010, to January 1, 2019, was carried out in a tertiary care teaching hospital in South Kerala, India. The study group included all (114) pregnant patients who underwent cesarean myomectomy between January 2010 and January 2019. The comparison group included 77 non-pregnant patients with confirmed fibroids who underwent interval myomectomy within the same time frame. The surgeries in both of these groups were performed by the same senior obstetrician and team.

## Inclusion Criteria

All pregnant women with fibroid uterus who needed cesarean for obstetric indications were included in the study group.

## Exclusion Criteria

The pregnancies complicated with:

- 1) Gestational Hypertension (GHTN)
- 2) Thrombocytopenia
- 3) Bleeding disorders
- 4) Anaemia
- 5) Those patients who had severe bleeding during cesarean section were also excluded from the study.

The cesarean myomectomies and interval myomectomies done by the same surgeon were taken for the study. All cases of interval myomectomy performed by the same surgeon during the study period were included in the comparison group.

Pfannenstiel incision was chosen for most of the situations except in three situations where vertical incision was preferred because of the presence of a huge fibroid extending up to and above the umbilicus. Uterine incision was made using a low transverse incision in most of the patients. Myomectomy was done after the delivery of the baby and the placenta. The number, size

and position of the myoma were ascertained beforehand. Oxytocics were administered and it was ensured that the uterus was contracted and retracted before starting myomectomy. Intravenous oxytocin at a dose of 20 units in 500 ml NS at 40-60 drops per minute was infused as the uterotonic agent in all cases. PGF2- alpha was administered only in those cases where bleeding was more than usual.

Oxytocin was continued intravenously in postoperative period to prevent postpartum haemorrhage. A linear incision was made on the myoma using monopolar cautery and myoma was enucleated from myometrium. All myomas irrespective of the size and site were removed. Most of the cases of interval myomectomies were done using a Pfannenstiel incision except in a few cases where the fibroids were huge. Intraoperative bleeding was controlled using bipolar cautery; vasoconstrictive agents were not used intraoperatively for either of the cases. The myometrium was repaired in 2 layers with 1-0 vicryl and outermost layer closed with 2-0 vicryl (baseball sutures) in both the groups.



**Fig 1. Fundo anterior fibroid after caesarean section**



**Fig 2. After myomectomy**

Primary outcomes analysed were change in haematocrit, postpartum fever, operative time and length of post-operative hospital stay. Haemorrhage was defined as a drop in haematocrit of 10 points from the preoperative value or the need for intraoperative transfusion. Operative time was calculated from skin incision to skin closure as indicated in anaesthesia notes. Fever was defined as post-operative temperature greater than or equal to 38 degree Celsius.

**Statistical Analysis**

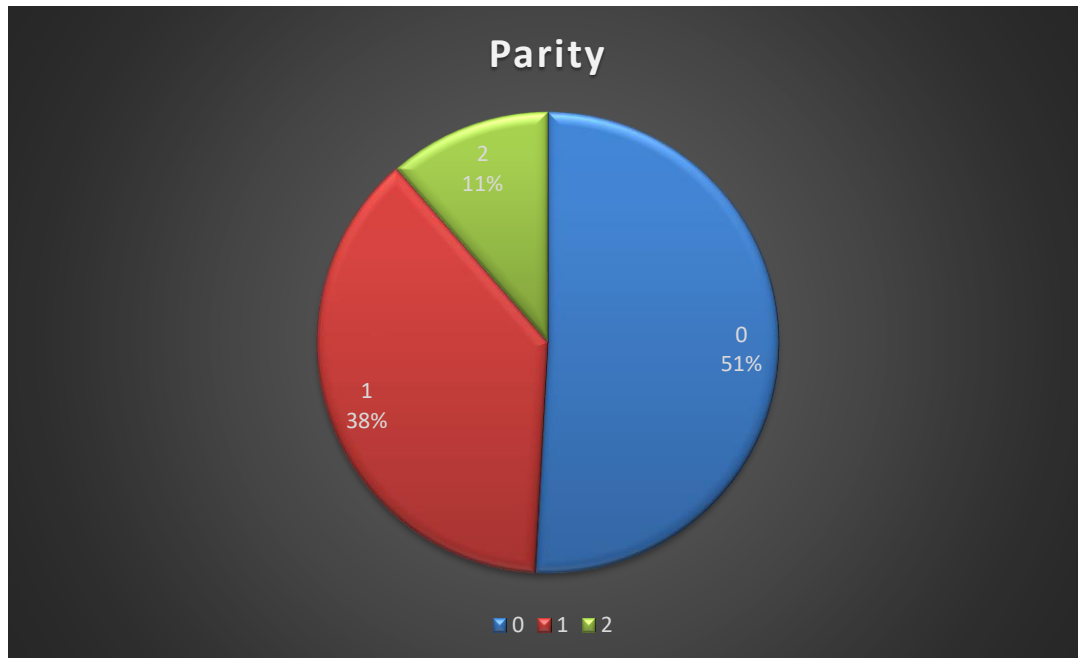
For statistical analysis, IBM SPSS Software version 15.0 was used. Data were entered in Microsoft excel. Descriptive and inferential analyses were done. Continuous data were summarised as mean+/- standard deviation and categorical data as number and percentage. Student “t” test and chi-square test were used to determine statistical significance a P -value 0.05 was considered statistically significant. The maternal demographics and characteristics of myomas were evaluated. The hemoglobin change between preoperative and postoperative period, duration of surgery, intra and post-operative complications and length of hospital stay were analysed.

**Results**

During the study period, 114 women underwent caesarean myomectomy and 77 non-pregnant women underwent interval myomectomy.

Study parameter	Study group	N	Mean	Standard deviation
Age	Caesarean myomectomy	114	30.63	4.747
	Interval myomectomy	77	35.18	6.030

The mean±SD age of women who underwent caesarean myomectomy was 30.63±4.747 years and that of interval myomectomy was 35.18±6.030 years.



**Figure 3: Parity**

58 cases out of 114 women who underwent caesarean myomectomy were primigravida (51%)

**Table 3: Number of fibroids in the two groups.**

No of fibroids		Group		Total	P value
		Caesarean myomectomy	Interval myomectomy		
<b>Single</b>	No	86	31	117	P=0.000
	%	75.4%	40.3%	61.3%	
<b>Multiple</b>	No	28	46	74	
	%	24.6%	59.7%	38.7%	
<b>Total</b>	No	114	77	191	
	%	100%	100%	100%	

Majority of women with caesarean section had single fibroid (75.4%), where as 59.7% of the women who underwent interval myomectomy had multiple fibroids. This was found to be statistically significant (P=0.000).

**Table 4: Location of fibroids in the two group.**

Location		Group		total	P value
		Caesarean myomectomy	Interval myomectomy		
<b>Fundus</b>	No	42	15	57	p=0.000
	%	36.8%	19.5%	29.8%	
<b>Body</b>	No	61	30	91	
	%	53.5%	39%	47.6%	
<b>Fundus + body</b>	No	7	31	38	
	%	6.1%	40.3%	19.9%	
<b>Lower segment</b>	No	4	1	5	
	%	3.5%	1.3%	2.6%	
<b>Total</b>	No	114	77	191	
	%	100%	100%	100%	

The most common location of fibroids in caesarean myomectomy was intramural in the body of the uterus (53.5%), whereas, in interval myomectomy it was in body and fundus of uterus. Intramural fibroids were the commonest in both the study groups (50.9%, 72.7%). This was found to be statistically significant (P=0.000).

There was one case where the fibroid was occupying the entire lower part of the uterus and the baby was occupying the upper part of the uterus, in which classical caesarean had to be done.

**Table 5: Type of fibroids in the two groups.**

Type of fibroid		Group		Total
		Caesarean myomectomy	Interval myomectomy	
<b>Subserous</b>	No	32	11	43
	%	28.1%	14.3%	22.5%
<b>Intramural</b>	No	58	56	114
	%	50.9%	72.7%	59.7%
<b>Submucous</b>	No	15	1	16
	%	13.2%	1.3%	8.4%
<b>Broad ligament</b>	No	9	0	9
	%	7.9%	0%	4.7%
<b>Subserous+ Intramural</b>	No	0	9	9
	%	0%	11.7%	4.7%
<b>Total</b>	No	114	77	191
	%	100%	100%	100%

Intramural fibroids were the commonest in both the study groups (50.9%,72.7%).

**Table 6: Postoperative complications in the two groups.**

Post op complications		Group	
		Caesarean myomectomy	Interval myomectomy
<b>No complications</b>	No	93	51
	%	81.6%	66.2%
<b>Blood transfusion</b>	No	13	20
	%	11.4%	26%
<b>Fever/sepsis</b>	No	8	6
	%	7%	7.8%
<b>Total</b>	No	114	77
	%	100%	100%

The majority (81.6 percent) of the study participants who underwent Caesarean myomectomy and 66.2 percent of those who underwent interval myomectomy experienced no post-operative problems. About 11.4% of the woman who underwent caesarean myomectomy required blood transfusion as opposed to a 26% in the interval myomectomy group. About 7% of patients who underwent caesarean myomectomy experienced post-operative sepsis compared to 7.8% of patients who underwent interval myomectomy ( $p=0.028$ ); which is statistically significant.

**Table 7: Group statistics.**

Study parameter	Study group	N	Mean	Std. deviation	Unpaired t test	P value
<b>Drop in Hb%</b>	Caesarean myomectomy	91	1.30	0.949	0.550	0.583
	Interval myomectomy	69	1.22	0.838	Difference is not significant	
<b>Time duration of surgery</b>	Caesarean myomectomy	114	91.64	19.246	-6.258	0.000
	Interval myomectomy	77	109.97	20.743	Difference is significant	
<b>Length of hospital stay</b>	Caesarean myomectomy	114	6.05	1.316	-2.189	0.030
	Interval myomectomy	77	6.52	1.619	Difference is significant	
<b>Weight of fibroid</b>	Caesarean myomectomy	114	376.38	274.415	-4.164	0.000
	Interval myomectomy	77	567.32	289.443	Difference is significant	

The mean drop in haemoglobin in the caesarean myomectomy group was 1.30 g% and in the interval myomectomy group was 1.22 g%; however, neither difference was statistically significant ( $p=0.583$ ).

None of the patient in either group required hysterectomy due to massive haemorrhage. The mean time duration of surgery was 91.64 minutes and 109.97 minutes respectively for caesarean myomectomy and interval myomectomy, which showed statistical significance ( $p=0.000$ ).

Mean duration of post-operative hospital stay was 6.05 days for caesarean myomectomy and 6.52 days for interval myomectomy which was again statistically significant ( $p=0.030$ ). The mean weight of the fibroids was  $376.38\pm 274.415$  gram and  $567.32\pm 289.443$  gram respectively for caesarean myomectomy and open myomectomy, which showed statistical significance ( $p=0.000$ ).

### Discussion

Leiomyomas are encountered in approximately 0.1-10.7% of pregnant women<sup>2</sup>. The increasing incidence is attributed to the fact that more and more women are delaying child bearing. Many obstetricians are not in favor of the idea of performing myomectomy along with cesarean section except for pedunculated subserous or small fibroids, owing to the theoretical risk of massive hemorrhage resulting in hysterectomy or mortality. However, if myomas are not removed, complications like preterm delivery, fetal growth restriction, placenta previa and post-partum bleeding cannot be prevented in future pregnancies. Large myomas  $>5$  cm are more commonly associated with these complications when compared to smaller or no myomas.<sup>8</sup> Myomectomy reduces red degenerations in the puerperium and could decrease complication related to fibroids such as heavy menstrual bleeding, anaemia and pain. Exacoustos P<sup>9</sup>, Rosati C et al. in 1993 reported a case series of 9 cases of caesarean myomectomy in which 3 were complicated by severe bleeding, necessitating hysterectomy, hence they recommended caution while making the decision to perform this procedure. A lot of water has flown under the bridge since then and in recent years some authors have advocated the removal of anterior wall myomas during cesarean section.

Roman et al<sup>10</sup> compared the outcomes of 111 patients who had caesarean myomectomy with 100 cases of caesarean section alone. No significant difference was noted in the incidence of intra or post-operative complications between two groups. A large retrospective case control study was conducted in Chinese women by Li H, Du J et al<sup>11</sup>; to assess the effectiveness, safety and outcomes of caesarean myomectomy. The study group of 1242 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 section alone (Group B) and 51 pregnant women who underwent caesarean hysterectomy (Group C). No significant difference was noted between the groups in mean haemoglobin change, the frequency of haemorrhage, post-operative fever or the length of hospital stay.

Bourton et al<sup>12</sup> reported 13 cases of caesarean myomectomy where only 1 case had intraoperative haemorrhage and concluded that it is a safe procedure in selected patients. The study by Hassiakos et al<sup>13</sup> further reinforces the recent trend of myomectomy during caesarean section. They compared 47 pregnant women with fibroids who underwent caesarean myomectomy versus 94 pregnant women with fibroids who had caesarean alone. Myomectomy added a mean operating time of 15 minute to caesarean section. No patient required a hysterectomy, post-partum complication or blood transfusion. The length of hospital stay was comparable in both groups.

Kanthi J M et al<sup>14</sup> compared the outcomes of 33 cases of caesarean myomectomy with 32 cases of abdominal myomectomy in single fibroid, in terms of blood loss and post operative complications. There was no significant difference in Hb drop in the two groups. There was no postoperative febrile morbidity in both groups. Our study compared the safety and efficacy of caesarean myomectomy to non-pregnant women with fibroids who underwent interval

myomectomy. The largest myoma removed during caesarean section weighed 2.75 kg. The postoperative complications, length of hospital stay and operating time were all lesser compared to interval myomectomy. Despite a large number of patients having had big fibroids and majority being intramural, none of the patients required hysterectomy due to heavy bleeding.

In spite of the favorable outcomes in support of cesarean myomectomy, chance for complications like massive blood loss, need for obstetric hysterectomy and ICU admission should be kept in mind<sup>15</sup>. Literature about sequelae including adhesion formation, scar integrity in subsequent pregnancy and the risk of rupture uterus are lacking. Our study did not pursue the recurrence of myoma. However, studies showed that the recurrence is fairly low and subsequent pregnancy is protective. The limitations of this study are lack of follow up of the patients in subsequent pregnancy. Data regarding the follow up of patients who underwent caesarean myomectomy is lacking. Therefore, it is better to advice caesarean myomectomy as a routine procedure after such evidence is available.

### Conclusion

With the advent of better anaesthesia, availability of blood and blood products, caesarean myomectomy is no longer a dreaded job in the hands of an experienced surgeon in a well-equipped tertiary institution.

**Conflict of interest:** Nil

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