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Original Research Article

## Making caesarean myomectomy safe and feasible: a 12 year single center experience

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### ABSTRACT

**Background:** To standardize our protocol of caesarean myomectomy to make it safe and feasible for all patients.

**Methods:** This prospective study was conducted in Aarogya Hospital and test tube baby Centre, Raipur from 1<sup>st</sup> January 2008 to 1<sup>st</sup> August 2020. Total 45 patients who had documented fibroid in index pregnancy and consented for the procedure were included. B- Lynch sutures were prophylactically applied in all cases to prevent PPH.

**Results:** Our maximum patients were between the age of 20-30 years (66.67%) and 75.56% were primigravida. 44.45% cases were of intramural fibroids and in 53.34% cases the size of myoma was >5 cm. Malpresentation was seen in 15.56% cases. 62.22% myomas were removed through single incision. 33.33% patients had uneventful second CS with us with excellent scar healing in 93.33% cases. 20% cases had secondary infertility and are advised further evaluation to find cause of infertility.

**Conclusions:** The decision to proceed with elective myomectomy at time of CS should be approached with proper pre-operative evaluation of the patient, thorough counseling for hysterectomy if required, expert team, arrangement of blood and adequate correction of medical factors like anemia, hypertension, and diabetes mellitus. Prophylactic application of B- Lynch sutures in all the cases made a dramatic improvement in tone of uterus which we observed intra operatively.

**Keywords:** APH, Cesarean myomectomy, Cesarean hysterectomy, Cesarean section, Fibroids and pregnancy, PPH

### INTRODUCTION

Uterine fibroids are often seen in pregnancy in 0.3 - 5% cases. Myomectomy at the time of a caesarean section (CS) has traditionally been discouraged due to fear of intractable hemorrhage, need for hysterectomy and increased post-operative morbidity. If myomectomy during caesarean delivery becomes a widespread practice, it could potentially eliminate the risk of multiple surgeries, aesthetic complications, costs of repeated operative procedure and hospitalization. There is lack of large studies on caesarean myomectomy (CM) demonstrating its safety, so many surgeons still remain in

dilemma whether to perform CM or not. During last 20 years our technique, patient selection and experience gradually improved and in the past 12 years we have safely performed CM in 45 women who requested for the simultaneous removal of previously diagnosed fibroid during CS. In the last decade, there have been various reports suggesting the safety of the procedure and documenting various reasons for the removal of uterine fibroid during CS including prevention of necrobiosis, pain during pregnancy, unusual intra operative appearance of the tumor, to gain access to the baby in patients in whom fibroids are obstructing the lower uterine segment (LUS), with pedunculated and anterior

uterine fibroids and when the fibroids cause difficulty with uterine wound closure thereby causing significant blood loss. Also, the enucleation of fibroid becomes technically easier in a gravid uterus due to flexibility of capsule. CM scar has a better healing as uterus in postpartum phase is adopted physiologically to control hemorrhage. As contractions and retractions of muscle fibres occur, the blood vessels are closed. Also, the onset of vascular changes for clot formation in placental bed, helps in stopping the bleeding. We would like to put all the steps adopted by us that had made our CM safe.

Aims and objectives of the study were to standardize our protocol of caesarean myomectomy to make it safe and feasible for all patients.

## METHODS

This prospective study was conducted in Department of Obstetrics and Gynecology, Aarogya Hospital and Test Tube Baby Centre from 1st January 2008 to 1st August 2020. 45 patients who fulfilled the following criteria were included:

Documented fibroid during the index pregnancy by antenatal ultrasound.

Delivery by Cesarean section

Willingness for CS and Myomectomy.

No preexisting coagulopathy.

Hemoglobin.  $\geq 10\text{gm} / \text{dl}$  (Except in cases of Sickle cell anemia)

All cases underwent elective cesarean section by the same team as and when required. In all patients consent for myomectomy if required caesarean hysterectomy for intractable hemorrhage was taken. All other factors which would adversely affect fetal and maternal outcome were

explained. In all cases 2 units of packed red cells were arranged. In all patients we had given 200  $\mu\text{g}$  of misoprostol tablet sublingually just prior to giving spinal or general anesthesia. Abdominal incision was given as per the size of myoma to be removed. Pfannenstiel incision was preferred. Incision over uterus was given in such a way that after delivery of fetus and placenta the myomas could be removed from the same site. All myomas including posterior wall and fundal were removed from the same incision. (Figure 1A) after applying gentle pressure from the myometrial surface which made the myoma prominent on the endometrial surface and gently enucleation could be done (Figure 1B and C). All incisions were made using electro cautery. If more than one incision was required as in cases of multiple sub serosal and pedunculated fibroids then purse-strings sutures were used as described by Lee JH.<sup>1</sup> Suturing of myoma bed was done with interrupted sutures leaving behind no dead spaces. Approximation of all loose myometrial tissue was done using interrupted sutures from the myometrial surface in cases of large myomas. Oxytocin drip was given in each case. All incisions were closed using vicryl no.1 on needle. (Figure 1D) Care was taken that number of incisions over uterus were kept minimum by approaching adjacent fibroid through the same incision in a tunnel like fashion. B-Lynch sutures were applied in all the cases using catgut no. 2 on 70 mm round bodied needle.<sup>2</sup> In all our cases after completing the suturing we felt that adequate uterine tone has not been attained and if blood starts collecting in intra myometrial spaces that intractable hemorrhage would occur. After applying B-Lynch sutures we waited for adequate uterine tone which was achieved in all cases and then abdominal closure was done. While giving uterine incision we made it a point to give it transversely and if required extend it in J-shaped manner to upper uterine segment so that extension of incision to uterine arteries or cervix or vagina can be prevented. But in two cases of placenta previa extension occurred and to attain hemostasis we did uterine artery ligation also. We did not use upper segment incision in any case.



**Figure 1 (A-D): Intraoperative images (A): Myoma (B): Enucleation (C): Myoma specimen (D): Uterine closure.**

If we felt that suturing would take prolonged time then we temporarily occluded the uterine and ovarian arteries using sponge holding forceps. We used suction to clear blood and fluids from the field rather than sponges. This has the advantage that operating field is not obscured and estimation of blood loss is accurate. Also, continuous long suturing was avoided as undue force may be applied by assistant leading to tearing of fibers. In post-operative period we monitored all the vitals of the patient, fundal height and bleeding per vaginum. But in all cases an abdominal ultrasound was done 6 hours post operatively to see any concealed clots or blood in the uterine and the peritoneal cavity. All patients were given antibiotic coverage till the day of discharge. Replacement of intra operative blood loss was done adequately. Stitches were removed on 8th post-operative day and repeat ultrasound was done to see involution of uterus and any intra peritoneal collection. At 6 weeks follow up patients keen for further child bearing were advised contraceptives for

at least 2 years. All patients were counselled that if they had menorrhagia or severe abdominal pain at any point of time, they should immediately report back.

The SPSS version 22.0 software program was used for statistical analysis. No ethical approval was needed for this study.

## RESULTS

Our maximum patients were between the age of 20 - 30 years (66.67%) and primigravida (75.56%) (Table 1).

Associated placenta previa was found in 22.2% cases and abruptio placenta in 6.67% patients. 26.65% cases were high risk for uterine atony. 44.45% cases were of intramural fibroids and 53.34% cases the size of myoma was >5 cm. Malpresentation was seen in 15.56% cases. 75.55% foetus had normal growth parameter (Table 2).

**Table 1: Patient profile (n=45).**

Age (in years)	Number	Percentage
20-30	30	66.67
30-40	08	17.78
>40	07	15.56
<b>Gravida</b>		
Gravida 1	34	75.56
Gravida 2	08	17.78
Gravida 3 or more	03	06.67
<b>Previous surgeries</b>		
Myomectomy	06	13.33
CS	08	17.78
<b>Anemia status (Hb in gm/dl)</b>		
10 -12 gm%	45	100
8 - 10 gm%	Nil	Nil
<8 gm%	Nil	Nil
<b>Associated problems</b>		
Pregnancy induced hypertension	07	15.56
Gestational diabetes mellitus	03	06.67
Bleeding disorder	Nil	Nil
<b>Antepartum hemorrhage</b>		
Placenta previa	10	22.22
Abruptio placenta	03	06.67
Placenta accreta	04	08.89
<b>High risk factors for uterine atony</b>		
Multiple pregnancy	02	04.44
Polyhydramnios	04	08.89
Previous history of PPH	02	04.44
Grand multipara	02	04.44
Baby weight> 4 kg	02	04.44

**Table 2: Fibroid details (as per antenatal USG) (n=45).**

Number of fibroids	Number	Percentage
Single	30	66.6
Multiple	15	33.33
<b>Location</b>		
Subserosal	15	

Continued.

Number of fibroids	Number	Percentage
<b>Intramural</b>		
Anterior wall	12	26.67
Posterior wall	08	17.78
Pedunculated	05	11.11
Fundal	05	11.11
<b>Size (In Cms)</b>		
< 5 cm	21	46.67
5-10 cm	12	26.67
> 10 cm	12	26.67
<b>Malpresentation</b>		
Breech	03	06.67
Transverse	04	08.89
<b>Amount of liquor</b>		
Polyhydramnios	03	06.67
Oligohydramnios	05	11.11
<b>Fetus growth parameters</b>		
Normal	34	75.55
IUGR	10	22.22
IUD	01	02.22

Table 3: Intra operative details (all elective LSCS) (n=45).

Gestational age at time of CS (in weeks)	Number	Percentage
24-28 (Due to red degeneration and torsion of fibroid)	02	04.44
28-32 (Due to PPRM + fetal malpresentation)	06	13.33
32-36 (Pre-term labor pains + obstetric indications)	12	26.67
>36 (For obstetric or fetal indications)	25	55.56
<b>Anesthesia</b>		
Spinal	40	88.89
General	05	11.11
<b>Time for LSCS (In minutes)</b>	20±5	15-25
<b>Times for myomectomy (in minutes)</b>		
<b>Incision</b>	15±7	08-22
Single	28	62.22
Two	12	26.67
>Two	05	11.11
Purse string sutures	10	22.22
<b>B- Lynch suture</b>	45	100
Average blood loss (In ml)	400±100	300-500
PPH	Nil	Nil
Uterine artery ligation	06	13.33
<b>Weight of myoma (In gms)</b>		
< 100	20	44.4
100-500	15	33.33
500-1000	08	17.78
> 1000	02	04.44
Tubectomy (Done in all cases of previous LSCS and willing for tubectomy)	07	15.56

Table 4: Post-operative details (n=45).

	Number	Percentage
Fever	Nil	Nil
Blood transfusion (known case of sickle cell anemia)	04	08.88
Duration of hospital stay (in days)	5±1	4-6
Puerperal Sepsis	Nil	Nil
Wound dehiscence	Nil	Nil

Continued.

	Number	Percentage
<b>USG on 7<sup>th</sup> P.O.D</b>		
Sub involution	Nil	Nil
Any intra peritoneal collection	Nil	Nil
<b>HPE report</b>		
Consistent with leiomyoma without degeneration	30	66.67
With red degeneration	05	11.11
With hyaline degeneration	10	22.22

Table 5: Follow up details (n=45).

	Number	Percentage
<b>Repeat uneventful pregnancy (n=15)</b>		
Delivered by repeat CS	15	33.33
Delivered by vaginal	15	100
Scar healing	Nil	Nil
Excellent	14	93.33
Poor*	01	06.67
<b>Fertility aspects (n=45)</b>		
Patients underwent tubectomy	07	15.56
Patients opted for single child norm	12	26.67
Patients with age >40 years + Grade IV endometriosis keen for second child	02	04.44
Patients with age <30 years having secondary infertility and under evaluation for infertility	09	20.00

A total 82.23% of CS were done at >32 weeks gestational age (Table 3). A total 62.22% myomas were removed through single incision 22.22% myomas weighed >500 gms. Maximum weight of myoma removed was 3 kg. at 24 weeks gestational age due to torsion, red degeneration and with intrauterine foetal demise. Blood transfusion was required in 4 cases of sickle cell anaemia who had sickling crisis (Table 4).

A total 25.92% patients had uneventful second CS with us with excellent scar healing in 93.33% cases. 20% cases had secondary infertility and are advised further evaluation to find cause of infertility (Table 5).

## DISCUSSION

To make CM safe we emphasize that experienced surgeons should perform it. Till date there is no relevant literature to suggest as who should be counted as experienced surgeon.<sup>3</sup> Our all patients were diagnosed cases of fibroid with pregnancy and it was not incidental finding and all cases were electively planned for LSCS with myomectomy, whereas Mumtaz P also attempted Myomectomy in incidental cases of 15.4%.<sup>4</sup> Large fibroids > 5 cm are more likely to grow during pregnancy and can cause miscarriages, obstructed labor, malpresentation, pressure symptoms, pain due to red degeneration, pre-term labor, pre-term premature rupture of membranes. These complications also occurred in our cases (Table 2).

In series by Machado et al they reported that 7 patients out of 8 had fibroids >5 cm in diameter who underwent CM.<sup>5</sup> In their series step wise devascularization was

required to control PPH in one patient. Pre-operative placement of uterine balloon catheter was used in another patient with a large posterior wall fibroid. The balloon was inflated intra operatively controlling the hemorrhage. None of their patients required hysterectomy.

In our series average blood loss was 400±100ml. Bala R et al found mean average blood loss of 600.2±104.2 cc and no patient required Cesarean hysterectomy (CH).<sup>6</sup> They had applied purse string sutures at the base, secured myoretraction by bimanual massage and intravenous infusion of 5 dose of oxytocin was given to ensure uterine contraction during myomectomy.

Senturk et al also found control of bleeding by suturing the myoma bed and use of oxytocin but in some cases still uterine atony and bleeding occurred requiring hypogastric artery ligation.<sup>7</sup>

We had used prophylactic B-Lynch sutures in all our patients. No atonic PPH occurred in any patient and none of them required hysterectomy. In our series neither the location nor the size of the myoma affected our decision to perform CM. Myoma location in relation to the large blood vessels constitutes a very important factor while deciding to perform CM.

Zhao R et al found that myomectomy was performed more frequently with sub serous fibroids and was avoided in intramural and cervical fibroids.<sup>8</sup>

The literature offers only one absolute contraindication to CM i.e. the intra surgical uterine hypotony atony following the delivery of fetus. In addition to anatomical location, the number and size of the fibroid, experience of

surgeon and suspicious degeneration of the fibroid is important factor influencing decision of CM. Sparic et al removed 77.45% myomas without degeneration, we removed 66.67% myomas without degeneration, 11.11% with red degeneration and 22.22% with hyaline degeneration.<sup>3</sup> No case was malignant. Agrawal et al also reported that in their series of 14 women there was no case of histologically proven malignancy.<sup>9</sup> Mumtaz et al reported degeneration in 3 patients out of 26 patients in their series.<sup>4</sup> The scar integrity following CM was excellent in 93.3% cases who underwent repeat CS with us. The review article by Awoleke also suggest that CM scar has better healing than that of interval myomectomy.<sup>10</sup>

In our series there was no added morbidity because of CM and mortality rates were nil. Celal K also concluded in their series of 27 patients that there was no increase in morbidity or mortality rates but Kim YS et al reported significant complications like ileus and postoperative atonic bleeding.<sup>11,12</sup>

Jaiswar et al supported the safety of CM even with huge fibroids and recommended that the old practice of avoiding myomectomy along with CS should be reconsidered Mangla et al showed that blood loss is comparable between CM and abdominal myomectomy.<sup>13</sup> And CM in case of single fibroid can be safely done in selected patients with proper methods to reduce blood loss.<sup>14</sup>

#### **Limitation of the study**

We had limited number of cases who were diagnosed antenatally with fibroid in the index pregnancy and were willing for myomectomy.

#### **CONCLUSION**

The decision to proceed with elective myomectomy at time of CS should be approached with proper preoperative evaluation of the patient, thorough counseling for hysterectomy if required, expert team, arrangement of blood and adequate correction of medical factors like anemia, hypertension, and diabetes mellitus. We have removed large myomas and our patients were at high risk of PPH because of factors like associated placenta previa, accreta, polyhydramnios, large babies, twin pregnancies]. Prophylactic application of B- Lynch sutures in all the cases made a dramatic improvement in tone of uterus which we observed intra operatively. All the methods which we employed for safe myomectomy are already published in literature and we conclude that CM is a safe procedure.

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