

Is Myomectomy during Caesarean Section a Safe Procedure? Prospective Cohort Study

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Abstract:

Background: Benign uterine myoma is the commonest female tumor in the reproductive tract, and its incidence in pregnancy was estimated to be 2% to 5%. Traditionally, cesarean myomectomy was rejected as there is a liability of intrapartum and postpartum hemorrhage. The aim of this work is to investigate the significance of cesarean myomectomy together with early impact on the mother. **Patients and methods:** This study was conducted on 73 patients having different types and sizes of myoma during caesarean section delivery, the myomectomy was done by traditional technique but timing of myomectomy either pre or post delivery of the baby varied between different cases. Infusion of oxytocin during the operation and for 24 h later. **Results:** All women with uterine myoma were aging from 20- 38 years and had different parity. The participating women had myoma with different characteristics mostly from 5-10 cm. Also, the commonest types were intramural alone and sub-serous alone (76.8%). The commonest sites of fibroid were the uterine fundus and upper segment (80%). Intrapartum hemorrhage occurred in 10 cases that were overcome by ecbolics and bilateral uterine artery ligations with or without B-lynch technique. Five cases suffered from post operative fever that was overcome by antibiotics and antipyretics. The post partum hospital stay was 3 days in 63% of cases. **Conclusion:** caesarean myomectomy is a safe procedure but can be only done by experienced surgeon with some precautions.

Key words: Myomectomy, caesarean, section

Clinical trial.gov; NCT04390659

Introduction

Uterine fibroids are the commonest benign tumors of woman genital tract, and the incidence of fibroids in pregnancy has been estimated to be 2% to 5% (1, 2)

For a long time, cesarean myomectomy (CM) has been considered to be dangerous as there is a liability of intrapartum and postpartum hemorrhage (3, 4, 5). From the time of Victor Bonney, cesarean myomectomy was strongly discouraged for the torrential blood loss it may cause. But in the last 20 years, numerous case reports and case control studies have supported cesarean myomectomy as safe and even cost effective. Nevertheless, some authors suspected that complications were under reported. (6).

Antepartum management is essentially conservative, but for extreme reasons, antepartum myomectomy has been reported (7). The obvious reasons of avoiding excision of fibroid at time of cesarean section are high chances of torrential hemorrhage, atonic uterus and resultant hysterectomy. But sometimes, cesarean myomectomy becomes unavoidable like in case of fibroids in the lower uterine segment

posing hardness in baby extraction or closing uterine incision.(6).

As stated before, Cesarean myomectomy was better than myomectomy in non pregnant uterus because the capsules become loose so enucleation of myoma is easier. Also, in cases of myoma presenting at lower uterine segment, classical cesarean section can be avoided. The aim of this work is to investigate the significance of cesarean myomectomy together with early impact on the mother. (8)

Patients and Methods

This prospective cohort study started from August 2014 till September 2019 after approval of local ethical committee. The work was done at Benha university hospital and some specialized centers of labour. Seventy three women were informed about the benefits and risks of caesarean myomectomy.

Consent was obtained before the CM in diagnosed cases while in incidentally diagnosed cases, the consent was taken during the operation.

All women had the following inclusion criteria; women with diagnosed uterine myoma prior to pregnancy and needed cesarean sections for various indications, women with diagnosed uterine myoma during pregnancy and needed cesarean sections for various indications & women with myoma diagnosed incidentally during labour. The exclusion criteria included the following; Refusal of the women at any time before and during the operations, cervical myoma, atonic uterus post extraction of the baby and before starting myomectomy, & women with bleeding disorders due to medical or obstetric causes. Blood donation was kept available during the operation. The myomectomy was done by traditional method but timing of myomectomy either pre or post extraction of the baby varied between different cases (figure 1) .Infusion of oxytocin during the operation and for 24 h later.



Figure 1: Two large myoma in pregnant uterus during cesarean section

Outcome measures:

1. Difficulty of cesarean myomectomy.
2. Operative time.
3. Intra operative complications.
4. The necessity for blood transfusion,
5. Complications after delivery.
6. Period of post operative hospital lodging.

Sample size calculation: The least number of contacts was determined according to the following equation: sample size = $[(Z_{1-\alpha/2})^2 P(1-P)] / d^2$ where $Z_{1-\alpha/2}$ is the normal variant at 5% type 1 error ($P < 0.05$); it is 1.96. P is the predicted ratio established on preceding researches (the prevalence 5.0%) . d is the absolute error (0.05).

Data management: The clinical informations were registered on a report shape. These data were classified and analysed using the computer program SPSS (Statistical package for social science) version 25 to gain: These were counted for the data in the form of mean and standard deviation ($\pm SD$), median and inter-quartile range (IQR) for quantitative informations and frequency and distribution for qualitative informations after testing for normality using K-S test (One-Sample Kolmogorov-Smirnov Test).

Results

This prospective cohort study included 73 pregnant women with uterine myoma aging from 20- 38 years by a mean age 28 years. The participating women in the study had different parity. Fifty three percent of them were primipara while the remaining 47% were having 2 or more deliveries before. All women delivered by caesarean section at gestational age from 38-40 weeks with a mean gestational age 39 weeks .The commonest indication of caesarean section (46.6%) in our patients was due to previous caesarean section. table 1

Table 1 : characteristics of the patients

	No	%
Age (years) mean \pmSD	27.97 \pm 6.03	
(range)	(20.0-38.0)	
Parity		
0	39	53.4
1	0	0.0
≥ 2	34	46.6
Median (IQR)	0.0(0.0-2.0)	
GA (weeks) mean \pmSD	38.55 \pm 0.80	
(range)	(38.0-40.0)	
C.S. indication		
Previous C.S.	34	46.6
C.P.	16	21.9
Mal presentation	11	15.1
Precious baby	12	16.4

The participating women had myoma with different characteristics. They had myoma

from 3-11 cm mostly from 5-10 cm. Also, the commonest types were intramural alone and sub-serous alone (76.8%). The commonest sites of fibroid were the uterine fundus and upper segment (80%).table 2

Table 2: characteristics of myoma

	No	%
Fibroid size(cm)		
<5	17	23.3
5-10	45	61.6
>10	11	15.1
mean \pm SD (range)	7.03 \pm 2.97 (3.0-11.0)	
Fibroid type		
Intra-mural	28	38.4
Mural sub-mucous	8	11.0
Mural serous	9	12.3
Sub-serous	28	38.4
Fibroid location		
Fundus	37	50.7
Lower segment	7	9.6
Upper segment	29	39.7

Myomectomy was done before the baby delivery in seven patients because the fibroid was located at the lower segment while in the remaining 66 patients; myomectomy was done after the baby delivery. Intrapartum hemorrhage occurred in 10 patients that were overcome by ecbolics and bilateral uterine artery ligations with or without B-lynch technique.

Only 6 cases who needed ≤ 2 units of blood. Five cases suffered from post operative fever that was overcome by antibiotics and antipyretics. The post partum hospital stay was 3 days in 63% of cases .table 3.

Table 3: outcome of caesarean myomectomy

	No	%
Timing		
After delivery	66	90.4
Before delivery	7	9.6
Hge	10	13.7
Blood transfusion	6	8.2
Operation time(minutes)		
	25	34.2
<45	19	26.0
45- ≥ 60	29	39.7
mean \pm SD (range)	50.75 \pm 9.54 (35.0-60.0)	
post-partum Fever	5	6.8
Post- partum stay		
(hours)	46	63.0
48-72H	27	37.0
>72H		
median (IQR)	3.0 (3.0-5.0)	

Discussion

During pregnancy, the woman is in a state of hypervolemia and hypercoagulability, so the pregnant patients can acclimatize readily with a limited amount of blood loss. Moreover, the myometrium is hyper sensible to oxytocic hormones and excision of fibroid allow the uterine corpus to contract well. Accordingly, after labour the uterus is ready for holding any bleeding. This is the

hypothesis that explains why Caesarean Myomectomy would cause less bleeding. (8).

Most of obstetricians were educated not to do myomectomy during cesarean section to avoid the complications of severe bleeding and subsequently hysterectomy. This traditional viewpoint was challenged by some authors (9, 10) as they suggested that myomectomy may be performed during cesarean section in selected patients. It was concluded the advantages of this approach as it reduced the total anesthesia risk associated in cesarean section and subsequent myomectomy, and the total cost was reduced (11) (12).

Since Bonney (a pioneer in uterine myomectomy) and Burton et al (probably, a pioneer in CM in 1989) till now, no agreement has yet been established on safety and feasibility of CM (13). Accordingly, indications and contraindications for this approach need to be established (14, 15, &16).

Most common studies tried to avoid hemorrhage during cesarean myomectomy by using high dose oxytocin intra and post operatively and others did uterine artery occlusion and a tourniquet to reduce

bleeding during the operation (**17, 9, 18, 19, and 20**).

Our study showed some cases of moderate blood loss that was overcome by embolics and bilateral uterine artery ligations with or without B-lynch technique. Only 6 cases who needed ≤ 2 units of blood and did not necessitate hysterectomy. This is consistent with several reports (**21, 22**).

In logic thinking, when we are facing myoma during cesarean delivery, it is easy to leave it and to postpone later for another surgery, anesthesia and cost. This seems to be an excellent policy to avoid any complexity during the operation. This is a limited view, because it does not consider the complications for a long-time (**11**). Because during the follow up period of 38.5 months in women who underwent cesarean delivery leaving uterine leiomyomas in place, 40.9% of these patients were subjected to therapeutic operations during this period because of their symptoms (**23**). On accounting the cost of myomectomy and hysterectomy to 40.9% of these women, it is a high impact when compared to the cost of doing them during cesarean delivery.

In this study, we performed cesarean myomectomy with no regard to site and size of the myoma. One study found no

significant differences between myoma sizes regarding the incidence of hemorrhage (**24**). Another study compared between cesarean myomectomy and cesarean delivery alone regarding the change of hemoglobin concentration, the need for blood transfusion and the operative time and found only increased operative time in cesarean myomectomy group. (**25**).

In support to our results, **Ghaemmaghami et al, (26)** concluded that cesarean myomectomy is safe to perform if surgeon is experienced and in some selected cases. Also in a trial for determination which myoma to be removed with cesarean delivery, **Zhao et al, (27)** in their retrospective study, found that the presence of myoma diameter ≥ 5 cm and baby weight ≥ 4 kg were high dangerous factors for PPH $\geq 1,000$ ml while, in general, excision of myoma through cesarean delivery reduced the danger of postpartum bleeding. Also they found that the type and position of myomas had a definite but not statistically significant effect on postpartum hemorrhage. In contrast to previous report, **Kwon et al, (28)**, in their retrospective study, found that even with large myoma cesarean myomectomy is a secure process when completed by well trained surgeon surgeons

Limitation of the study: the present study did not introduce the selection criteria for special type of myoma during CS. It did not investigate the possible late complications as scar integrity, adhesion formation, and abnormal placentation.

Conclusion: Caesarean myomectomy is a secure process but can be only done by well trained surgeon with some precautions.

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