Original Article

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Myomectomy During Caesarean Section: Seven Years' Experience

Obstetrics and Gynaecology Section

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ABSTRACT

Introduction: The incidence of myomas during pregnancy is reported as 1.6-10.7% depending on gestational age. Increased rates of Caesarean Section (CS) together with advanced maternal age bring the decision for caesarean myomectomy (myomectomy during caesarean section) into question.

Aim: To compare the obstetric features and clinical outcomes of pregnant women with uterine leiomyoma who had myomectomy together with caesarean section to those who had caesarean section only.

Materials and Methods: A retrospective study was performed on a total of 50 pregnant women with myoma that underwent caesarean section in the Obstetrics and Gynaecology Department of Trakya University Medical Faculty between 2007 and 2014. Obstetric history, operative details and type, size and location of leiomyoma were noted and compared. Data were analysed using the IBM Statistical Package for Social Sciences version 17.0 (SPSS Inc., Chicago, IL, USA). Parametric tests were applied to data with normal distribution and non-parametric tests were applied to data without normal distribution.

Results: Two groups displayed similar features in terms of age, parity, gestational weeks, type and location of leiomyomas. Notably, average size of leiomyomas was larger (p=0.03) and duration of operation was significantly longer in patients that underwent caesarean myomectomy (72.69±26.73 minutes vs. 56.25±6.64 minutes) (p=0.003). Duration of hospitalisation and preoperative/postoperative values for haemoglobin and hematocrit levels did not show any clinically significant difference (p >0.05).

Conclusion: Our results demonstrate that caesarean myomectomy is a safe and effective procedure in especially cases with large uterine leiomyomas.

Keywords: Pregnancy, Uterine leiomyoma, Uterine myomectomy

INTRODUCTION

Uterine myomas are the most common uterine neoplasms detected in women older than 35 years of age and their growth is associated with exposure to reproductive hormones that have been demonstrated in vitro [1]. Therefore, uterine myomas display the maximum growth within the reproductive period [2]. The incidence of myomas during pregnancy is reported as 1.6-10.7% depending on gestational age [2-4]. Attributed to the delayed age of childbearing in women, myomas currently tend to occur more frequently in pregnancy [5,6]. In other words, increased rates of Caesarean Section (CS) together with advanced maternal age bring the decision for caesarean myomectomy (myomectomy during caesarean section) into question [5].

Even though majority of uterine myomas remain silent, some cases may present with pain, bleeding, ablatio placenta, anaemia, preterm-premature rupture of membranes, labor dystocia, and intrauterine growth retardation [7]. Caesarean myomectomy is mostly not recommended due to risks such as intractable haemorrhage, postoperative morbidity and possibility of hysterectomy in extreme cases [5]. Some publications suggested that myomectomy should be avoided during CS unless myoma is pedunculated, whereas some authors advocated that caesarean myomectomy could be performed in selected patients [8-10].

The objective of the present study was to investigate whether caesarean myomectomy is associated with any alterations in durations of operation and hospitalisation as well as amount of intraoperative bleeding. Thus, we aimed to assess the safety and efficacy of caesarean myomectomy.

MATERIALS AND METHODS

This retrospective case control study was performed in Trakya University Medical Faculty, Department of Obstetrics and Gynaecology, subsequent to the approval by the local Institutional Review Board. Data was extracted according to the diagnosis of "myoma and pregnancy" among caesarean delivered patients through medical charts between January 2007 and January 2014. Pregnants who were diagnosed with co-existing myomas and went through CS or who were realized to have myoma during the operation were included into the study. Patients who had any hematologic or coagulation problems such as thalassaemia or thrombocytopenia, who had been using anti-coagulants or anti-fibrinolytics for any reason or presented with massive haemorrhagia (e.g., ablatio placenta, placenta previa, etc.,) were excluded from the study.

A total of 50 pregnants with uterine myoma who underwent CS were allocated into two groups with respect to performance of myomectomy simultaneously with CS. Pregnant women who had myoma, repeat CS, breech presentation, labor dystocia, abnormal fetal heart tracing; overall CS indications for the general pregnant population was valid for this study population.

Group 1 was comprised of 26 patients who underwent myomectomy at the time of CS after the delivery of the neonate. Group 2 was composed of 24 pregnants with uterine myoma who underwent isolated CS without myomectomy.

Myomectomies were performed with a sharp incision parallel to the myoma's longest axis. The edges of the incision were held by Allis clamps and the myoma is grasped by forceps and tracted. Blunt

and sharp dissections were implemented to remove the myoma. After the removal of the myoma, haemostasis was obtained by electrocautery and a multilayer wound closure was applied by No:1 vicryl.

At the time of operation 15 units of oxytocin in 1000cc of saline solution was infused with a dose of 100 cc/hours. In the postoperative period this infusion prolonged to the first 8 hours if the patients vaginal bleeding was more than expected (approximately more than 2 full pads in 30 minutes) and methilergobasine maleate was also employed to obtain better uterine tonus.

Outcome Parameters

Age, gestational weeks, parity as well as intraoperative and postoperative maternal morbidity in terms of blood loss, operative time, and length of hospital stay were compared to matched pregnant woman with CS alone. Size, number and location of myomas were also studied between two groups.

STATISTICAL ANALYSIS

Data were analysed using the IBM Statistical Package for Social Sciences version 17.0 (SPSS Inc., Chicago, IL, USA). Parametric tests were applied to data of normal distribution and non-parametric tests were applied to data of questionably normal distribution. Data are expressed as either mean±standard deviation or median interquartile range, as appropriate. All differences associated with p value <0.05 were considered statistically significant.

RESULTS

As shown in [Table/Fig-1], the mean age of the patients was 33.81±4.14 in Group 1, and 32.33±4.85 in Group 2. Gestational weeks were similar in two groups (37.2 vs. 36.9). Rates of primigravidity in Groups 1 and 2 were 65% and 54.1%, respectively. The mean sizes of myomas removed in Group 1 and Group 2 were 5.96±3.79 (range:1-15) cm, and 3.96±2.56 (range: 1-10) cm, respectively.

[Table/Fig-2] demonstrates the distribution of the type, size and location of myomas in our series. Subserosal myomas were more frequent (p=0.41) and size of the myomas were larger (p=0.03) in Group 1. Location of myomas did not differ between two groups.

The mean preoperative haemoglobin values were 11.91±1.04 mg/dL in Group 1, and 11.93±0.97 mg/dL in Group 2 (p=0.984). While the mean postoperative haemoglobin values were 10.45±1.40 mg/dL in Group 1 and 10.72±1.49 mg/dL in Group 2 (p=0.162). The mean preoperative hematocrit value was 35.30±3.02% in Group 1, and 34.89±3.25% in Group 2 (p=0.593); while, the mean postoperative hematocrit value was 31.04±4.58% in Group 1, and 31.59±3.93% in Group 2 (p=0.225). There was also no statistically significant difference in the haemoglobin and hematocrit differences of preoperative and postoperative values (p=0.984, p=0.225 respectively). The mean operative time was significantly longer for Group 1 (72.69±26.73 minute) as compared to Group 2 (56.25±6.64 minute) (p=0.003). Myomectomy resulted in a prolongation of approximately 16 minutes for the duration of operation of CS. The mean length of hospitalisation was 4.77±2.32 days for Group 1 and 6.29±5.37 days for Group 2 (p=0.553) [Table/Fig-3].

None of the patients received blood transfusion and no remarkable complications were encountered during puerperium. Caesarean hysterectomy was not required in any of the patients.

Parameters	Group 1 (n=26)	Group 2 (n=24)	p-value
Age (years)	33.81±4.14	32.33±4.85	0.252
Nulliparity, n (%)	17(65)	13(54)	
Gestational weeks	37.27±1.43	36.92±2.45	0.533
Size of leiomyoma (cm)	5.96±3.79	3.96±2.56	0.034*

[Table/Fig-1]: Demographic and obstetric features of uterine leiomyoma patients in 2 groups.
*: statistically significant

Characteristics of uterine myoma		Group 1 (n=26) n (%)	Group 2 (n=24) n (%)
Type	1	16 (61.5)	12 (50)
	2	10 (38.5)	12 (50)
Size	< 5 cm	12 (46.2)	16 (66.6)
	5-10 cm	9 (34.6)	7 (29.2)
	≥ 10 cm	5 (19.2)	1 (4.2)
Location	1	9 (34.6)	7 (29.2)
	2	6 (23.1)	6 (25.0)
	3	1 (3.8)	2 (8.3)
	4	7 (26.9)	7 (29.2)
	5	3 (11.5)	2 (8.3)

[Table/Fig-2]: Comparison of type, size and location of uterine leiomyomas in 2 groups.
Type 1: Subserosal, Type 2: Intramural; Location 1: Anterior; Location 2: Posterior; Location 3: Intraligamentary; Location 4: Fundal; Location 5: In relation with Kerr line

	Group 1	Group 2	p-value
Preoperative Hb (gm/dL)	11.91±1.04	11.93±0.97	0.984
Postoperative Hb (gm/dL)	10.45±1.40	10.72±1.49	0.162
Preoperative Hct (%)	35.30±3.02	34.89±3.25	0.593
Postoperative Hct (%)	31.04±4.58	31.59±3.93	0.225
Operative time (minutes)	72.69±26.73	56.25±6.64	0.003*
Length of hospital stay (days)	4.77±2.32	6.29±5.37	0.553

[Table/Fig-3]: Overview of operative characteristics in 2 groups.
*Hb: Haemoglobin; Hct: Hematocrit; *: statistically significant

DISCUSSION

Our aim in this study was to investigate the pros and cons of caesarean myomectomy and compare the obstetric, pathological and clinical outcomes with caesarean section alone. In conjunction with previous reports in the literature, results of the present study indicated that caesarean myomectomy was a safe and effective procedure and it does not cause any additional morbidity except for prolongation of the operation time. Second operation after delivery for myomectomy may have its own complications as mentioned by Akkurt MO et al., [9]. Thus, caesarean myomectomy might reduce the possible risks and costs of another surgery.

Burton CA et al., reported that intraoperative haemorrhage occured in only one out of 13 cases of caesarean myomectomy and they noted that caesarean myomectomy was a safe procedure in selected cases [11]. Ortac F et al., supported caesarean myomectomy particularly for large myomas [12]. They claimed that myomectomy could be useful for minimizing the possibility of sepsis postoperatively. Similarly, a recent study carried out on a large population yielded that there was no difference between patients operated with CS alone and caesarean myomectomy in terms of complications but the procedure is related with increased blood loss that does not require blood transfusion [13]. Nevertheless, the average size of myomas was smaller in their series. A study by Kwon DH et al., reported that also removal of large myomas during CS did not have a negative effect on postpartum complications compared to non-removal group [14]. In agreement with these studies, we also did not observe any remarkable or life-threatening morbidity during or after caesarean myomectomy.

The appropriate management of uterine myomas is not clear [15]. Caesarean myomectomy is a topic under debate and many obstetricians refrain from this procedure due to possibility of massive bleeding or need for hysterectomy [5,10]. We detected no significant difference between two groups regarding the preoperative and postoperative levels of haemoglobin and hematocrit. Anyway, precautions such as administration of high dose oxytocin, occlusion of uterine artery and application of a tourniquet can be useful for avoiding excessive haemorrhage

during surgery [5,16]. In a small group of patients, Kumar RR et al. experienced only 2 transfusion necessitating myomectomies during CS otherwise he also shows that myomectomy during caesarean section is a safe procedure and is not associated with major intraoperative and postoperative complications [17]. Kim YS et al., reported that complications such as ileus, prolonged hospitalisation and need for blood transfusion were more frequent after caesarean myomectomy. In their series, embolization of uterine artery was enough for haemostasis and hysterectomy or re-operation was not required in any cases [18].

Even though avoiding any interventions on uterine myomas at CS seems to be a safe mode of action, intraoperative complications and long-term morbidity cannot be eliminated with conservative approach [5]. It must be remembered that uterine myomas constitute the most frequent indication for hysterectomy. When repetitive surgery after caesarean myomectomy is unlikely, removal of myoma simultaneously at the same time with CS is a cost-effective procedure [13]. Similar to our results, another study indicated that operative time was longer for myomas larger than 6 cm in the caesarean myomectomy group [19]. A recently published large cohort revealed that leaving the myoma insitu at the time of CS did not prevent any fall in postoperative haemoglobin levels [16]. Other than that, CS and caesarean myomectomy groups displayed similar features in terms of haemoglobin levels. But leaving the myoma at the time of CS for future surgery may cause complications of myomectomy itself such as anesthesia or fistula formation [9]. Criteria and indications for caesarean myomectomy have not been clarified thoroughly yet. Kim YS et al., suggested that subserosal or pedunculated myomas were candidates for removal of myoma during CS [18]. Hassiakos D stated that intramural myomas in the fundus, myomas proximal to the fallopian tubes and cornual myomas might not be appropriate for caesarean myomectomy since further fertility may be adversely affected [20]. However, controversially, myomas displayed higher uterine peristalsis in midluteal phase and this might have a more unfavourable effect on fertility [21]. A recent publication supported that the most significant predictors of caesarean myomectomy included age, surgical experience and type of myomas. The procedure is generally carried out by experienced surgeons and in younger women. It is more frequently performed in patients affected by pedunculated and subserosal myomas, and less frequent in case of intramural and multiple myomas [22].

LIMITATION

Main limitation of the present study include small sample size, retrospective design and data confined to short-term follow-up. Moreover, these outcomes reflect the experience of a single institution and impact of environmental, ethnic, social and economic factors cannot be ignored. Long-term results for fertility have not been evaluated in this series and no definite conclusions can be made for defining criteria of caesarean myomectomy. Compared to the related literature, this is a prolonged procedure, but this is due to the fact that most of all obstetrical operations in our institution are performed by trainees, while myomectomies are conducted by the senior staff. Therefore, generalization and extrapolation of our results to larger populations must be made carefully.

CONCLUSION

In conclusion, caesarean myomectomy can be considered as a safe procedure. Our results imply that caesarean myomectomy does not bring about additional risks such as excessive intraoperative bleeding, postoperative infection or prolonged hospitalisation. The only drawback detected in our patients who underwent caesarean myomectomy was prolonged operation time.

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