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MYOMECTOMY AT TIME OF CESAREAN DELIVERY **MIOMEKTOMIJA TIJEKOM CARSKOG REZA**

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Professional paper

Key words: myoma, myomectomy, cesarean section

SUMMARY. Objectives. Myomectomy at time of cesarean delivery is traditionally discouraged because of the risk of hemorrhage. A retrospective cohort study was performed to determine whether myomectomy at time of cesarean delivery leads to an increase in the incidence of intrapartum and post partum complications. **Methods.** Manual search of medical records from January 2000 to December 2006 identified a total of 46 women who underwent myomectomy at time of cesarean delivery. Charts were reviewed for the following variables: change in hematocrit and hemoglobin from pre-operative to post-operative period, length of the operation, intraoperative complications, length of post partum stay, incidence of post partum fever, incidence of hemorrhage and incidence of subsequent pregnancy. Hemorrhage was defined as change in hematocrits of ten points or need for intra-operative or post-operative blood transfusion. **Results.** The mean size of fibroids was 7.11 ± 5.99 , range 1–34 cms. The percentage of hemorrhage encountered in the study group was 8.7%. There was no statistical significance between the mean value of the largest size of the fibroid and hemorrhage group ($P=0.8$), same was found between the mean value of the number of fibroids and the hemorrhage group ($P=0.16$). None of the patients among the study group had any organ injury, required hysterectomy or SICU admission. Four patients needed blood transfusion (8.7%). **Conclusion.** Myomectomy during cesarean delivery is not always hazardous procedure and does not appear to result in an increase risk of intrapartum or short term post partum morbidity, and it can be performed without significant complications by experienced obstetricians.

Stručni članak

Ključne riječi: miom, miomektomija, carski rez

SAŽETAK. Cilj. Tradicionalni pristup opstetričara prema miomektomiji tijekom carskog reza je bio konzervativan. U ovoj retrospektivnoj kohortnoj studiji željeli smo istražiti povećava li miomektomija tijekom carskog reza rizik od intrapartalnih i postpartalnih komplikacija. **Metoda.** Pretražene su povijesti bolesti od siječnja 2000. do prosinca 2006. i pronađeno je ukupno 46 žena u kojih je tijekom carskog reza učinjena miomektomija. Pretraživanje je uključilo sljedeće varijable: preoperativne i postoperativne promjene hematokrita i hemoglobina, trajanje operacije, intraoperativne komplikacije, dužina boravka u bolnici poslije poroda, učestalost febrilnih stanja postpartalno, učestalost krvarenja i učestalost sljedećih trudnoća. Prosudba krvarenja: promjene u hematokritu u deset postotaka ili potreba za intraoperativnom ili postoperativnom transfuzijom krvi. **Rezultati.** Prosječna veličina fibroida je bila $7,11 \pm 5,99$. Postotak krvarenja je bio 8,7%. Nije bilo statistički značajne razlike između najvećeg fibroida i grupe s krvarenjem. Isto to nađeno je i uspoređujući prosječan broj fibroida sa skupinom koja je krvarila. Ni jedna ispitanica u promatranim skupinama nije doživjela ozljedu organa, histerektomiju ili premještaj u Jedinicu za intenzivnu skrb. Četiri ispitanice primile su transfuziju krvi. **Zaključak.** Miomektomija tijekom carskog reza nije uvijek komplicirana procedura i čini se da ne povećava rizik za intrapartalni ili kratkotrajni postpartalni pobol te može od strane iskusnog porodničara biti izvedena bez značajnih komplikacija.

Introduction

Uterine myomas are the most common pelvic tumors over the age of thirty.¹ The incidence of fibroids in pregnancy has been reported to be between 0.09% and 3.9%. Though the majority of gravid uteri with fibroids are asymptomatic, 10–40% can have complications in pregnancy.²

Performing myomectomy at the time of cesarean delivery in classical teaching has been discouraged because of the increased incidence of morbidity primarily from hemorrhage.³ The risk of excessive hemorrhage at the time of myomectomy is significantly greater than cesarean section alone. Myomectomy in the first trimester is associated with less blood loss than myomectomy at term.⁴ In the first trimester the uterus receives only

2%–3% of the cardiac output. At term, however, the uterus receives in excess of 17% of the cardiac output.⁵

In case series of twenty five myomectomy that was performed at the time of cesarean delivery, five patients (20%) received blood transfusion, although none patient required hysterectomy.⁶ For pedunculated fibroids the removal can be performed without difficulty since the bleeding is usually less and with minimum complications. Recently many case series of cesarean myomectomies have been published which reveals different results.

In this study our aim was to evaluate the outcome of myomectomy at time of cesarean delivery. All the cases performed at the Women's Hospital in Qatar during the study period were reviewed to assess our performance and the morbidity of this procedure.

Methods

A retrospective cohort study was used; forty six women with myomas who underwent myomectomy at time of cesarean delivery at Women's Hospital, Hamad Medical Corporation between January 2000 and December 2006 were included in this study.

The study group consisted of patients who underwent myomectomy at time of cesarean delivery. All the women fulfilled the following criteria: (1) documented fibroid uterus during the index pregnancy by antenatal ultrasound or by intraoperative findings; (2) delivery by cesarean delivery; (3) admission and post partum hematocrits in the data base; (4) no evidence of antenatal bleeding (e.g., from placenta previa or abruption); (5) no other procedures at the time of cesarean delivery besides myomectomy (e.g., cystectomy, planned hysterectomy, or tubal ligation); (6) no co-morbid conditions with evidence of coagulopathy.

Characteristics abstracted include age, parity, gestational age at delivery, and number and size and location of fibroid. For the patients who underwent myomectomy, the size of the excised fibroid was obtained from the pathology report or, if no pathology report was available, the surgeon's findings in the operative notes or antenatal ultrasound during that pregnancy. When there was more than one myoma, the biggest and the smallest myoma diameter were documented.

Primary outcomes analyzed were change in hematocrit, hemoglobin, need for blood transfusion, intra- and post-operative complications, duration of hospital stay, and the necessity for admission in Intensive Care Unit. Hemorrhage was defined as a decrease of hematocrits of 10 points from the pre-operative to post-operative value or the need for intra- or post-operative blood transfusion. Operative time was calculated from skin incision to skin closure as indicated in nursing notes. Post operative fever was defined as a post operative temperature equals or greater to 38°C.

A linear incision was made over the myoma, myometrial closure was accomplished in one or two layers using interrupted absorbable sutures (1-0 vicryl), the serosa is sutured with a continuous absorbable suture (2-0 or 3-0 vicryl). Pelvic irrigation was done with saline.

All data were analyzed using Wilcoxon/Kruskal Wallis for non parametric variables, Chi square and Fisher Exact test for categorical variables, and Student's t-test for continuous parametric variables. The threshold of significance was defined as $P < 0.05$.

Results

During the study period, forty six women with myomas who underwent myomectomy during cesarean section were included in this study. Our data have shown that myoma and pregnancy is found mainly in women after thirty years of age and prevalent in nulliparas.

Table 1. Patient characteristics

Tablica 1. Karakteristike bolesnica

	Mean ± S.D. / (n) / (%)
Maternal age (years)	32.74 ± 4.39
Primiparity (n)	24 (52.2%)
Gestational age (weeks)	37.22 ± 2.01
Myoma diameter of the largest(cm)	7.11 ± 5.99
Myoma diameter of the smallest (cm)	2.5 ± 0.55
Incidental finding	23 (50.0%)
Planned operation	23 (50.0%)

Table 2. Features of removed myoma

Type – Oblik	N (%)
Pedunculated	1 (3%)
Intramural	7 (21.2%)
Subserous	17 (51.5%)
Submucous	2 (6.1%)
Multiple	6 (18.2%)
Total	33 (100.0%)
Not Documented	13
Location – Smještaj	N (%)
Fundal	25 (67.6%)
Lower segment	4 (10.8%)
Cervical	1 (2.7%)
Multiple sites	6 (16.2%)
Other	1 (2.7%)
Total	37 (100.%)
Not Documented	9
Size – Veličina	N (%)
≤3 cm	11 (24.4%)
<6 cm	10 (22.2%)
≥6 cm	24 (53.3%)
Total	45 (99.9)
Not Documented	1
Number of Fibroid – Broj mioma	N (%)
Single Fibroid	35 (77.8%)
Not Documented	1

The mean ±SD of age of patients who underwent cesarean myomectomy was 32.74±4.39 years. Around fifty two percents (52.2%) of them were nulliparas. The mean ± SD of the gestational age among the study group was 37.22±2.01 weeks. Of women who underwent cesarean myomectomy, the indication for the procedure in fifty percents (50%) of patients was either not noted or was identified as incidental and fifty percents (50%) of patients had specific indications documented including symptoms such as pain during pregnancy, obstructed lower uterine segment, unusual intra-operative appearance, and had a planned operation. Patients' characteristics are in *Table 1*.

The types of myoma removed are presented in *Table 2*. Most of the fibroids were subserosal (51.5%), 15.2% of them were located in multiple sites. Single myomas were found in 77.8% of cases, around sixty eight percents (67.6%) were located in the fundus, 10.8% were

Table 3. Outcomes of cesarean myomectomy patients
 Tablica 3. Ishod bolesnica s odstranjenim miomima

Mean change in hematocrit (range)	2.55 ± 3.60 (2.4–12.7)
Pre-operative hemoglobin values (gm/dL) (mean ± SD)	11.63 ± 1.28
Post-operative hemoglobin values (gm/dL) (mean ± SD)	10.67 ± 1.60
Mean change in hemoglobin values (gm/dL) (mean ± SD)	0.96 ± 1.15
Number and percentage of hemorrhage	4 (8.7%)
Frequency of blood transfusion (intra-operative)	1 (2.2%)
Frequency of blood transfusion (post-operative)	4 (8.7%)
Frequency of postoperative fever	3 (6.5%)
Duration of operation in minutes (mean ± SD)	55.11 ± 20.79
Length of hospital stay in days (mean ± SD)	4.4 ± 1.92
Hysterectomy	0
SICU admission	0
Organ Injury	0

Table 4. Number and percentages of hemorrhage in relation to the size and location of myoma

Tablica 4. Broj i postotak krvarenja u odnosu na veličinu i smještaj mioma

	N°	Hemorrhage	
		Yes	(%)
Size (diameter)			
Veličina (promjer)			
≤3 cm	11	0	(0)
3 cm and < 6 cm	8	2	(25%)
≥6 cm	22	2	(9%)
Type of fibroid			
Oblik mioma			
Intramural	7	0	0
Pedunculated	1	0	0
Subserous	15	2	(13%)
Submucous	2	0	(0)
Multiple	4	2	(33,33%)
Single fibroid	4	2	(50%)
Pojedinačni miom			

located in the lower segment, and around three percentages (2.7%) were located in the cervical region. The mean ±SD of size of fibroid removed was 7.11±5.99 cm (range, 1 cm – 34 cms).

The results of the primary outcome are shown in *Table 3*. Hemorrhage was encountered in four patients (8.7%), four patients in the study group required blood transfusion post operatively (8.7%), one of the four patients also required intra-operative blood transfusion (2.2%).

The mean change in hematocrits was 2.55±3.60 and one (2.2%) of the forty six patients in this group had change in hematocrits of more than 10 points. The mean ±SD of hemoglobin values were 11.63±1.28 preoperatively and 10.67±1.60 gm/dL postoperatively.

The mean operative time was 55.11±20.79 minutes. None of the patients required hysterectomy at the time of surgery or embolization within six weeks of delivery. No case of any organ injury was reported during the procedure. The mean length of hospital stay was 4.4±1.92 days. None required admission to the Intensive Care

Unit. Three out of the forty six patients had post operative fever (6.5%).

The incidence of hemorrhage according to the size of the myoma is presented in *Table 4*. There was no statistical significance in the incidence of hemorrhage in relation to the large size group of fibroids (P=0.8) and also no statistical significance encountered in relation to the number of fibroids (P=0.16).

Nineteen (41.3%) of patients have subsequently become pregnant, four (21.05%) of whom had normal vaginal deliveries, while twelve (63.16%) had repeated elective cesarean section, and one patient had one normal vaginal delivery and one cesarean section (5.26%).

Discussion

Generally most obstetricians do not suggest myomectomy during cesarean delivery, unless the myoma is pedunculated,^{14,15} however some obstetricians agree in selected patients and in experienced hands myomectomy at time of cesarean section may be safe and effective procedure. Most authors³⁻⁶ found that the site of the myoma is more significant than any other factors. It seems that retro-placental myomas are associated with increased incidence of pre-term delivery, ante partum and post partum hemorrhage, fetal growth restriction and even intrauterine fetal death.^{3,5} Exacoustos² established placental abruption when myoma volume was greater than 200 cm³ and more than 3 cm in diameter, with an incidence of 31% in this group of placenta with sub-mucosal myoma. More and more studies have been done worldwide on myomectomy during pregnancy⁹⁻¹² and at cesarean section^{13,14} where successful outcomes have been achieved without a significant increase in the complications.

In our study, hemorrhage encountered in patients who had large myoma was found to be not statistically significant (P=0.8); the P value of 0.16 was found when testing the null hypothesis of no difference between the mean value of number of fibroids for each of hemorrhage group. After stratifying the procedure by type of fibroid removed, operation done on multiple fibroids was found to be associated with a hemorrhage (33.33%), and subserosal cesarean myomectomy was associated with 13% of hemorrhage; on the contrary, no hemorrhage was encountered in the other types of fibroids.

In cases with persistent fibroids, myomectomy can be considered at cesarean section. Later myomectomy will involve more morbidity due to the fact that repeat abdominal surgeries are bound to be more difficult with adhesions and other peri-operative complications. Myomectomy at cesarean section gives another opportunity to do the same procedure without necessarily increasing the morbidity and is more cost-effective than an interval myomectomy. The major risk of undertaking myomectomy during cesarean section is the risk of bleeding and the possible difficulty of closing the defect in the cavity after myomectomy.^{7,8} With experienced surgeons who

operate quickly and efficiently this surgery can be considered.

This study has several limitations, given its retrospective study design, it's subjected to several possible biases. Firstly, the study population was not large enough to make accurate conclusions. Secondly, the size, site, and type of fibroid were obtained from the operative notes and histopathology reports were not clearly documented. Finally, as a result of retrospective design, during the operations blood was measured together with amniotic liquor in milliliters so the hemorrhage was finally defined according to hematocrits values.

Conclusion

Despite these limitations, the message from this study is clear, myomectomy during cesarean section was not always a hazardous procedure and it can be performed without significant complications and should be pursued with caution and only in selected patients.²

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