

# Myomectomy during cesarean section and adhesion formation as a long-term postoperative complication

Miomektomia podczas cięcia cesarskiego a powstawanie zrostów jako późne powikłanie pooperacyjne

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## Abstract

**Objectives:** We aimed to evaluate the incidence and features of postoperative adhesion related complications occurring following myolysis or myomectomy performed during cesarean section (C/S).

**Methods:** This cross-sectional study consists of four groups of patients who underwent C/S: group I; myolysis is performed by electric cauterization for small superficial fibroids less than 2 cm. (n: 21), group II; myomectomy is performed for pedunculated fibroids (n: 18), group III; myomectomy is performed for intramural/subserous fibroids less than 5 cm. (n: 23), group IV; control group (n: 19) who did not go through myomectomy. Repeat C/S is performed to study subjects within 1-5 years. All cases are evaluated in terms of mild to moderate adhesions between omentum and uterus, mild to moderate adnexial area adhesions, mild to moderate incision area adhesions and surgical difficulty due to severe adhesions.

**Results:** The incidence of adhesions of omentum and uterus ( $p= 0.278$ ), mild to moderate adnexial area adhesions ( $p= 0.831$ ), mild to moderate incision area adhesions ( $p= 0.804$ ) were similar between the intervention groups (group I, II, and III) and the controls (group IV).

**Conclusion:** Cesarean myomectomy is a safe procedure and can be performed without significant postoperative adhesion formation.

Key words: **caesarean / myomectomy / postoperative adhesion /**

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Mert Turgal et al. Myomectomy during cesarean section and adhesion formation as a long-term postoperative complication.

## Streszczenie

**Cel pracy:** Celem naszego badania była ocena częstości występowania i charakter zrostów pooperacyjnych po zabiegu miolizy lub miomektomii w trakcie cięcia cesarskiego.

**Metoda:** Do badania włączono cztery grupy pacjentek, które miały wykonane cięcie cesarskie (C/S) oraz miolizę powierzchniowego, mniejszego niż 2 cm mięśniaka metodą elektrokauterizacji – grupa I (n:21), usunięcie mięśniaka uszypułowanego – grupa II (n:18), miomektomię mięśniaka wewnątrzściennego/podsurowiczkowego, mniejszego niż 5 cm – grupa III (n:23), nie miały wykonanej miomektomii – grupa IV kontrolna (n:19). Ponowne cięcie cesarskie wykonano u badanych pacjentek w ciągu 1-5 lat. Wszystkie pacjentki oceniono pod kątem małych do średnich zrostów pomiędzy siecią większą i macicą, małych do średnich zrostów w okolicy przydatków, małych do średnich zrostów w okolicy nacięcia powłok i trudności operowania z powodu ciężkich zrostów.

**Wyniki:** Częstość występowania zrostów pomiędzy otrzewną i macicą ( $p=0,278$ ), małych do średnich zrostów w okolicy przydatków ( $p=0,831$ ), małych do średnich zrostów w okolicy nacięcia powłok ( $p=0,804$ ) była podobna pomiędzy badanymi grupami (I, II i III) a grupą kontrolną (IV).

**Wnioski:** Miomektomia podczas cięcia cesarskiego jest bezpieczną procedurą i może być przeprowadzana bez istotnych, pooperacyjnych zrostów.

Słowa kluczowe: **cięcie cesarskie / miomektomia / zrosty pooperacyjne /**

## Introduction

Uterine fibroids are the most common pelvic tumors observed during the reproductive period of a female [1]. The incidence of fibroids in pregnancy is 0.05–5% [2]. Myomectomy can be performed during pregnancy or cesarean section (C/S) [3, 4]. Myomectomy during the course of C/S is questionable because of an increased risk of intrapartum and short term postpartum complications. General trend is against myomectomy at time of cesarean delivery with the exception of small pedunculated fibroid tumors [5, 6]. However, there is limited information related to long term postoperative complications. There are no studies evaluating the difficulty of repeat cesarean section due to postoperative adhesion formation following myomectomy in the previous cesarean section. This cross-sectional study was performed to evaluate the incidence and features of postoperative adhesion formation after myolysis or myomectomy during C/S.

## Methods

This cross-sectional study was conducted at the Department of Obstetrics and Gynecology, Hacettepe University Faculty of Medicine based on operations performed from January 2001 to December 2005. Small superficial fibroids, pedunculated fibroids and intramural/subserous fibroids less than 5 cm. at the fundus, anterior and posterior walls of the uterus are included into this study. This study is consisted of four groups of patients who underwent C/S: group I; myolysis (Figure 1) is performed by electric cauterization for small superficial fibroids less than 2 cm. (n: 21), group II; myomectomy (Figure 2) is performed for pedunculated fibroids (n: 18), group III; myomectomy (Figure 3) is performed for intramural/subserous fibroids less than 5 cm. (n: 23), group IV; control group (n: 19) repeat caesarean sections without myomectomy. All operations were conducted by a single surgeon (MSB). Intramural fibroids were carefully dissected vertically when possible and enucleated cautiously not to injure the fallopian tubes. Tourniquet and vasopressin were not used in any of the patients. After the removal of the fibroid the myoma bed was closed without leaving any dead space in layers of interrupted absorbable sutures. The serosa was closed by continuous absorbable sutures.

Myolysis were performed by bipolar needles. Cases with infectious morbidity in-between two operations are not included in the study. Repeat C/S was also performed by the same surgeon within 1-5 years preceding the current C/S. All patients have given written informed consent before caesarean section and the institutional review board approval has been obtained with #308. Mild to moderate adhesions between omentum and uterus; adnexial area adhesions; incision area adhesions and surgical difficulty due to severe adhesions were determined for each patient. There were no major complications in the first and repeat operations.

For the statistical analysis of the data, the Statistical Package for the Social Sciences (SPSS) 17.0 (SPSS Inc., Chicago, IL, USA) was used. As descriptive statistics number with percentage for categorical variables were used. Pearson Chi-Square test was used for comparison of number of postoperative adhesion formation between the myolysis, myomectomy and control group. The p-value of  $<0.05$  was considered significant.

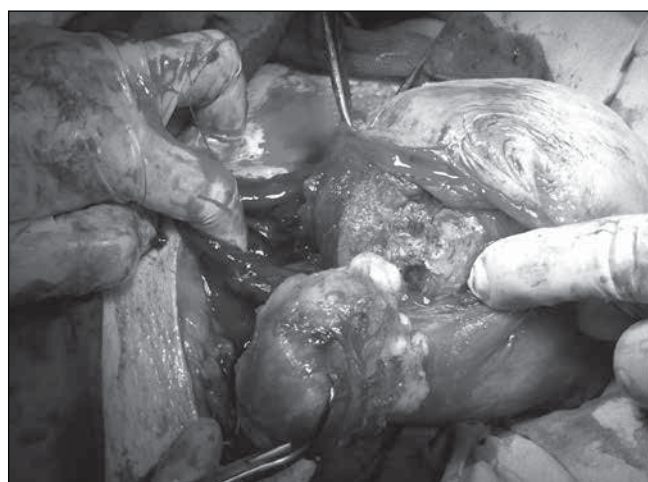
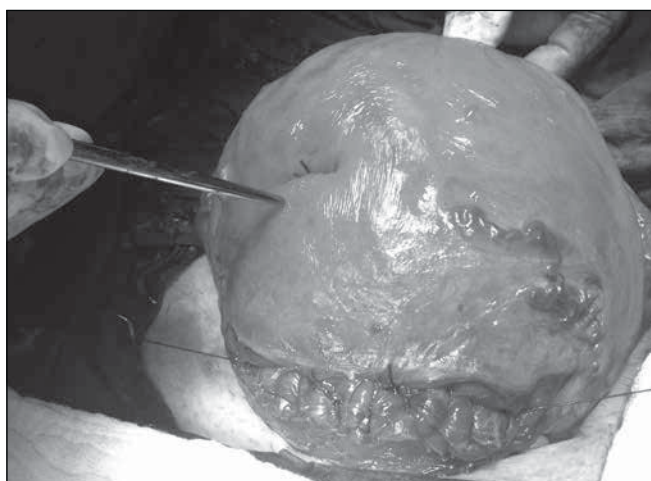
## Results

This study included 81 cases. All groups were similar with respect to age, parity, and gestational age. The incidence of adhesion between omentum and uterus ( $p=0.278$ ), adnexial area adhesions ( $p=0.831$ ) and incision area adhesions ( $p=0.804$ ) were similar between the intervention groups (group I, II, and III) and the controls (group IV). Group I and IV had similar adhesion incidence rates (19% vs. 21.1%). Furthermore, adhesion rates for group II (50%) and III (34.8%) were higher than group IV (21.1%) but there was no statistically significant difference between these groups ( $p=0.182$ ). Cumulative incidence of all adhesions revealed no statistically significant difference between groups I, II, III and IV ( $p=0.139$ ). Details are given in Table I.

Only in two cases we have experienced surgical difficulty due to severe adhesions. One patient was group III and other patient was group IV. In the study case the uterus and omentum was adhesive to the anterior abdominal wall and in the control case the bladder was densely adhered to previous C/S incision area in the uterus. There were no bleeding complications related to adhesion formation.

Mert Turgal et al. *Myomectomy during cesarean section and adhesion formation as a long-term postoperative complication.***Table 1.** Postoperative adhesion formation areas in operative and control groups.

Groups (n)	Adhesion between omentum and uterus	Adnexial area adhesions	Incisional area adhesions	All adhesions	Surgical difficulty due to severe adhesions
I <sup>1</sup> (21)	1 (4.8%)	2 (9.5%)	1 (4.8%)	4 (19.0%)	0 (0%)
II <sup>2</sup> (18)	4 (22.2%)	3 (16.7%)	2 (11.1%)	9 (50%)	0 (0%)
III <sup>3</sup> (23)	3 (13.0%)	4 (17.4%)	1 (4.3%)	8 (34.8%)	1 (4.3%)
IV <sup>4</sup> (19)	1 (5.3%)	2 (10.5%)	1 (5.3%)	4 (21.1%)	1 (5.3%)
Total (81)	9 (11.1%)	11 (13.6%)	5 (6.2%)	25 (30.9%)	2 (2.5%)
P value (Pearson Chi-Square)	0.278	0.831	0.804	0.139	0.585

<sup>1</sup> group I; myolysis<sup>2</sup> group II; myomectomy performed for pedunculated fibroids<sup>3</sup> group III; myomectomy performed for intramural/subserous fibroids less than 5 cm<sup>4</sup> group IV; control group**Figure 1.** Process of myolysis by electric cauterization.**Figure 3.** Procedure of myomectomy for intramural fibroid.**Figure 2.** Photograph showing uterus after myomectomy for pedunculated fibroid.

## Discussion

Postoperative adhesions are undesirable pathological complications and they are defined as abnormal fibrous connections in-between two anatomically different surfaces. After gynecological surgery, intra-peritoneal adhesions develop among 55%

to 100% of patients [7]; however, rates of adhesion development recorded at a repeat C/S are lower ranging from 24% to 46% [8]. The incidence increases from 43% to 75% at the third, and up to 83% at the fourth C/S [9]. In our study, mild to moderate “adhesions in-between omentum and uterus” and “adnexial plus incision area adhesions” are observed at a rate of 21.1 % and surgical difficulty due to severe adhesions was observed in 5.3 % of repeat caesarean sections (Table I).

Our clinical understanding necessitates further description of adhesions i.e. their localizations and severity. Otherwise our current data will be less valuable for routine clinical practice.

Caesarean myomectomy is not preferred due to an increased risk of intrapartum and short term postpartum complications [10-12]. Myomectomy during C/S is usually performed for small pedunculated fibroids [6]. However, many authors agree that myomectomy is a safe procedure during C/S [13-16]. Hassiakos et al. found no statistically significant difference in-between the control and study groups in terms of hemoglobin levels, hospitalization time, intra-operative and puerperal complications [17]. Roman and Tabsh have shown that myomectomy during caesarean delivery do not appear to result in an increased risk of intrapartum or short-term postpartum morbidity [18].

Mert Turgal et al. Myomectomy during cesarean section and adhesion formation as a long-term postoperative complication.

Current published data on outcomes following caesarean myomectomy lack coexisting maternal health problems, perinatal complications and classification of myoma uteri according to their localizations and size. We believe that pooled caesarean myomectomy data is not an ideal approach to reach definite conclusions to be used in “intervention protocols”. Another critical issue is the pressure of social medicine and ethical/legal climate on daily clinical practice going together with complication concept. We need to provide evidence and answers to complication related simple medical situations as a part of defensive medicine.

Although there are several studies about adhesions due to abdominal myomectomy or caesarean delivery [19, 20] there is no study investigating postoperative adhesion formation after caesarean myomectomy. This is the first study evaluating post-operative adhesions after caesarean myomectomy during the course of subsequent caesarean sections. Study population is consisted of three groups of patients with myoma uteri who underwent C/S: group I; “myolysis is performed by electric cauterization for small superficial fibroids less than 2 cm”, group II; myomectomy is performed for pedunculated fibroids, group III; myomectomy is performed for intramural/subserous fibroids less than 5 cm. Adhesions are classified according to their localizations and severity (Table I).

The frequency of adhesion formation is higher in “pedunculated fibroids” and “intramural/subserous fibroids less than 5 cm” (Table I). However, there was no statistically significant increase in the incidence of “adhesion formation between omentum and uterus”, “mild to moderate adnexial area adhesions” and “mild to moderate incision area adhesions” at the intervention groups compared to the controls.

This study has several limitations. First the number of patients is relatively small. Second, the study is not a randomized trial. The third issue is the lack of uniform elapsed time in between the first and repeat caesarean sections which is 1 to 5 years. On the other hand, all operations were performed and evaluated by the same surgeon. Another advantage is the classifications of myoma uteri groups and adhesions according to their localizations, sizes and severities.

In conclusion based on our study we can conclude that among selected cases, myomectomy during C/S does not cause statistically significant increase in the formation of postoperative adhesions. We believe that randomized studies are required to confirm our results.

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#### Authors' contribution:

1. Mert Turgal – drafting the manuscript conception and design of study, acquisition of data, article draft and revising the manuscript critically for important intellectual content.
2. A. Seval Ozgu-Erdinc – drafting the manuscript conception and design of study, analysis and interpretation of data, acquisition of data, article draft and revising the manuscript critically for important intellectual content, corresponding author.
3. Kemal Beksac – acquisition of data, article draft and revising the manuscript critically for important intellectual content.
4. Ozgur Ozyuncu – acquisition of data.
5. Ergun Karaagaoglu – analysis and interpretation of data.
6. M. Sinan Beksac – acquisition of data, drafting the manuscript conception and design of study, article draft and revising the manuscript critically for important intellectual content.

#### Authors' statement

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