

## Comparison of short term maternal complications of primary elective caesarian section and normal vaginal delivery

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### Abstract

**Background:** Performing caesarian section (C/S) according to maternal request is one of the major challenges of obstetrics. Number of mothers requesting caesarian without any medical indication is increasing. The aim of this study was to compare short term maternal complications of primary elective caesarian and scheduled normal vaginal delivery in healthy nulliparous women.

**Methods:** This analytical comparative cross-sectional study was performed during 2006-2011. Required data was collected using patient's medical records. SPSS 16 software was utilized for data analysis. Short term maternal complications of primary elective caesarian and normal vaginal delivery were compared.

**Results:** 950 women which had undergone primary elective caesarian with mean age of  $22.6 \pm 2.1$  years and 1200 women which had undergone normal vaginal delivery with mean age of  $24.01 \pm 3.1$  years were enrolled in the study ( $P < 0.0001$ ). There were no significant differences regarding wound infection, anemia, need for blood transfusion, thromboemboli as well as need for hysterectomy between two groups ( $P > 0.05$ ). Duration of hospitalization was significantly shorter in normal vaginal delivery group (1.19 versus 2.25 days) ( $P < 0.0001$ ).

**Conclusion:** Results of the present study revealed that short term maternal complications of primary elective caesarian and normal vaginal delivery in healthy nulliparous women are comparable. Further studies are suggested to confirm these results.

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**Kew words:** short term maternal complications, elective caesarian, normal vaginal delivery

## **Introduction**

Nowadays caesarian section (C/S) is one of the most common major abdominal surgeries. It has been estimated that 1.3 million cases of C/S (31.1% of all deliveries) have been performed during the year 2006 in the United States. Number of primary and repeated C/S cases has been markedly increased and on the other hand, number of vaginal birth after C/S has been significantly decreased.<sup>1</sup> It seems that mothers' request are main cause of this issue.

C/S according to maternal request refers to performing C/S without any medical indications to avoid from NVD. Applying this method is based on active decision made by the physician and the patient.<sup>2,3</sup>

It has been estimated that C/S according to maternal request accounts for 4-18% of all cases of C/S<sup>4</sup> and 1-3% of all cases of C/S in the United States.<sup>5</sup> Unlike scheduled NVD, it appears that total number C/S due to mothers' request is increasing.<sup>6</sup> Agency for Healthcare Research and Quality has published some details about performing C/S due to mothers' request.<sup>7</sup>

Performing C/S due to mother's request is unlikely to affect overall obstetrical care costs.<sup>8</sup> Better scheduling to do postpartum tasks, preventing post date pregnancies and lower risk of postpartum hemorrhage are potential advantages of elective C/S rather than NVD.<sup>9</sup>

While maternal risks including postpartum depression<sup>10</sup> are slightly higher but complications including, infection, accidental damages to intra-abdominal organs, fetal injuries during cutting uterine wall, injuries to pelvic floor, urinary incontinence and complications of anesthesia are less frequent following elective C/S.<sup>11</sup> Fear of pelvic floor damages, urinary and fecal incontinence following NVD are frequent reasons of mothers request for C/S.<sup>12</sup>

Regarding increasing number of C/S in the world including in Iran we conducted this study to compare short term maternal complications of primary elective C/S and scheduled NVD in healthy nulliparous women.

## **Materials & Methods**

It was an analytical comparative study on term pregnancies of nulliparous women which had undergone primary elective C/S or NVD in obstetric wards of teaching university hospitals affiliated to Kermanshah University of Medical Sciences. Source of data was medical records of the patients archived in medical archive units of the hospitals during 2006 - 2011.

Inclusion criteria were nulliparous, singleton, term pregnancies (complete 37-42 weeks) with cephalic presentation. Gestational age was determined based on date of first day of the last menstrual period or ultrasound findings.

Women with medical diseases (diabetes, hypertension, etc) and premature rupture of membranes, assisted vaginal deliveries by forceps and vacuum were excluded from the study.

1200 cases of NVD and 950 cases of C/S were included in the study. Short term maternal complications such as, wound infection, deep vein thrombosis (DVT), anemia, febrile morbidity (temperature higher than 38 degrees during the first 48 hours detected for 2 times postpartum except the first 24 hours), need to blood transfusion and hysterectomy, duration of hospitalization and maternal death were compared between two groups.

The case group was consisted of women candidate for primary elective C/S and the control group was those scheduled for NVD. All caesarian sections were performed using Pfannenstiel section and standard methods of Kerr incision. After shoulder delivery, 10 units of Oxytocin injected to all women. Prophylactic antibiotic (2 gr. IV Cefazolin) was administered after umbilical cord clamp in all C/S cases.

SPSS version 16 software were used for data analysis. We used Chi-square test for comparing qualitative variables and independent T test for quantitative variables. Statistical significance was recognized at  $P < 0.05$ .

## **Results**

Totally medical records of 2150 patients admitted between the years 2006 to 2011 were involved in the study. 1200 women (55.8%) had undergone NVD and 950 ones (44.2%) had undergone C/S. Mean age of mothers was  $24.01 \pm 3.6$  years in NVD group and  $22.6 \pm 2.7$  years in C/S group. The age difference was statistically significant between two groups ( $P < 0.0001$ ). Incidence of wound infection was not significantly different between the NVD and C/S groups ( $P = 0.558$ ). Anemia was occurred in 47 cases (2.1%) among which 19 cases (2%) were in the C/S group and 28 cases (2.3%) in the NVD group which was not significantly different between two groups ( $P = 0.505$ ). 7 patients (0.3%) had needed to blood transfusion among which 1 case (0.1%) was in the C/S group and 6 cases (0.5%) in the NVD group.

Duration of hospitalization was 1 to 6 days (Table 1). The relationship between duration of hospitalization and method of delivery was statistically significant ( $P < 0.001$ ).

Febrile morbidity was encountered in 6 patients (0.3%); 2 cases (0.2%) in the C/S group and 4 cases (0.3%) in the NVD group ( $P = 0.458$ ).

None of the patients required peripartum hysterectomy. There were also no cases of DVT or maternal death in the case or control groups.

## Discussion

This study revealed that short term maternal complications of elective C/S and NVD were not significantly different but C/S method cannot be considered as a completely safe delivery method. One of the characteristics of this study was exclusion of mothers with complicated conditions (diabetes, hypertension, rupture of membranes and breech presentation) from the study. Thus a low rate of febrile morbidity was encountered.

In Liu and his colleagues' study<sup>13</sup> on 46766 cases of C/S and 2292420 cases of NVD in the year 2007 and also in Norwitz's study<sup>14</sup>, duration of hospitalization in the C/S group was significantly longer than the NVD group. As well, in Oladapo's<sup>15</sup> study in Nigeria in the year 2007<sup>15</sup>, 165 cases of elective C/S were compared with NVD cases. Mean days of hospitalization was  $13.3 \pm 8.8$  days in C/S group and  $6.2 \pm 5.4$  days in NVD group which was consistent with our study. However, in Oladapo's study duration of hospitalization was significantly different between two groups but mean days of hospitalization was longer than those in our study.

In Liu and his colleagues' study, C/S was reported to be a risk factor for development of DVT. In a study conducted by Norwitz's and colleagues in United States in the year 2008 on more than 200000 cases of C/S<sup>14</sup> and also in a cohort study conducted by Sia and colleagues on 194 cases of C/S, there was only one case of advanced DVT which accounted for 0.5% of the patients<sup>16</sup> whereas there was no case of DVT in our study. It could be due to the differences in patient selection criteria in the studies; such as exclusion of breech presentations and multiple pregnancies from our study which were included in other studies.

In Norwitz's study incidence of bleeding, anemia, and also need for blood transfusion was higher in the C/S group. In Fenton's study<sup>17</sup> in Malawi, incidence of morbidity following C/S in 8070 cases was assessed. Anemia was occurred in 6.2% of the patients. In our study although need for blood transfusion was higher in NVD group but the difference was not statistically significant. The inconsistency between results of our study and others could be due to the difference in sample sizes of the studies. However regarding inclusion of patients which had undergone C/S following lack of labor progression and also cases of uterine rupture (4.1%) in Fenton's study, the differences in results of that study and ours is justified.

In Liu's study, need for hysterectomy due to bleeding was more frequent in C/S group but need for blood transfusion due to bleeding was more frequent in NVD group. There was no case of hysterectomy in our patients which could be due to exclusion of high risk patients from our study.

In Oladapo's study incidence of febrile morbidity was higher in C/S group whereas there were no significant differences between two groups in our study. However, probably some of our patients had admitted in other hospitals or were followed up in outpatient clinics which could be the cause of the difference in results of the studies.

Maternal death, hysterectomy and thromboembolism are rare complications and there are few evidences about them.<sup>1</sup>

The important point is that no cases of maternal death were observed in the present study which had been reported in most studies, although in small numbers. This demonstrates the aptitude of our health system in maternal care field.

One of the limitations in our study was incomplete data registration in patients' medical records. We tried to minimize the effect of that issue by excluding incomplete medical records from the study. Moreover some short term complications had been followed up in outpatient clinics and had not been registered completely.

## **Conclusion**

The present study revealed that incidence of maternal short term complications of primary elective C/S in low risk healthy women is not different from that in scheduled NVD. The only difference could be the duration of hospitalization which might impose more costs on patient and the health system. However when a mother requests C/S, she must be informed about the possibility of incidence of major and life-threatening complications including placenta accreta, increta, and also possible need for urgent hysterectomy during subsequent C/S.

Based on the finding of this study, the differences in anemia, febrile morbidity and wound infection was not statistical significant between two groups but need to transfusion was more in NVD group.

It is recommended that investigators conduct similar studies with more sample size to determine possible differences.

## **Acknowledgment**

We wish to acknowledge the medical archive units of Imam Reza hospital.

This work was performed in partial fulfillment of the requirements for the degree of M.D. of Raana Riahi and Paria Nasiri at Kermanshah University of Medical Sciences.

**Conflict of Interest:** There was no conflict of interest.

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**Table 1:** Mean and distribution of duration of hospitalization in two groups

Duration	Method of delivery	C/S	NVD	Total
		No. (%)	No. (%)	No. (%)
1 day		34(3.6)	977(81.4)	1011 (47)
2 days		636(66.9)	210(17.5)	846(39.3)
3 and more days		280(29.5)	13(1.1)	293(13.6)
Mean		2.25 days	1.19 days	1.67 days