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Increase in cesarean delivery rates is the biggest obstacle to the reduction of feto-maternal morbidity

Primary versus secondary cesarean

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Abstract

Aim: Cesarean delivery, whose incidence is already high, has started to increase due to the increase in both labor induction and multiple pregnancy rates due to ART. The cesarean section rate to reduce maternal and fetal morbidity should be 10% or less. This study was planned to compare cesarean and vaginal delivery rates, indications, fetal and maternal morbidity and mortality rates performed in Istanbul Training and Research Hospital over a ten-year period.

Material and Methods: During the ten-year period between January 2000 and January 2009, 17150 patients who gave birth were included in the study. Demographic data of the patients were obtained retrospectively from their files. Maternal age, gravida, parity, length of hospital stay and cesarean section indications were recorded. Those who had one or more previous cesarean sections and those who had previous cesarean section due to myomectomy constituted the secondary cesarean section group. Those who had a cesarean section for the first time constituted the primary cesarean section group. Frequency of normal and cesarean delivery rates, indications for cesarean section, early and late maternal and fetal morbidity and mortality rates were compared.

Results: The total number of patients participating in the study, including normal vaginal delivery and cesarean section, was determined as 17150. While 9310 of them gave birth by cesarean section, 7840 cases delivered vaginally. While the number of patients with previous and repeated cesarean section was 3180, the number of patients with first cesarean section was 6130. Previous and repeated cesarean sections were recorded as the most common cesarean indication (48%). The second most common cesarean indication is fetal distress (18.4%). The third most common indication for cesarean section is cephalo-pelvic incompatibility (11.2%), which was found in 67 cases. The fourth most common cesarean indication is presentation-position anomaly, which was detected in 53 cases (8.8%). When compared with the primary cesarean section group, the rates of hemorrhage, urinary infection, fever, wound dehiscence and re-operation were found to be significantly higher in the secondary cesarean section group. When compared with the secondary cesarean section group, fetal birth weight was found to be significantly higher in the primary cesarean section group. Fetal length, head circumference, 1st and 5th minute APGAR scores were found to be similar in both groups.

Discussion: Despite efforts by healthcare providers and governments to promote normal vaginal delivery, both cesarean section and feto-maternal morbidity continue to increase.

Keywords

Cesarean Section, Vaginal Delivery, Fetal Morbidity, Maternal Morbidity

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Introduction

Cesarean section, which is the most frequently performed surgical intervention in the world, was a procedure that surgeons avoided until the end of the 19th century due to its high mortality. Thanks to the low transverse uterine incision recommended by Kerr, accepted by everyone, and the development of new surgical techniques, cesarean section has now become a routine surgical practice. If we include all pregnant women, one out of every seven cases gives birth by cesarean section, while one out of five primigravid patients gives birth by cesarean section. Most of the indications for cesarean section are due to obstetric reasons. However, indications related to maternal request constitute a large percentage and pave the way for many fetal and maternal complications [1].Three of the 4 cases who had a cesarean section can have a vaginal delivery in their next pregnancy. This due to the fact that most indications for cesarean section are due to the conditions specific to that moment [2]. However, the increase in cesarean rates up to 35% in the last decade has led to an increase in maternal and fetal complication rates and has started to cause financial problems in the budgets of states. For this reason, health providers have applied a number of measures to reduce cesarean section rates. Although it has been suggested that mothers who have had a cesarean delivery can have their next birth vaginally, this has not been very successful. Although there is a low risk of 0.2-1.5%, the risk of uterine rupture after cesarean section has kept patients away from vaginal delivery. Vaginal delivery cannot be recommended in patients with a history of uterine rupture, those who have undergone surgery with a vertical incision, and those who have had more than two cesarean sections. However, the confidence of the couples in the cesarean section and the mothers' ability to have this procedure by asking their physicians have been the biggest obstacles to reducing the cesarean rates. Even an increase in maternal morbidity and mortality was not enough to reduce cesarean rates [2,3].

This study was planned for a comprehensive analysis of all normal deliveries and cesarean sections in Istanbul Training and Research Hospital between 2000 and 2009. Frequency of normal and cesarean delivery rates, indications for cesarean section, early and late maternal and fetal morbidity and mortality rates were compared.

Material and Methods

During the ten-year period between January 2000 and January 2009, 17150 patients who gave birth in Istanbul Training and Research Hospital Gynecology and Obstetrics Clinics were included in the study. Demographic data of the patients were obtained retrospectively from their files. Maternal age, gravida, parity, length of hospital stay and cesarean section indications were recorded. Those who had one or more previous cesarean section and those who had previous cesarean section due to myomectomy constituted the secondary cesarean section group. Those who had cesarean section for the first time constituted the primary cesarean section group. Frequency of normal and cesarean delivery rates, indications for cesarean section, early and late maternal and fetal morbidity and mortality rates were compared. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee, and approval for the study was obtained from the Institutional Review Board.

Statistical analysis

Analyses of all data were performed on SPSS 21 (SPSS Inc., Chicago, IL, USA). In addition to descriptive statistical methods (mean, standard deviation) in the evaluation of the data, an independent t-test was used in the comparison of paired groups, the chi-square test was used in the comparison of qualitative data, and a paired t-test was used in the repeated measurements of the groups. The results are given as mean±SD in both text and tables. $P<0.05$ cases were considered statistically significant.

Results

The total number of patients participating in the study, including normal vaginal delivery and cesarean section, was determined as 17150. While 9310 of them gave birth by cesarean section, 7840 cases delivered vaginally. While the number of patients with previous and repeated cesarean section was 3180, the number of patients with first cesarean section was 6130. Demographic characteristics of primary and secondary cesarean section groups are given in Table 1. Previous and repeated cesarean sections were recorded as the most common cesarean indication (48%). The second most common cesarean indication is fetal distress (18.4%). The third most common indication for cesarean section is cephalo-pelvic incompatibility (11.2%), which was found in 67 cases. The fourth most common cesarean indication is presentation-position anomaly, which was detected in 53 cases (8.8%).

When compared with the primary cesarean section group, the rates of hemorrhage, urinary infection, fever, wound dehiscence and re-operation were found to be significantly higher in the secondary cesarean section group (Table 2). When compared with the secondary cesarean section group, fetal birth weight was found to be significantly higher in the primary cesarean section group. Fetal length, head circumference, 1st and 5th minute APGAR scores were found to be similar in both groups (Table 3). Thrombophlebitis, wound infection, pneumonia, atelactasis and endometritis were found as etiological causes in cases with fever. Four out of the five patients in the secondary cesarean section were reoperated for postpartum bleeding control. In one case, surgery was performed to intervene in bladder injury. In the primary cesarean section group, re-operation was performed to intervene in a case that developed atony.

Table 1. Demographic parameters of primary and secondary cesarean section groups

	N	Minimum	Maximum	Mean ±SD
Maternal age	9310	17	45	29.3±4.08
Gravida	9310	1	7	3.66±0.55
Parity	9310	0	6	1.3±0.51
Hospitalization time	9310	1	13	3.98±2.09
Pre-partum Htc.	9310	26.9	44.6	32.6±0.70
Post-partum Htc.	9310	21.5	40.3	32.7±3.01

Table 2. Comparison of postoperative complication rates of patients in primary and secondary cesarean section groups

	Hemorrhage	Urinary infection	Fever	Wound dehiscence	Re-opertaion
Primary C/S (n=6130)	11	21	26	3	1
Secondary C/S (n=3180)	23	41	39	8	5
P value	0.01	0.002	0.02	0.04	0.002

Table 3. Comparison of primary and secondary cesarean section groups in terms of newborn parameters

	Birth weight	Fetal length	Head circumference	First min. APGAR	Fifth min. APGAR
Primary C/S (n=6130)	3208.55±455.7	50.66±1.77	36.7±3.88	8.55±2.01	9.05±3.22
Secondary C/S (n=3180)	3067.77±165.3	49.04±3.09	35.9±4.07	8.44±3.09	9.23±2.04
P value	0.03	0.65	0.33	0.60	0.12

Discussion

Because of the increased risk of urinary tract infection, fever, wound dehiscence, neonatal mortality, and postoperative surgery in patients undergoing emergency cesarean section, most of the cesarean section procedures are planned. However, even if it is performed under elective conditions, the risk of maternal and fetal mortality and morbidity due to cesarean continues [3]. Some authors have proposed to characterize lower segment caesarean section as normal birth with an interesting suggestion. However, the increase in mortality and morbidity rates provided important proof that this recommendation is unrealistic. WHO gave the real indication rate of cesarean section to be 15% to protect mother and baby life and emphasized that normal delivery refers to vaginal delivery [1]. The significant increase in hemorrhage, wound dehiscence, urinary tract infection, thromboembolism, the need for transfusion, and placentation anomalies in subsequent pregnancies compared to vaginal delivery in the post-cesarean period is evidence that vaginal delivery is a physiological mode of delivery [4].

The most common cesarean indication in the patients participating in our study consisted of patients with a previous cesarean section history. Fetal distress and cephalopelvic incompatibility are the second and third frequencies, respectively. These indications are similar to the results of previous studies. Maternal and fetal complication rates were significantly higher in the patient group with a previous cesarean section compared to those with a first cesarean section. However, except for fetal weight, other demographic parameters were similar in old and new cesarean section groups. The risk of reoperation was lower in the primary cesarean section group compared to the secondary cesarean section group [5-7].

Repeated cesarean deliveries continue to increase maternal morbidity and mortality by causing pathological placentation, obstetric bleeding and peripartum hysterectomy. Cesarean deliveries after maternal request have a very wide range and vary from 1 to 50%. Especially in private hospitals, cesarean rates after maternal request exceed 60%. Two other important reasons leading to an increase in cesarean section rates are increased labor induction and decreased instrumental delivery. In the light of all these data, cesarean sections planned with maternal request and fear of delivery have taken their place as the most common indications. In our study, the rates of cesarean section performed as a result of maternal request were not recorded. Cesarean section due to increased labor induction or decreased instrumental delivery rates was also an important group in our study [7,8].

In patients with a history of severe cardiovascular disease and previous sphincter injury, the mode of delivery should be decided by considering the advantages and disadvantages of normal delivery. In these cases, the preference is mostly for cesarean delivery. In our study, cesarean delivery was performed upon maternal request in four patients with a history of sphincter rupture. In pregnant patients with cardiovascular problems, endocarditis prophylaxis was performed and cesarean delivery was preferred. In IVF pregnancies, both physician preference and patient preference were in the direction of cesarean section. The preferred mode of delivery, especially in multiple pregnancies, was recorded as cesarean section. In most clinics, the diagnosis of fetal hypoxia is made with cardiotocography or scalp-lactate samples. In pregnant women whose cervix is not open enough, the diagnosis is made only by cardiotocography. In our cases, fetal hypoxia was diagnosed with a cardiotocograph. In patients diagnosed with severe preeclampsia, diabetes mellitus or rhesus immunization, cesarean section was preferred as the delivery method with a multidisciplinary approach [9-11].

Conclusions

As a result, a significant increase was observed in cesarean section rates in the last decade due to fetal hypoxia secondary to labor induction or prolonged labor. The news about maternal request, fear of giving birth, and uterine rupture from the press and social media has also become an important cesarean indication. Uterine scar due to previous surgeries, breech presentation and multiple pregnancies due to IVF are other important cesarean indications. Fetal hypoxia due to prolonged labor is another common cesarean indication. The WHO recommended cesarean rates are 10% or less to reduce maternal and fetal mortality [12]. Cesarean section rates above these rates will lead to a continuation of feto-maternal morbidity and mortality.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical

standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest
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