

Alarming rise of cesarean births: a single center experience

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Abstract. – BACKGROUND AND OBJECTIVES, The increase in cesarean section rates requires detailed investigation worldwide. The goal of this study was to analyze the distribution of indications and rates of cesarean sections in a developing country and to introduce the measures for controlling increased cesarean deliveries.

MATERIAL AND METHODS, Electronic medical records of the patients who underwent cesarean section were retrospectively evaluated between the years of 2006 and 2008.

RESULTS, Total of 42,547 vaginal delivery, 104 instrumental vaginal delivery and 28357 cesarean section were performed. The instrumental delivery and cesarean section rates were 0.14 and 39.9%, respectively. The most common indication was repeat cesarean that was present in 9224 patients (32.5%) followed by fetal distress in 6427 patients (22.6%).

CONCLUSIONS, Encouraging vaginal delivery for patients with previous cesarean by community based national approaches seems the leading measure to control the increased rates of cesarean section in developing countries.

Key Words:

Cesarean section, Indications, Frequency, Obstetric delivery, Public health.

tion of the safe delivery and changing health policies have contributed this rise³⁻⁶. Rising rate of cesarean delivery is one of the most important public health concern in Turkey, as well. According to the recent data established from demographic and health survey, women of reproductive age constitute 27.4% of the total population in Turkey. As a developing country, Turkey's annual birth rate is 1.5 million newborn with a total fertility rate of 1.87 children born per women.

However, cesarean section is a major surgical operation with considerable risks including postoperative infection, bleeding that required transfusion, thromboembolic complications and should be carried out in the presence of clearly defined indications⁷. Maternal and fetal mortality risk of vaginal birth after cesarean section (VBAC) associated with rupture of uterine scar, is a deterrent factor for many obstetrician for trial of labor in patients with prior cesarean⁸. The purpose of this study was to report the cesarean section rates in the most widely circulated tertiary center for perinatal care at Central Anatolia of Turkey, to evaluate the factors leading to increase cesarean section rate in our organization and to suggest preventive measures to reduce it safely.

Introduction

The increasing cesarean section rates have become one of the most debated topics in maternity care worldwide, due to the fact that high rates of cesarean delivery do not provide better perinatal care^{1,2}.

Reported cesarean section rate in USA is 29.1%, in England 21.5%, in Latin American countries 40% and according to the unpublished data of some maternity hospitals, in our country is 40%³⁻⁵. Medicolegal, psychological, social and financial factors including improved surgical and anaesthetic techniques, defensive practice of obstetricians arising from the medicolegal concerns, advanced maternal age, patients's percep-

Materials and Methods

This was a retrospective designed descriptive study and conducted at a Maternity Hospital which is a major referral center for perinatal care. A total 71,008 deliveries (vaginal delivery n = 42,547, instrumental vaginal delivery n = 104 and cesarean section n = 28,357) were performed at our Hospital from 1st January 2006 to 31st December 2008. The annual distribution of deliveries were investigated electronically and the indications for cesarean sections were obtained from patient's medical files manually. The patients whose file records were not provided were excluded from the study.

The study protocol was approved by the local Ethical Committee of the institution and was conducted in accordance with the basic principles of the Declaration of Helsinki. The operations were divided into two groups: emergency cesarean section and non-emergency group. An emergency cesarean section was defined as the presence of one which required prompt delivery to reduce the maternal and fetal risk. The pre-operative diagnoses included a cardiotocogram showed loss of variability and/or persistent late decelerations in the fetal heart rate, suspected placental abruption, or heavily bleeding placenta previa. All other indications for cesarean section were considered elective.

Statistical Analysis

Data was analyzed on SPSS version 15.0 (Chicago, IL, USA) and frequencies as well as percentages were calculated. Comparisons of the cesarean rates between the years were made using Chi-Square test and *p* value of < 0.05 was considered as statistically significant.

Results

During three years study period, total delivery was 71008 with proportions of vaginal delivery *n* = 42,547, 59.9%, instrumental vaginal delivery *n* = 104, 0.14% and cesarean section *n* = 28,357, 39.9%. (Table I).

Mean age of the patients was 29.1 ± 5.4 with a range of 14-47. Mean gestational age was 36.1 weeks and mean birth weight was 2941 ± 641 g with a range of 690-5220. Distribution of emergency and elective cesarean operations were *n* = 7720, 27.2% and *n* = 20,637, 72.8%, respectively (Table II).

As shown in Table III there were no significant differences between the years regarding the rate of indications for cesarean section (*p* = 0.996).

Discussion

Increase in cesarean section rate has become an international public health concern in developed and developing countries. The rates have increased from 5-7% in 1970 to 25-30% in 2003⁹. Cesarean section is a major abdominal surgery which is life saving for the mother and fetus when vaginal delivery carries a high risk of complications and death. However; increased rates of caesarean delivery is associated with increased use of antibiotics in postpartum and 7-10 times higher maternal mortality and fetal morbidity^{10,11}. The consensus recommendation for optimal cesarean section rate of 10-15% was made by WHO in 1985¹². In the present study, a cesarean section rate of 39.9% was found in a 3-year study period which shows a definite increase than expected rates. One of the most important factors associated with this high cesarean section rate is that our center is a major referral center for perinatal care with 15,000-25,000 live birth annually and caters majority of the patients with high risks from other regions of the country.

Unpreventable increase of cesarean delivery has been a global phenomenon as reported cesarean section rate in USA is 29.1%, in England 21.5%, in Asian countries 27.3% and in Brazil more than 50%^{3,4,13}. Lumbiganon et al.¹³ reported on a large multinational WHO survey on the mode of delivery and pregnancy outcomes in Asia. A total of 107,950 deliveries were analyzed and of these 29,428 (27.3%) deliveries were via cesarean. Compared with spontaneous vaginal deliveries, they found that cesarean section was associated with a 2.7-14.5-fold increase in the Odd's of the maternal mortality and morbidity index. Furthermore, these increases in maternal morbidity and mortality were not accompanied by associated decreases in the infant morbidity and mortality index.

A similar survey conducted by Villar et al⁴ comprising 24 geographic regions in eight coun-

Table I. Distribution of deliveries by years.

Year	Vaginal deliveries		Instrumental deliveries		Cesarean section		Total
	n	%	n	%	n	%	n
2006	15.170	59	46	0.18	10.288	40.2	25.504
2007	15.337	60.8	31	0.12	9834	39.8	25.202
2008	12.040	59.3	27	0.13	8235	40.5	20.302
Total	42.547	59.9	104	0.14	28.357	39.9	71.008

Table II. Distribution of cesarean sections.

Year	Mode of cesarean section			
	Emergency		Elective	
	n	%	n	%
2006	2649	25.7	7639	74.3
2007	2890	29.3	6944	70.7
2008	2181	26.5	6054	73.5
Total	7720	27.2	20637	72.8

tries in Latin America, demonstrated a 33%²⁴⁻⁵⁷ median rate of caesarean delivery. According to their results, increased caesarean delivery was positively associated with a severe maternal morbidity and mortality, even after an adjustment for the risk factors. Increase in the rate of caesarean delivery was also found to be associated with an increase in fetal mortality rates and higher numbers of newborns admitted to intensive care for 7 days or longer. They concluded that high rates of caesarean delivery do not necessarily indicate a better perinatal care and can be associated with harm.

Paradoxically, in Africa, where more cesarean deliveries are needed to improve maternal and perinatal survival, its availability and utilization are low¹⁴. In the poorest countries-mostly in sub-Saharan Africa, cesarean rates were below 1% for 80% of the population and the rates of maternal mortality and stillbirths are extremely high¹⁵.

It was found in the present study that the most common indication for cesarean section was repeat cesarean (29.8-36.6%). It's obvious that the decision of primary cesarean section should be made with a clear and well-supported justification.

16.7% of all cesarean sections performed in UK with an indication of repeat cesarean¹⁶. Unfortunately recurrent sections for four or more times are now frequently performed in our daily practice. VBAC is considered safer than a routine repeat cesarean section. The success rate of a trial of labor after one cesarean section ranges between 50% and 85%^{17,18}. The success rate with trial of scar depends on appropriate selection criteria, which include non-recurrent previous cesarean section, adequate pelvic dimensions, known uterine scar and absence of medical complications and of fetal macrosomia. Trial of labor in patients with previous low segment transverse uterine incision can safely be given to reduce rate of repeat cesarean section as the reported risk of uterine rupture is 0.3%^{19,20}. In our investigation, 32.5% of patients were having previous one cesarean which could be a candidate for VBAC provided optimal antenatal evaluation was done. Currently repeat cesarean section is the most important cause of increased cesarean section rates, therefore we believe that implementation of a trial of vaginal delivery after previous cesarean section is mandatory to control this increase²¹. In our organization, rate of labor induction given to the patients with previous scar is unfortunately quite low due to majority of the patients admitted have associated medical or obstetrical problems and no reliable information about previous uterine incision.

The second and third most frequent indications observed in our study was fetal distress (26.6%) and obstructed labour (18.9%). These indications were mostly due to mishandling by labour, improper use of oxytocics or unjustified induction with prostaglandins without an appropriate assessment of pregnancy²². Current research suggests that the labor induction makes a

Table III. Distribution of indications of cesarean sections.

Indications	2006		2007		2008		Total	
	n	%	n	%	n	%	n	%
Repeat cesarean	3076	29.8	3130	31.8	3018	36.6	9224	32.5
Fetal distress	2156	20.9	2446	24.8	1825	22.4	6427	26.6
Obstructed labour	2177	21.1	1791	18.2	1414	17.1	5382	18.9
Hypertensive disorders	266	2.5	202	2	134	1.6	602	2.1
Antepartum hemorrhage	135	1.3	151	1.4	138	1.6	424	1.4
Breech presentation	1019	9.9	838	8.5	763	9.2	2620	9.2
Other indications	1459	14.1	1276	12.8	943	11.3	3678	12.9

$P = 0.996$.

cesarean section more likely among first time mothers when cervix is unfavorable^{21,23}. Proper evaluation of patients play a key role in decision and prevents unnecessary interventions. Some randomized studies demonstrated a reduction in cesarean delivery rate by using a partogram that helps in early diagnosis of abnormal labour patterns and timely management²². Antenatal diagnosis of malpresentations and their effective management greatly prevent obstructed labor. Similarly oxytocic infusions lead to fetal distress and dysfunctional labor when given in false labor or in latent phase of labor. Fetal distress was diagnosed by presence of cardiotocographic evidence of late decelerations, deep variable decelerations and fetal bradycardia with absent variability. The diagnosis of fetal distress is often subjective and lacks standard clinical criteria in different health facilities. Continuous electronic fetal monitoring has been associated with greater likelihood of a cesarean²⁴. Precise interpretation of fetal heart tracing and use of fetal pH might be effective in reducing cesarean section rate.

During 1976 and 1996, cesarean section for breech increased from 30% to 86%. However, vaginal delivery for term breech does not appear to increase morbidity and mortality if the case for vaginal delivery is well selected²⁵. A policy of vaginal delivery had been recommended in a study by Danielian et al²⁶ in which they had not seen it to be associated with increased risk of long term infant morbidity. However, in their large scaled randomized multicenter trial, Hannah et al²⁷ have been reported that perinatal mortality, neonatal mortality, or serious neonatal morbidity was significantly lower for the term breech fetuses delivered by planned cesarean section rather than the term breech fetuses delivered by planned vaginal birth. As a consequence of evolution of modern obstetrics, cesarean section rates for breech presentation have been increasing²⁸. This trend increases the chance of repeat cesarean section in subsequent pregnancies of these patients. In this work the rate of cesarean delivery for breech presentation was 9.2%. In our center women with breech presentations were not allowed to labour, because of suggestions in the literature of as high as 30% prevalence of perinatal mortality and morbidity^{27,28}.

Cesarean section rate is alarmingly high (39.9%) in our organization as pertinent with current literature. The repeat cesareans and obstructed labour that mainly secondary to injudicious use of oxytocics in patients with latent

phase of labour are the main factors responsible for this high rate. The most clearly seen measure to diminish the rate of abnormally increased cesarean sections is trial of normal birth in selected patients who have had prior uterine surgery. It can also be reduced by proper antenatal evaluation and prevention of unjustified induction.

In conclusion, encouraging vaginal delivery for patients with previous cesarean by community based national approaches seems the leading measure to control the increased rates of cesarean section in developing countries. Finally, to improve fetomaternal outcome, caesarean section should be done only when there is a precise medical indication.

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