

■ *Original Article*

Caesarean section: its rates and indications at a tertiary referral center in Eastern Nepal

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Abstract

Background: There has been a sustained increase in the rate of caesarean section in the last few years around the world. Data regarding the current caesarean rate and the trends of its indications in eastern Nepal have not been estimated earlier. **Aim:** To assess the rate of caesarean sections and the varying indications for caesarean section in a tertiary referral center in eastern Nepal. **Methods:** All hospital deliveries that took place in BPKIHS between January 2006 and December 2007 were recorded to assess the caesarean section rate and its indications. **Results:** A total of 5330 deliveries were conducted in 2006. Likewise the total number of deliveries conducted in 2007 was 6634. In 2006 caesarean sections were performed in 28.6% (1524) of all patients. The rate of caesarean sections in 2007 increased and was 33.7% (2239). The most common indication for caesarean section was meconium-stained liquor, which constituted 23.4% (883). The next frequent indication was previous caesarean section, which accounted for 17.2% (650), followed by breech presentation in 11.1% (417), fetal distress in 9.6% (364), non-progress of labor in 7.2% (270), cephalopelvic disproportion in 6.2% (234), and placenta previa in 4.4% (165). **Conclusions:** There is an increasing trend of performing cesarean section in the tertiary referral center in east Nepal. The most common indication for cesarean section is meconium-stained liquor.

Keywords: Caesarean section, caesarean delivery rates, Nepal

Background

Caesarean section is one of the most commonly performed surgeries in obstetric practice. Caesarean delivery is performed for a vast array of indications. As such, no single reason exists for an obstetrician to recommend and perform a cesarean delivery.

The rate of caesarean delivery has risen dramatically in the western countries over the last 30 years.¹⁻⁴ Likewise, data from developing countries have also demonstrated an increasing pattern of caesarean deliveries in recent years, up to 25% in Nigeria.⁵

In pregnancies complicated by fetal malpresentation, excessive fetal growth, multiple gestation, cord

prolapse, placental abruption and maternal viral infections, caesarean delivery can be a life-saving intervention for the fetus. However many studies have shown that a higher caesarean delivery rate is not necessarily associated with better perinatal outcomes, and has even been associated with increased risk of fetal and neonatal mortality and neonatal morbidity, compared with spontaneous vaginal delivery.⁶⁻¹² Hence efforts have to be made to keep it under check in Nepal too.

Methods

This study was planned to understand the changing trends in caesarean section rates and thus the study was conducted in the department of Obstetrics and Gynecology, B.P. Koirala Institute of Health Sciences, Dharan, Nepal, which is a tertiary care

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referral center in eastern Nepal. The main objective of the study was to assess the rate of caesarean sections and instrumental deliveries (vacuum and forceps) that were performed between 2006 and 2007. The varying indications for caesarean section were also assessed. All deliveries that took place in our Department between January of 2006 and December of 2007 were prospectively collected through a performa.

Likewise the records of the total deliveries and caesarean sections performed from 2003 to 2005 were also analyzed in order to observe the changes in the rate of caesarean sections during the last 5 years in our institution.

All data were analyzed by using statistical package SPSS (version 10.0; SPSS Inc., Chicago, IL, USA). Comparisons between proportions were carried out using the χ^2 test, and a P – value less than 0.05 was considered as statistically significant.

Results

A total of 5330 deliveries were conducted in our department in 2006. Likewise the total number of deliveries conducted in 2007 was 6634. Normal vaginal deliveries accounted for 68.3% (3644) of all deliveries conducted in 2006 (Table 1), and 63.3% (4205) of the total deliveries conducted in 2007 (Table 2).

Table 1: Total deliveries in 2006

	No.	%
Vaccum	135	2.5
Forceps	27	0.5
Cesarean Section	1524	28.6
Normal Delivery	3644	68.3

Table 2: Total deliveries in 2006

	No.	%
Vaccum	161	2.4
Forceps	29	0.6
Cesarean Section	2239	33.7
Normal Delivery	4205	63.3

In 2006 caesarean sections were performed in 28.6% (1524) of all patients and among the instrumental deliveries, vacuum was applied in 2.5% (135) and forceps delivery was conducted in 0.6% (27).

The rate of caesarean sections in 2007 increased and was 33.7% (2239), vacuum deliveries accounted for 2.4% (161) and forceps delivery comprised of 0.6% (29) of all deliveries performed that year.

When the data of the total deliveries and caesarean section of the last five years were assessed (2003 till 2007) it was noted that the numbers of hospital deliveries increased and likewise the caesarean deliveries too increased from 29.2% in 2003 to 33.7% in 2007. (Table 3)

Table 3. Total deliveries and caesarean sections performed during the last 5 years.

Year	Total deliveries	Caesarean Section	Caesarean section rates
2003	4142	1021	29.2%
2004	4257	1307	30.7%
2005	4845	1522	31.4%
2006	5330	1524	28.6%
2007	6634	2239	33.7%

The various indications for caesarean deliveries are shown in table 4.

Table 4. Indications for Caesarean section during study period (2006 – 2007)

Indications	2006 (n=1524)	2007 (n=2239)	P value
Meconium stained liquor	374 (24.5%)	509 (22.7%)	0.199
Previous CS	300 (19.6%)	350 (15.6%)	0.001
Breech presentation	147 (9.6%)	270 (12.1%)	0.02
Fetal distress	123 (8.1%)	241 (10.7%)	0.005
Non progress of labor	124 (8.1%)	146 (6.5%)	0.005
Cephalopelvic disproportionate	114 (7.5%)	120 (5.3%)	0.008
Placenta previa	53 (3.5%)	112 (5%)	0.024
Abruptio placenta	9 (0.6%)	10 (0.4%)	0.54
Failed induction	42 (2.7%)	72 (3.2%)	0.41
Twin pregnancy	24 (1.6%)	47 (2.1%)	0.24

Pre-eclampsia	38 (2.5%)	47 (2.1%)	0.42
Eclampsia	26 (1.7%)	46 (2.1%)	0.44
Transverse lie	35 (2.3%)	44 (1.9%)	0.48
Obstructed labor	20 (1.3%)	27 (1.2%)	0.77
Cord prolapse	12 (0.8%)	21 (0.9%)	0.62
Deep transverse arrest	9 (0.6%)	31 (1.3%)	0.019
Bad obstetric history	20 (1.3%)	16 (0.7%)	0.064
Previous 2 CS	6 (0.4%)	20 (0.9%)	0.69
Others	47 (3.1%)	103 (4.6%)	0.019
On request	1 (0.1%)	7 (0.3%)	0.106

Discussion

There has been a sustained increase in caesarean section rates around the world in the last 25 years and has been a matter of great debate, on both the indications and the appropriateness of this increase.¹³ In the USA it has increased from 20.7% in 1996 to 29.1% in 2004 and in the UK from 16% in 1995 to 21.5% in 2000.^{14,15} This trend is also similar in less developed countries. Caesarean section rates continue to be an issue of great concern to many midwives, obstetricians, women, and society as a whole.

Caesarean section rates in our study were noted to be in an increasing trend as compared to the previous year (33.7% vs. 28.6%) and also the total number of deliveries in the hospital, which increased by 5.5% (6634 deliveries in 2007 and 5330 deliveries in 2006). Data from 2003 to 2005 also shows an increasing number of childbirths 2003(4142), 2004(4257), 2005(4845) and caesarean sections 2003(1021, 29.2%), 2004(1307, 30.7%), 2005 (1522, 31.4%) in our institution.

In 1985 the WHO stated that there was no justification for any region to have a caesarean section rates to be more than 15%,¹⁰ but now after more than 22 years there have been various demographic changes, particularly the increasing maternal age, which suggest that a target rate of 20% might be more realistic nowadays,⁴ rates we report here are much higher. Furthermore, the risks of severe maternal morbidity and mortality associated with caesarean delivery are higher than those associated with vaginal delivery, even after adjustment for risk factors.^{6,10} Women who have had a previous caesarean delivery have increased risks of uterine rupture, placenta previa, placenta accreta and placental abruption in their next pregnancies.^{16,17}

Caesarean birth has also been associated with increased risks of ectopic pregnancy, spontaneous abortion, preterm delivery, low birthweight, stillbirth and neonatal death in subsequent pregnancies.¹⁶

The most common indication for which caesarean section was performed in our study was meconium-stained liquor, which constituted 24.5% (374) in 2006 and 22.7% (509) in 2007. Meconium stained liquor was noted to be common in women who were unbooked and who had prolonged pregnancies. Antenatal coverage as estimated by the United Nations in 2006 was 44% for all pregnancies in Nepal.¹⁸ Due to the low literacy rates and unawareness of the possible complications of childbirth and due to economic constraints, women may present for the first time to a medical facility only at the time of labor, often beyond the expected date of delivery. The incidence of meconium aspiration is high and this is an important cause of neonatal morbidity and mortality and due to the unavailability of intrapartum monitoring, the rates of caesarean section are high for meconium stained liquor.

The next frequent indication group was for previous caesarean section, which accounted for 19.6% (300) in 2006 and 15.6% (350) in 2007. It was noted that caesarean section needed for previous caesarean section was lower in 2007 as compared to 2006 (p value = 0.001). Scar dehiscence occurs in less than 1% of women undergoing attempted vaginal delivery after a previous caesarean section.^{19,20} Enkin et al analyzed a series involving 8899 women who were permitted a trial of labor: of these, 20.1% were delivered by caesarean section again and 79.9% were delivered vaginally.²¹ The reluctance to permit a trial of labor after previous caesarean section is probably due to either the obstetrician considering

that a repeat caesarean section is much safer and convenient and is less likely to give rise to the complication of scar dehiscence and possible subsequent litigation or due to maternal preference. Breech presentation accounted for 19.6% (147) in 2006 and 12.1% (270) in 2007 of all the caesarean deliveries. It was noted that this indication was higher in 2007 than in 2006 (p value = 0.02). Over the past 20 years planned caesarean section has increasingly become the favored approach for the delivery of these infants. A meta-analysis showed significantly lower rates of perinatal mortality and neonatal morbidity with planned caesarean section than with planned vaginal birth.²²

Fetal distress was the indication in 8.1% (123) in 2006 and 10.7% (241) in 2007 and this could be due to the frequent use cardio-tocogram to monitor the fetal heart rate variability which, if non reassuring would warrant a caesarean section. This difference in 2006 and 2007 was statistically significant (p value = 0.005) However as continuous electronic fetal monitoring was not available at our institution the rates of caesarean sections due to fetal distress may have been less in our series as those compared to those from the developed countries where such facilities are available.

Non-progress of labor in our series comprised of 8.1% (124) in 2006 and 6.5% (146) in 2007 of all the caesarean sections performed, cephalopelvic disproportion in 7.5% (114) in 2006 and 5.3% (120) in 2007, and placenta previa in 3.5% (53) in 2006 and 5% (112) in 2007. These indications were similar in both the years of the study.

The rate of caesarean sections performed on request in our series remained low and comprised of only 0.2% of all indications. In the west however maternal request for caesarean section is high and comprises of around 23% - 38.9% in the United Kingdom.^{5,23} This trend is also partly due to some evidence that suggests that planned caesarean birth might protect against urinary and fecal incontinence, pelvic organ prolapse and sexual dissatisfaction, further increasing its appeal.¹⁶ In our institute caesarean section on maternal request is low due to the fact that the adult literacy rate is low in Nepal and the socio-economic status of the people is also poor in the majority. Thus the fear for any surgical procedure is paramount, both financially and emotionally.

Conclusion

The trend of performing caesarean section is the increasing in BPKIHS - a tertiary level center of eastern Nepal. The most common indication for caesarean section is meconium-stained liquor.

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