Self-Evaluation of Obstetricians by Delivery Data to Reduce Cesarean Section Rate in Chai Nat Hospital

KITTISAK KUNTHONKITIDEJ, M.D.*,
OPART NGERNSET, B.N., B.P.H.*

Abstract

Introduction : The cesarean section rate has continuously increased in recent years in both public and private sector services. Various strategies have been proposed to reduce the cesarean section rate, however, none of them has proven to be effective. Cesarean section rate at Chai Nat Hospital climbed from 9.69 per cent in 1987 to 31.13 per cent in 1997. The authors have attempted to reduce the unnecessary rate by creating a strategy of self-evaluation of obstetricians by delivery data of each obstetrician. The objective of this study was to evaluate the effectiveness of the strategy by comparing the cesarean section rate before and after using the strategy with the assumption that the cesarean section rate would probably be decreased with the strategy.

Patients and Method : The study was a clinical experimental research conducted from January 1995 to December 1999, a sixty-month period. The target populations included obstetricians and pregnant women delivering at Chai Nat Hospital. The cesarean section rate during the first thirty months was compared with that of the latter thirty months, the period in which the strategy was used. Furthermore, the cesarean section rate was also compared with that in Phra Phutthabat Hospital.

Results : The cesarean section rate in the first half of the study (30 months) at Chai Nat Hospital, the period without the strategy, among 4,843 deliveries was 28.78 per cent compared with 25.40 per cent among 5,044 cases in the second half of the study, the period using the strategy. The rate was significantly decreased ($Z=3.79$, $P<0.001$). At Phra Phutthabat Hospital where the strategy was not used, the cesarean section rate during the first 30-month period was 29.36 per cent among 5,868 deliveries and 28.12 per cent among 6,020 deliveries during the second half of the study. The rates were not significantly different ($Z=1.49$, $P>0.05$). The comparison of cesarean section rates during the first 30-months between Chai Nat and Phra Phutthabat Hospital during the first half showed no significant difference ($Z=0.66$, $P>0.05$), whereas that during the second half of the study between both hospitals was significantly different ($Z=3.22$, $P<0.01$).

Conclusions : The strategy of self-evaluation of obstetricians by delivery data of each obstetrician could significantly reduce the cesarean section rate ($P<0.001$). If the strategy is imple-

mented in larger areas of Thailand, a large number of unnecessary cesarean sections as well as maternal morbidity could be avoided, resulting in saving a lot of national expense and also improving the standard of care in obstetrics.

Key word : Cesarean Section Rate, Self-Evaluation, Obstetricians

KUNTHONKITIDEJ K & NGERNSET O
J Med Assoc Thai 2001; 84: 1587-1593

* Chai Nat Hospital, Chai Nat 17000, Thailand.

Vaginal delivery is a normal physiological process for humans. In the past, however, vaginal birth sometimes caused high morbidity and mortality for both mothers and fetuses, especially in cases of dystocia. As medical technology has changed, several methods have been developed to reduce the complications secondary to the birth process and cesarean section, which is now a rather safe operation, is one of them. The cesarean section rate has continuously increased in recent years in both public and private sector services. For example, in the USA, the cesarean section rate has gradually increased from 4.5 per cent in 1965(1) to 22.7 per cent in 1985(1). In Thailand, the total cesarean section rate increased from 15.19 per cent in 1990 to 22.44 per cent in 1996 with the primary cesarean section of 64.1 per cent and repeated cesarean 35.9 per cent (1). The message has not got through to the public, that the high cesarean section rate alone did not contribute to a decline in infant mortality during the past two decades(2). Overall, the cesarean section rate usually includes unnecessary cesarean sections, the section causing only morbidity but not improving the perinatal outcome. It is true that cesarean section has a great impact on reduction in maternal and perinatal mortality, however, an unnecessary cesarean section itself has several disadvantages, including a higher risk of maternal morbidity and mortality when compared to vaginal delivery. Moreover, a cesarean section is much more expensive than a vaginal delivery(3,4). The Public Citizen Health Research Group estimated that approximately 475,000 unnecessary cesarean sections in the USA in 1987 resulted in 25-100 avoidable maternal deaths, approximately 25,000 serious maternal infections, and 1.1 million hospital days at a cost of over a billion dollars(5). According to WHO recommendations, there is no justification in any specific geographic region to have more than 10-15 per cent cesarean section births(6). Various strategies have been proposed to reduce the cesarean section rate, however, none of them has proven to be effective. Some have suggested the policy of vaginal birth after cesarean section to reduce the repeated cesarean section rate. The cesarean section rate at Chai Nat Hospital rose from 9.69 per cent in 1987 to 31.13 per cent in 1997. The authors are concerned about this rising rate and have attempted to find an effective way to reduce the unnecessary rate by creating a strategy of self-evaluation of obstetricians by delivery data of each obstetrician. The objective of this study was to evaluate the effectiveness of the strategy by comparing the cesarean section rate before and after using the strategy with the assumption that the cesarean section rate will probably be decreased with the strategy.

PATIENTS AND METHOD

The study was a clinical experimental research conducted from January 1995 to December 1999, a sixty-month period. The target populations included obstetricians and pregnant women delivering at Chai Nat Hospital. Terminology used in this study included: A self-evaluation of obstetricians form which is a form recorded by each obstetrician indicating delivery methods. Cesarean sec-

tion means delivery by operation through abdominal and uterine incision. An obstetrician is a doctor with a certificate or diploma in the specialty of obstetrics and gynecology. Pregnant women were those with a pregnancy of more than 28 gestational weeks and delivery at Chai Nat Hospital between January 1995 and December 1999. The study was divided into two periods. During the first half, the first thirty months' period, the strategy was not used and the deliveries underwent conventionally. The strategy of self-evaluation was introduced in the second half of the study, the latter thirty months period.

During the period of study, all obstetricians in Chai Nat Hospital and pregnant women giving birth were recruited in the study. In addition, pregnant women who delivered at Phra Phutthabat Hospital were also recruited. However, the strategy of self-evaluation was not used at Phraphutthabat Hospital in both halves of the study.

The form for self-evaluation of obstetricians was as follows :

Self-evaluation form for obstetricians.

Route of delivery	Month Year					
	Doctor 1	Doctor 2	Doctor 3	Doctor 4	Ward	Total
Normal delivery						
Forceps extraction						
Vacuum extraction						
Breech delivery						
Primary cesarean section						
Previous cesarean section						
Total cesarean section						
Cesarean section rate (%)						
Total delivery						

Table 1. Number and percentage of women according to indications.

Indications before delivery	The first half of study Cesarean section		The second half of study Cesarean section	
	Number	%	Number	%
CPD	483	9.97	426	8.45
Previous c/s	290	5.99	421	8.35
Elective c/s	221	4.56	77	1.52
Fetal distress	69	1.42	58	1.15
Others	317	6.55	283	5.61

CPD = cephalopelvic disproportion
c/s = cesarean section

At the beginning of each month the self-evaluation forms were given to all doctors to evaluate themselves over the past month. Important data were also separately collected including general information of each patient, the number of deliveries and cesarean sections, and the expense of delivery.

The cesarean section rate during the first thirty months was compared with that of the latter thirty months, the period in which the strategy was used. The strategy of self-evaluation of obstetricians by delivery data of each obstetrician was an independent variable and cesarean section rate was dependent. Furthermore, the cesarean section rate was also compared with that of Phra Phutthabat Hospital, using the proportional Z-test.

RESULTS

The cesarean section rate in the first half of the study (30 months) at Chai Nat Hospital, the period of not using the strategy, among 4,843 deliveries was 28.78 per cent compared with 25.40 per cent among 5,044 cases in the second half of the study, the period of using the strategy. The rate was significantly decreased ($Z=3.79$, $P<0.001$). The main indications of cesarean section in the first and second half of the study included previous cesarean sections (5.99% & 8.35%), cephalopelvic disproportion; CPD (9.97% & 8.45%), fetal distress (1.42% & 1.15%), elective cesarean section (4.56% & 1.53%) respectively. Routes of delivery in terms of indications, in the first and second half of study were similar as shown in Table 1.

During the 5 years of the study, the cesarean section rate after using the strategy was decreased in all age groups, especially the age group younger than 20 years in which the rate decreased from 21.4 per cent to 9.4 per cent as shown in Table 2. In the first and second half of the study, there was no significant difference in the aspects of parity, gestational age, proportion of pregnant women receiving tetanus toxoid, antenatal care providers, percentage of cases with induction of labor, number of intrapartum pelvic examinations, mean birth weight, and perinatal outcomes, including Apgar scores and requirement of oxygen therapy.

At Phra Phutthabat Hospital where the strategy was not used, the cesarean section rate during the first 30-month' period was 29.36 per cent among 5,868 deliveries and 28.12 per cent among 6,020 deliveries during the latter half of study as shown in Table 3. The rates were not significantly different ($Z=1.49$, $P>0.05$). The comparison of cesarean section rates during the first 30-months between Chai Nat and Phra Phutthabat Hospital during the first

Table 2. Number and percentage of women according to age group and route of delivery.

Age group (year)	The first half of study				The second half of study			
	Vaginal delivery		Cesarean section		Vaginal delivery		Cesarean section	
	Number	%	Number	%	Number	%	Number	%
< 20	534	78.6	145	21.4	665	90.6	69	9.4
20-24	1,059	77.6	305	22.4	1,114	80.4	272	19.6
25-29	961	70.4	405	29.6	933	71.5	372	28.5
30-34	633	64.6	347	35.4	633	66.8	330	33.2
> 34	254	57.9	185	42.1	348	62.5	209	37.5

Table 3. Number and percentage of women according to routes of delivery at Chai Nat and Phra Phutthabat Hospital during the first and second half of study.

Hospitals	The first half of study				The second half of study			
	Vaginal delivery		Cesarean section		Vaginal delivery		Cesarean section	
	Number	%	Number	%	Number	%	Number	%
Chai Nat	3,449	71.22	1,394	28.78	3,763	74.60	1,281	25.40
Phra Phutthabat	4,145	70.64	1,723	29.36	4,327	71.87	1,693	28.12

half of the study showed no significant difference ($Z=0.66$, $P>0.05$), whereas those during the latter half of the study between both hospitals were significantly different ($Z=3.22$, $P<0.01$).

DISCUSSION

The overall cesarean section rate was rather high at Chai Nat Hospital, when compared with that of the Thai national cesarean section rate of 23 per cent in 1996[1], however, our study showed that the cesarean section rate at Chai Nat Hospital over the second half of the study had significantly decreased with the policy of self-evaluation, whereas the cesarean section rate was increasingly higher in most hospitals in Thailand, as reported by Tangcharoensathien et al[1].

In general, the four main indications for cesarean sections were CPD, fetal distress, breech presentation and repeated cesarean sections[6-8]. Apart from those clinical indications, several other factors without apparent indications have attributed to the rising trend of cesarean section, including sterilization requests, private insurance, malpractice concerns[6,7,9], and over diagnosis of fetal distress by abnormal electronic fetal monitoring[6,7], financial incentives[9], misunderstanding of patients and fear of vaginal delivery leading to sexual dysfunction[10], and the schedules of physicians and the women[6]. Clearly, each year several unnecessary cesarean sections are performed without medical or obstetric indications. The US Department of Health objectives for the 1990's called for decreasing the national cesarean rate to no more than 15 per cent of all deliveries by the year 2000[11].

There are several proposed successful strategies to reduce the cesarean section rate[4,6,7,12,13]. These strategies include physician and public education about maternal and fetal benefits of vaginal delivery, professional guidelines for management of labor, periodic peer review of cesarean sections in institutions, extra incentives for vaginal deliveries, group practice, audit system, physician and hospital payment and change in labor management such as limiting unnecessary induction of labor, use of prostaglandins for cervical ripening, and active management of labor. But none of these can be achieved if there is no commitment from attending physicians to lower the cesarean delivery rate. Therefore, a national consensus should be done in order to set up an overall acceptable target and also congregate all efforts to achieve it. As in the USA the rate came down slightly from as high as 24.7 per cent in 1988 to 20.6 in 1996[6], following the implementing of a national consensus. In Thailand, while a national consensus to control the cesarean section rate has not been developed yet, our study has shown that an audit system or self-evaluation is effective. The main principle of our strategy is to promote attending physicians to have a commitment to control their cesarean section rate. Notably, the elective cesarean section rate was dramatically decreased with our strategy, from 4.56 per cent to 1.53 per cent. This implies that the attending physicians were more careful in selecting patients for cesarean section and elective cesarean section may be a significant part of unnecessary cesarean sections. This study implies that a self-evaluation system or audit system is a simple and effective way to reduce unnecessary cesarean sections with no impact on the perinatal outcome although comprehensive analysis of the perinatal mortality rate was not done. To our knowledge, this is the first report in Thailand indicating that an audit system or self-evaluation of obstetricians had an impact on cesarean sections in the era of rising trend.

In conclusion, the strategy of self-evaluation of obstetricians significantly reduced the cesarean section rate. If the strategy is implemented in larger areas of Thailand, a large number of unnecessary cesarean sections as well as maternal morbidity could be avoided, resulting in saving a lot of national expense and also improving the standard of care in obstetrics.

(Received for publication on March 18, 2001)

REFERENCES

1. Tangcharoensathien V, Chantarasatit G, Sithitoon C, Ung P. Pattern of hospital delivery in Thailand 1990-1996. Bangkok, Institute of Health system Research. 1998; 10, 12, 32-3. Ref Type: Report
2. Miller B. Hold the scapel. American Demographics 1997; 23: 5.
3. What is the right number of caesarean sections? Lancet 1997; 349: 815.
4. Lagrew DC, Morgan MA. Decreasing the cesarean section rate in a private hospital: success without mandated clinical changes. Am J Obstet Gynecol 1996; 174: 184-91.
5. Shearer EL. Cesarean section: Medical benefits and costs. Soc Sci Med 1993; 37: 1223-31.
6. Poma PA. Effect of departmental policies on cesarean delivery rates: A community hospital experience. Obstet Gynecol 1998; 91: 1013-8.
7. Porreco RP, Thorp JA. The cesarean birth epidemic: Trends, causes, and solutions. Am J Obstet Gynecol 1996; 175: 369-74.
8. Wilkinson C, McIlwaine G, Boulton-Jones C, Cole S. Is a rising caesarean section rate inevitable? Br J Obstet Gynaecol 1998; 105: 45-52.
9. de Costa C. A sort of progress. Lancet 1998; 351: 1202-3.
10. Geary M, Wilshin J, Persaud M, Hindmarsh PC, Rodeck CH. Do doctors have an increased rate of Caesarean section? Lancet 1998; 351: 1177.
11. Health people 2000. Washington, DC : US Department of Health Services, Public Health Services. No. 91-50212: 378-9. 2001. Ref Type: Report
12. Glantz JC, McNanley TJ. Active management of labor: A meta-analysis of cesarean delivery rates for dystocia in nulliparas. Obstet Gynecol Surv 1997; 52: 497-505.
13. Robson MS, Scudamore IW, Walsh SM. Using the medical audit cycle to reduce cesarean section rates. Am J Obstet Gynecol 1996; 174: 199-205.

การประเมินตนเองของสูติแพทย์เพื่อลดอัตราการผ่าตัดคลอดในโรงพยาบาลชัยนาท

กิตติศักดิ์ กุณฑลกิติเดช, พ.บ., โอภาส เงินเศษ, พย.บ., ส.บ.**

วัตถุประสงค์ : ปัจจุบันอัตราการผ่าตัดคลอดสูงเป็นปัญหาที่พบได้ทั่วไปทั้งในโรงพยาบาลของรัฐและเอกชน รายงานวิจัยส่วนมากพบว่ามีแนวโน้มเพิ่มขึ้น แต่ไม่มีการเสนอวิธีที่จะลดอัตราการผ่าตัดคลอดอย่างได้ผล มีบางรายงานเสนอการคลอดทางช่องคลอดหลังผ่าตัดคลอด (vaginal birth after cesarean section) เพื่อลดอัตราการผ่าตัดคลอดซ้ำ โรงพยาบาลชัยนาทมีปัญหาอัตราการผ่าตัดคลอดสูงขึ้นทุกปีจากร้อยละ 9.69 ในปีงบประมาณ 2530 เป็นร้อยละ 31.13 ในปีงบประมาณ 2540 ผู้วิจัยจึงได้หาวิธีที่จะลดอัตราการผ่าตัดคลอดด้วยการสร้างแบบประเมินตนเองของสูติแพทย์ เพื่อประเมินอัตราการผ่าตัดคลอด เปรียบเทียบก่อนใช้และหลังใช้แบบประเมินและเปรียบเทียบกับโรงพยาบาลที่ไม่ใช้แบบประเมิน โดยมีสมมติฐานการวิจัยว่าแบบประเมินตนเองที่สร้างขึ้น เมื่อนำมาใช้สามารถลดอัตราการผ่าตัดคลอดได้

วิธีการศึกษา : การวิจัยนี้เป็นการวิจัยเชิงทดลอง (Experimental Research) โดยมีสูติแพทย์และหญิงตั้งครรภ์ที่มาคลอดในโรงพยาบาลชัยนาทเป็นประชากร ศึกษา 5 ปี (60 เดือน) ตั้งแต่ มกราคม 2538 ถึง ธันวาคม 2542 โดยเปรียบเทียบอัตราการผ่าตัดคลอดก่อนใช้แบบประเมิน 30 เดือน และ หลังใช้แบบประเมิน 30 เดือน โดยแบบประเมินตนเองของสูติแพทย์เป็นตัวแปรอิสระและอัตราการผ่าตัดคลอดเป็นตัวแปรตาม เปรียบเทียบอัตราการผ่าตัดคลอดก่อนใช้แบบประเมินและหลังใช้แบบประเมินและเปรียบเทียบกับโรงพยาบาลพระพุทธบาท โดยใช้ proportional Z-test

ผลการศึกษา : ผลการศึกษาพบว่า อัตราการผ่าตัดคลอดของโรงพยาบาลชัยนาท 30 เดือนก่อนใช้แบบประเมินตนเองมีการคลอดทั้งหมด 4,843 ราย อัตราการผ่าตัดคลอด ร้อยละ 28.78 หลังใช้แบบประเมินตนเอง 30 เดือนมีการคลอดทั้งหมด 5,044 ราย อัตราการผ่าตัดคลอดลดลงเหลือร้อยละ 25.40 ซึ่งลดลงอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.001 (Z=3.79) เมื่อเปรียบเทียบกับโรงพยาบาลพระพุทธบาท 30 เดือนแรก พบว่ามีการคลอดทั้งหมด 5,868 ราย อัตราการผ่าตัดคลอดร้อยละ 29.36 และ 30 เดือนหลังมีการคลอดทั้งหมด 6,020 ราย อัตราการผ่าตัดคลอดร้อยละ 28.12 ซึ่งอัตราการผ่าตัดคลอดลดลงอย่างไม่มีนัยสำคัญทางสถิติ (Z=1.49) และเมื่อเปรียบเทียบอัตราการผ่าตัดคลอดของสองโรงพยาบาลก่อนใช้แบบประเมินตนเอง พบว่ามีความแตกต่างกันอย่างไม่มีนัยสำคัญทางสถิติ (Z=0.66) แต่หลังจากโรงพยาบาลชัยนาทใช้แบบประเมินตนเองพบว่า อัตราการผ่าตัดคลอดลดลงแตกต่างกับโรงพยาบาลพระพุทธบาทอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.01 (Z=3.22)

วิจารณ์และสรุป : การใช้แบบประเมินตนเองของสูติแพทย์ สามารถลดอัตราการผ่าตัดคลอดที่โรงพยาบาลชัยนาทอย่างมีนัยสำคัญทางสถิติที่ระดับ 0.001 ถ้าจะนำไปทดลองใช้ในโรงพยาบาลที่มีปัญหาอัตราการผ่าตัดคลอดสูงจะลดค่าใช้จ่ายของประเทศในการทำผ่าตัดคลอดที่ไม่จำเป็น และเป็นการควบคุมมาตรฐานการทำคลอดของสูติแพทย์ด้วย

คำสำคัญ : การลดอัตราการผ่าตัดคลอด, การประเมินตนเอง

กิตติศักดิ์ กุณฑลกิติเดช, โอภาส เงินเศษ
จดหมายเหตุทางแพทย์ ฯ 2544; 84: 1587-1593

* โรงพยาบาลชัยนาท, ชัยนาท 17000