

## Cesarean Section Rates Differences among Hospitals in Jakarta

Basalamah A\*, Suradi R\*\* Wiknyosastro G.H\*  
(Departments of \* Obsetrics and Gynecology and \*\*Child Health  
Medical School, University of Indonesia)

**ABSTRACT** The incidence cesarean section (CS) has increased in the world as well as Indonesia. This fenomenon creates a concern among professionals. This study was undertaken to determine the incidence of CS and its indications among hospitals in Jakarta in 1992. Hospitals were divided into 3 groups according to the management and ownership: government (type A), semiprivate (type B) and private (type C) hospitals. Twelve hospitals belonged to type A, 17 to type B, and 34 to type C. Total deliveries in type A, B and C hospitals were respectively: 11 803; 19 130 and 17 665. The median number of deliveries was higher in type A than in type B or C. Most of type A hospitals (83.3%) and only 47.9 % of type B and 11.8 % of type C hospitals were open for referral cases. The mean CS rates were respectively 12.7%; 16,6% and 29.9% in type A, B, and C hospitals. Cephalopelvic disproportion was the most frequent indication in all 3 groups. In type A and B hospitals the second most frequent indication was antepartum hemorrhage while in type C hospitals it was previous CS. It is widely accepted that 80% of pregnancy with a CS scar can be delivered vaginally; so that the high incidence of CS due to previous CS might be related to difference in interest or concept. In type C hospitals the 6th most frequent indication of CS was on mother's request, which was not found in type B or A hospitals. The length of stay was longer in type C than in type B or A hospitals. [Paediatr Indones 1995; 35:8-17]

### Introduction

Cesarean section (CS) has been performed since ancient times and the development of that medical technology goes parallel with the development of human

civilization. The CS rate that was only 5% of deliveries in developed countries, since the last two decades has increased 4 times.<sup>1,5</sup> It is estimated that the increase is about 1% yearly in developed countries and 0.51-0.75% in developing countries.<sup>6</sup>

The increase of CS was usually related to prevention of vaginal deliveries in cases with breech presentation, mid forcipal extraction, previous CS and fetal distress.

Received: December 2, 1994; accepted for publication Dec. 27, 1994. Author's address: Dr. A. Basalamah, Dept. of Obstetrics & Gynecology, Medical School Univeristy of Indonesia, Jalan Salemba 6, Jakarta 10430, Indonesia.

CS should only be performed when birth could not happen naturally, so it has to have a correct indication. It is noted that there is a trend of increase of CS without solid obstetrical or clinical indications.

The incidence of CS in Indonesia is not available; in Jakarta at Cipto Mangunkusumo Hospital during 1990-1992 the incidence was around 20%. This figure is rather high; however, it is understandable because this hospital is the national referral hospital. We use the data from this hospital for comparison. The purpose of this study was to find out the incidence of CS and the distribution of the indication and to explore the differences of practice especially for CS among hospitals in Jakarta.

## Methods

This descriptive retrospective study was conducted from September to December 1993. In Jakarta there were 67 hospitals with facilities for surgical deliveries; data were collected from 63 of those hospitals. The hospitals were classified into 3 categories based on the function and ownership:

A. Government hospitals: These hospitals were owned and subsidised by the Government.

B. Semiprivate hospitals: These hospitals were owned by Foundations or Government controlled enterprises with social and educational functions.

C. Private hospitals: These hospitals were owned by conglomerates, have less social functions and were more business oriented.

Data were collected from 1 January until 31 December 1992, and taken from:

- Hospital yearly reports
- Medical records
- Reports from the operating theatre.
- Reports from the delivery room.
- Reports from the wards

All data were recorded in a form that was prepared beforehand. Important data related to the practice were collected:

1. Type of hospital
2. Number of deliveries.
3. Type of deliveries
4. Birth attendants
5. Referral rates
6. Indication of CS
7. Length of hospital stay.

## Results and Discussion

### 1. Hospital distribution

From 67 hospitals in Jakarta that had facilities for surgical deliveries 3 hospitals were excluded because data were not available. Cipto Mangunkusumo hospital was not included in the study because this hospital is the national referral hospital and a teaching hospital for medical students and specialists, so that we analyse data only from 63 hospitals.

Table 1 shows that the private and semiprivate hospitals comprised more than 80% of hospitals in Jakarta with surgical facilities and 75.5% of total deliveries were in these of hospitals. Data of 1990 showed that there were 938 hospitals in Indonesia of which 56.3% belonged to group A, 7.7% to group B and 36% to group C.<sup>7</sup> The difference in distribution of the hospitals in Jakarta from that of the rest of Indonesia showed that the private sectors were interested in running hospitals in Jakarta because it is the capital

and the center of business.<sup>8</sup>

## 2. Hospital workload

We defined workload as low if total deliveries a year is less than 500 and very high if total deliveries a year is more than 2000. From the 63 hospitals analyzed, 7 had a very high workload distributed not equally through the three types of hospitals (Table 2). Twenty-eight hospitals had a low workload, of which 21 were from type C hospitals. The data showed that workload was high in government hospitals and low in private hospitals. This was true because the cost of both normal and abnormal delivery the private hospitals was very high.

## 3. Cesarean section rates

We define CS rates of more than 20 % as very high, 10-20% as high and less than 10 % as normal. In Table 3 we see that in type A hospitals none had a cesarean rate of more than 20%, seven had high and 5 hospitals had normal CS rates. In type B hospitals 5 had a very high CS rate and only 2 hospitals had a normal CS rate. In type C hospitals, 22 of 34 hospitals had a very high CS rate and none have a CS rate of less than 10%.

## 4. Number and type of deliveries

We divided type of deliveries into normal, vacuum extraction, forcipal extraction and CS. Tables 4a, 4b, and 4c, show that normal deliveries in type A hospitals were 82.3%, in type B hospitals 77.4% and in type C hospital only 59.7%. Vacuum extraction was preferred to forcipal extrac-

tion and was higher in type C than in type B or A. CS rate in type A hospitals was 12.7%, in type B 16.6%, and in type C 29.9%. Every country has their own problems and distribution of pathological pregnancy so that the management of labor is also different, but on average CS should only be around 6% of total deliveries.<sup>9</sup> Our figures showed that CS rate was higher than the accepted rates, especially those in the private hospitals.

Both Tables 4a and 4b show that the number and type of deliveries varied a lot between hospitals even within a certain group of hospitals. The median of delivery is higher in type A hospitals than in type B or type C hospitals. Vacuum extraction did not show much difference in the three types of hospitals. Furthermore forcipal extraction was not practiced anymore in at least 50% of types B and C hospitals. It is clearly seen that the incidence of SC in type C hospitals was very high, so that we can assume that more type C hospitals have high incidence of Cesarean section rates. This is also seen in Table 3.

## 5. Birth attendants

Hospital deliveries were attended by midwives, doctors or obstetricians. In Table 5 we see that in group A hospitals more than 87% of normal deliveries were attended by the midwife. The obstetricians were called only when there were complications. In group B only about 40% and moreover in type C hospital: only about 7% of normal deliveries were helped by the midwife. This was because in semiprivate and private hospitals most of the patients have their own doctor.

Table 1. Distribution of hospitals according to type

Type	Group	Number (%)	Total deliveries
Government hospital	A	12 (19.1)	11.830
Semiprivate hospital	B	17 (27.0)	19.130
Private hospital	C	34 (54.0)	17.665
Total		63 (100.0)	48.625

Table 2. Load of work by hospital group

Hospital group	number of deliveries a year				
	< 500	501 - 1500	1501 - 2000	> 2000	total
A	1	7	2	2	12
B	6	6	1	4	17
C	21	6	6	1	34

Table 3. Extent of CS rate by hospital group

Hospital group (n)	Very high (>20%)	High (10-20%)	Normal (<10%)
A (12)	0	7	5
B (17)	5	10	2
C (34)	22	12	0

Table 4a. Number and Percentage of type of delivery by hospital group

Hospital group	Total deliveries	Type of delivery							
		Normal delivery		Vac. extraction		Forc. extraction		C. Section	
		total	%	total	%	total	%	total	%
A	11.803	9.709	82.3	545	4.6	52	0.4	1.497	12.7
B	19.130	14.814	77.4	1.058	5.5	76	0.4	3.182	16.6
C	17.665	10.542	59.7	1.778	10.1	64	0.4	5281	29.9

Table 4b. Mean of type of delivery by hospital group

Hospital group (n)	Total delivery		Normal		Vac. extrac.		Forc. extrac.		C. Section	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
A 12	983.6	607.8	809.1	454.2	45.4	56.1	4.3	6.9	124.8	106.5
B 17	1125.3	1232.6	871.4	959.3	62.2	87.0	4.5	9.9	187.2	213.0
C 34	519.6	554.5	310.1	320.0	52.3	60.3	1.9	4.8	155.3	198.0

Table 4c. Median of type of delivery by hospital group

Hospital group (n)	Total delivery	Normal	Vac.extrac.	Forc. extrac.	C. section
A 12	824.5	635.5	25	0.5	93.5
B 17	592	424	30	0	125
C 34	371	185.4	25,5	0	67

Table 5. Birth attendant by hospital group

Hospital group	Birth attendant			
	Midwife		Doctor/Obstetrician	
	total	%	total	%
A	8466	87.2	1243	12.8
B	8861	59.8	5653	40.2
C	711	6.7	9831	93.3

Table 6a Distribution of referral cases by hospital groups

Hospital group	Referral cases (+)	Referral cases (-)	Total referred cases	% of total deliveries
A	10 (83.3 %)	2 (16.7 %)	3272	27.9 %
B	8 (47.9%)	9 (52.9 %)	991	5.2%
C	4 (11.8%)	30 (88.2 %)	42	0.2 %

Table 6b. Proportion of CS from referral cases and from the total deliveries

Hospital group	% CS from total deliveries	% CS from referred cases
A	12.7 %	4.7%
B	16.6 %	1.6 %
C	29.9 %	0.2 %

Table 7a The ten most frequent indications of CS in type A hospitals

Indication	Total	% of CS	% of total deliveries
1. Cephalopelvic disproportion	409	27.3	3.5
2. Antepartum hemorrhage	315	21.0	2.7
3. Fetal distress	166	11.1	1.4
4. Induction failure	130	8.7	1.1
5. Malpresentation	116	7.8	1.0
6. Early rupture of membrane	96	6.4	0.8
7. Eclampsia +Preeclampsia	67	4.5	0.6
8. Breech	65	4.3	0.6
9. Intrapartum infection	41	2.7	0.3
10 Previous CS	37	2.5	0.3

Table 7b. The ten most frequent indication of C. Section in type B hospitals

Indications	Total	% of C.S	% of total delivery	Odds Ratio
1. Cephalopelvic disproportion	733	23,0	3,8	1,11
2. Antepartum hemorrhage	380	11,9	2,0	0,74
3. Induction failure	314	9,9	1,6	1,50
4. Fetal distress	306	9,6	1,6	1,14
5. Breech	277	8,7	1,5	2,65
6. Previous C. Section	232	7,3	1,2	3,90
7. Early rupture of Membrane	201	6,3	1,1	1,31
8. Eklampsia+Preeklampsia	197	6,2	1,0	1,82
9. Other malpresentation	157	4,9	0,8	0,83
10 Infertility	56	1,8	0,3	---

Table 7 c. The ten most frequent indications of C. section in type C hospitals

Indication	Total	% of CS	% of total deliveries	Odds Ratio
1. Cephalopelvic disproportion	1032	19,5	5,8	1,72
2. Previous C. Section	1021	19,3	5,8	19,5
3. Induction failure	502	9,5	2,8	2,61
4. Antepartum Hemorrhage	416	7,9	2,4	0,88
5. Breech	398	7,5	2,3	4,16
6. Mother's request	394	7,5	2,2	---
7. Fetal distress	378	7,2	2,1	1,53
8. Early rupture of Membrane	324	6,1	1,8	2,30
9. Other malpresentation	216	4,1	1,2	1,25
10. Eclampsia+Preeclampsia	143	2,71	0,8	1,43

Table 8. Length of hospital stay according to level of ward by hospital group

Hospital group	Hospital stay ( in days)			
	V.I.P	First class	Second class	Third class
A	7	5-8	5-8	5-8
B	6-9	6-9	6-9	6-9
C	5-10	4.5-10	4.5-10	4.5-10

## 6. Distribution of referral cases

Tables 6a and 6b show that group A hospitals received more referral cases than group B or C hospitals. Although groups B and C hospitals comprised more than 80% of the hospitals in Jakarta, most cases were referred to Government hospitals.

Normally if a hospital receives more referral cases the rate of cesarean section rises. Savage<sup>2</sup> reported in England that there was a rise in CS rates in teaching and general hospitals due to the high rate of referral cases. This was the case in Cipto Mangunkusumo Hospital where CS rate in 1992 was 20.7%. In this table we see that in type C hospitals where referral cases were the lowest, the CS rates were the highest. In our case it shows that admission of referral cases did not induce Cesarean section rates. The cause could be that the low income group of society could not afford to be referred to the group B and C hospitals. Some investigators report that there is a relation between CS rates and economic and educational status.<sup>10-15</sup>

This situation is like in the United States that the rate of CS decline in teaching and general hospitals and rises in private hospitals.<sup>12,15</sup>

## 7. Indication for CS

Data from the 63 hospitals we analyse show 50 different indications. See Tables 7a, 7b, and 7c. We did some grouping as for instance placenta previa and solutio placenta were grouped as antepartum hemorrhage. Prolapse of the umbilicus was grouped with fetal distress and pree-

clampsia was grouped with eclampsia. From each group of hospitals we took only the ten most frequent indications. We compare types B and C hospitals to type A hospitals. Infertility ranked no 10 in type B hospitals but did not make the top ten in type A hospitals so we could not count the Odds ratio.

### 7.1 Cephalopelvic Disproportion (CPD)

In all three types of hospitals CPD is the most frequent indication for Cesarean section. The frequency is 27.3% in type A, 23.0% in type B and 19.5% in type C hospitals.

The tendency to do a CS on indication of CPD are in type C hospitals 1.73 times and in type B hospitals 1.11 times that in type A hospitals. The incidence of CPD in our series are high especially in type C hospitals if compare it with the incidence in Europe (1-2%) and in Asia (0.5%).<sup>16</sup> In the United States Taffel and friends<sup>6</sup> reported the incidence of 4,1% in 1980 and 4,2% in 1989.

Are the babies becoming bigger or are obstetrician afraid to take the risk of trial of labour? The most frequent indication for CS is CPD so the diagnosis should be proven correct because it will influence the incidence of CS.<sup>17</sup>

### 7.2 Previous cesarean section

In type A hospitals to do a Cesarean section on the indication of a previous C.S is 2.5% , in type B hospitals 7,3% and type C hospitals it is 19.3%. The tendency to do a CS on indication of a previous CS is in type B hospitals 3.9% and in type C hospitals 19.51 times that in type A hospitals.

Phelan and Clark in their book "Cesarean Delivery" have pointed out that it is safe to deliver a baby vaginally after a previous CS.<sup>18-21</sup> It says that 10% of women hospitalized for delivery had previous CS, 70% could be delivered vaginally.<sup>20</sup>

### 7.3 Fetal distress

In type A hospitals CS on indication of fetal distress is 1.4 % of the total deliveries. In type B and C it was 1.6% and 2.1% of total deliveries. The tendency to do a CS on indication of fetal distress is in type C hospitals 1.53 times than that in type A hospitals. The use of USG and CTG for fetal monitoring could detect fetal distress earlier. This could be the cause of the higher incidence in type C hospitals where fetal monitoring is a routine procedure.

### 7.4 On mothers' request

This indication that is also called social indications ranks number 6 in type C hospitals and can not be found in the top ten of indication in type A or B hospitals. In some cases private patients prefer a certain day to deliver their baby and asked for a CS to be done on that day. Is it ethical to perform a CS only on request? Remember the contraindication for CS was the absence of correct indication.<sup>1</sup>

### 7.5 Early rupture of the membranes (ERM)

In type A hospitals CS on indication of E.R.M is 6.4% of CS or 0.8% of total deliveries, in type B hospitals it is 6.3% of CS and 1.1% of total deliveries and in

type C hospitals it is 6.1% of CS and 1.8% of total deliveries. In type C hospitals CS on indication of ERM is 2.3 times greater than that in type A hospitals.

Before the era of antibiotics if there is ERM delivery should occur before 12 hours and CS is contra- indicated after 12 hours of membrane rupture because the fear of septicemia.<sup>22</sup> But now with antibiotics the treatment is more conservative. If the Bishop score is less than 4, wait for 24 hours before starting to induce the patient. By this method the incidence of CS is very much reduced.<sup>3</sup>

### 8. Length of hospital stay

With modern techniques of operation the complication of CS is very much reduced and hospital stay can be shorter. In Cipto Mangukusumo Hospital the average hospital stay after CS is 5 days. Here we see that in type B and C hospitals length of stay after a CS is longer than in type A hospitals. See Table 8.

## References

1. Pernoll ML. Cesarean section. In: Obstetric and gynecologic diagnosis and treatment. 7th ed. Norwalk: Appleton & Lange, 1984; 554-67.
2. Savage W, Francome C. British cesarean section rates; have we reached a plateau? *Br J Obstet Gynecol* 1993; 100:493-6
3. Porreco RP. High cesarean rate: a new perspective. *Obstet & Gynecol* 1985; 65: 307.
4. Ophir E, Oettinger M, Yagoda A, Markovits Y, Rojanski N, Shapiro H. Breech presentation after cesarean section: always a section? *Am J Obstet Gynecol* 1989; 161: 25-8

5. Patrikovski BM, Cohen M, Tancer ML. Usefulness of continuous fetal heart rate monitoring during cesarean section. *Am J Obstet Gynecol* 1989; 161: 36-7.
6. Ratnam SS, Rao B, Arulkamaran S. Obstetric and gynecology for postgraduates. Madras: Orient Longman, 1992: 134-42
7. Warsito B. Peningkatan mutu pelayanan rumah sakit. Jakarta : Kongres PERSI VI dan Hospital VI Nopember 1993.
8. Gani A. Aspek ekonomi pelayanan kesehatan. Jakarta: Kongres PERSI VI dan Hospital Expo VI Nopember 1993
9. Myerscough PR. Cesarean section. In: Munro Kerr's. Operation obstetrics 10 th ed. New York: Macmillan Publ, 1982: 295.
10. Nageotte M. How we can lower the cesarean section rate. *Contemp Obstet Gynecol* 1990; 35: 63-88.
11. Barros FC, Vaughan JP, Victora CG, Huttly SRA. Epidemic of cesarean section in Brazil. *Lancet* 1991;338:167-9.
12. Phelan JP. Medical-legal considerations of cesarean delivery. In: Cesarean delivery. Phelan JP, Clark SL, eds. New York: Elsevier Science Publ, 1988; 541-55.
13. Gould JB, Davey B, Stafford RS. Socio-economic differences in rates of cesarean section. *N Engl J Med* 1989;321:233-9
14. Haynes de Regt R, Minkoff HL, Felgman J, Scharz RH. Relation of private or clinic care to the cesarean birth rate. *N Engl J Med* 1986;315:619-24.
15. Cunningham FG, Mac Donald PC, Gant NF. Cesarean section and cesarean hysterectomy. In: Williams Obstetrics 17 th ed. New York: Appleton & Lange, 1985: 867-86
16. Jones DL. Fundamentals of obstetrics and gynaecology 4 th ed. Australia: English Language Book Society Faber & Faber Ltd. 1986; 483-5
17. Boylan P, Frankowski RR, Rountner R, Selwyn B, ParrishK. Effect of active management of labor on the incidence of cesarean section for dystocia in nulliparas. *Obstet Gynecol Survey* 1992; 47: 389-91
18. Paul RH. Reducing the cesarean delivery rate. In: Cesarean delivery. Phelan JP, Clark SL, eds. New York: Elsevier Science Publishing, 1988; 541-55.
19. Porreco RP. Once a cesarean, always a cesarean. In: Cesarean delivery. Phelan JP, Clark SL, eds. New York : Elsevier Science Publishing, 1988; 467-75.
20. Hornstein J, Phelan JP. Vaginal birth after cesarean: the role of oxytocin. In: Cesarean delivery. Phelan JP, Clark SL, eds. New York : Elsevier Science Publishing, 1988; 500-18.
21. Phelan JP, Clark SL, Diaz F, Paul RH. Vaginal birth after multiple prior cesarean section. *Am J Obstet Gynecol* 1987; 157: 1510-5.
22. Grant JM, Serle E, Mahmood T, Sarmandel P, Conway DI. Management of prelabour rupture of the membranes in term primigravida, report of randomized trial. *BR J Obstet Gynecol* 1992; 99: 557-62.