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Frequency and Indication of Emergency Caesarean Section in a Tertiary Care Hospital in Kolkata: Analysis of Secondary Data

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ABSTRACT

Background: Increase in caesarean delivery especially in the young primigravida is one of the major concerns in the maternal health. The study was conducted to know about the frequency and indications of emergency caesarean section (CS) preformed in women got admitted directly and through referral in a tertiary care hospital.

Methodology: The study was based on secondary data taken from Emergency register and labour room log book in the Department of Gynaecology and obstetrics of a tertiary care hospital. Data for all women underwent emergency CS during September 2013 to February 2014 were taken and analysed.

Results: Out of total 11,617 deliveries in six months, 2,196 (18.9%) were emergency caesarean. Rate of CS was 13.9% in direct admission group and 37.7% in the referred group. Important indications were previous CS (31.8% and 18.5%), foetal distress (19.0% and 13.3%) and cephalo pelvic disproportion (13.0% and 8.9%) in both the groups. Referrals made for ante partum haemorrhage (7.2%) and eclampsia (7.8%) were highest.

Conclusion: CS increases maternal morbidity and cost of delivery, therefore needs attention from public health perspective. Better infrastructure and strengthening of FRUs may reduce rate of referral to the tertiary care.

Key words: Caesarean section, direct admission, indication, referral, tertiary hospital.

INTRODUCTION

"Caesarean birth epidemic"[1] may now be considered a true pandemic emerging issue in mother-child healthcare. Escalating Caesarean Section (CS) rate is a major public health problem[2] because CS increases the health risk for mothers and babies as well as the cost of health care compared with normal deliveries.[3] From a public-health perspective, WHO[4] stated that no region in the world wherein a population-based CS rate exceeding 15% of all live-births is justified. This value is often considered as a 'threshold', beyond which the benefits of performing CS are no longer outweighing short and long term morbidity and mortality associated with the actual procedure.[2] In the developed countries rising pattern of CS has been attributed to fear of litigation, more liberal use for breech presentation, early detection of fetal distress by continuous electronic fetal monitoring, decreased risk rate in case of growth retarded infant.[5] The reasons for this increment in the developing countries may include, increasing use of fetal heart rate abnormalities alone as a measure of diagnosis of fetal distress in labour, over diagnosis of cephalo-pelvic disproportion by junior doctors, use of repeat CS for patients with a previous caesarean section and many others.[6] Perinatal mortality rate shows no significant diminution despite the increasing CS rate.[6] It is therefore proposed that careful probing of the trend and indications for the use of caesarean delivery may identify pathway to lower the CS rate.[6]

The difference in CS delivery from NFHS-1 to NFHS-4 is relatively high in states like Andhra Pradesh, Goa, Kerala, Tamil Nadu, West Bengal

and Punjab. Interesting to see that there is a large difference between rural (18.9%) and urban (36.6%) CS rates in West Bengal.[7]Difference rate is quite high in private sector (70.9%) compared to public sector (18.8%). Higher rates in urban areas may be a reflection of advanced health facilities to take care of risk factors, higher levels women's choice and wide prevalence of profit making private sectors. Moreover, referral hospitals are usually located in and they are more likely to deal with pregnancy complications which include both rural as well as urban patients.[8] The tertiary hospital under study is one centenarian hospital of Kolkata that caters as the referral centre for almost whole of the north 24 parganas as well as southern part of Nadia district. Besides direct admission, every day 12–15 pregnant women, being referred from other hospitals are admitted here through Obstetric Emergency wing. Each year around twenty thousand deliveries are conducted here.

On this background, the present study was conducted to know about the frequency and indications of emergency Caesarean Section preformed in women got admitted directly and through referral in the hospital and to describe various factors related with emergency caesarean section in the above mentioned groups.

MATERIALS AND METHOD

The present study was conducted in a tertiary care hospital at Kolkata and was based on secondary data obtained from the record of the department. Here, Gynaecology and Obstetrics Department has its separate emergency wings run by Residential medical Officers (RMO) of that Department. Except OPD admission, all other patients who come for obstetric care get admitted through this wing. All referred cases must be admitted through this wing and are marked as "referred" in the "emergency register". For the purpose of the study, this emergency register and "log Book" of labour room was studied every alternate day to get required data. In the first stage, registration no. of all those referred women was noted from the "emergency register". In the next stage, "log book" kept at Labour Room was studied to get the details of the emergency CSs performed in last two days. Thus, time of admission and time of delivery, age, parity of the mother, indication of the CS, baby weights were obtained. In some cases where more than one indication was written in the log book the most important one (usually the first one) was considered after consulting with the RMO on duty. CS, in case of "referred" cases was identified by cross checking the registration numbers collected from "emergency register". Thus details of women underwent emergency CS following direct admission and referral could be ascertained separately. Before starting, permission was sought from Institutional Ethical Committee and thereafter from the Head of the department, Dept of Gynaecoogy & Obstetrics. Data were collected for all emergency CS in six months; September 2013 to February 2014. Data were entered and analysed in SPSS version 20. Unpaired student t test, chi square test were used where necessary.

RESULT

Total number of delivery in six months (study period) was 11,617 (100.0%) of which 2,437 (20.9%) cases were referred from other institutions. Total emergency CS done in six months were 2,196 (18.9%) out of which 1,276 cases were admitted to the hospital without any referral from other institution and 920 cases came to get admitted following referral from other institution. [Fig 1]

Table 1: Characteristics of the respondents in direct and referred admission group (n = 2196)

Characteristics	Direct admission (n_1) (%)	Referred admission (n_2) (%)
No. of mother	1276 (100.0)	920 (100.0)
Age of the mother (years)		
<20	244 (19.1)	170 (13.3)
20 -25	762 (59.7)	484 (52.6)
26 – 30	206 (16.1)	196 (21.3)
31 – 35	56 (4.4)	56 (6.1)
≥36	8 (0.6)	14 (1.5)
Religion of the mother		
Hindu	758 (59.4)	496 (53.9)
Muslim	518 (41.6)	424 (46.1)
No. of living child		
Nil	698 (54.7)	550 (59.8)
1	495 (38.8)	210 (22.8)
2	64 (5.0)	68 (7.4)
3	4 (0.3)	0 (0.0)
≥4	9 (0.7)	2 (0.2)
No. of abortion		
Nil	1034 (81.0)	734 (79.8)
1	205 (16.1)	135 (14.7)
2	33 (2.6)	49 (5.3)
≥3	4 (0.3)	2 (0.2)
Time interval between admission and c section		
<1 hr	117 (9.2)	82 (8.9)
1 – 6 hrs	517 (40.5)	431 (46.8)
6 – 12 hrs	406 (31.8)	309 (33.6)
12 – 24 hrs	175 (13.7)	75 (8.2)
>24 hrs	61 (4.8)	23 (2.5)

Age of the mother ranged from 17 – 37 in case of direct admission and it was 18 – 20 in the group with referral [Table 1]. The difference in mean between two groups were statistically significant (p = 0.02) [Table 2]. The women were Hindu and Muslim in both the groups [Table 1]. Primigravida women outnumbered in both the groups (54.7%

Table 2: Comparison of characteristics between two groups (n = 2196)

Characteristics	Direct admission Mean(SD)	Referred admission Mean(SD)	P value
Age of mother	23.05 (±3.93)	23.75 (±4.49)	0.02*
Interval between admission & c section	7.21 (±5.37)	6.52 (±4.43)	0.006*
No. of living child	0.53 (±0.68)	0.48 (±0.66)	0.26
No. of abortion	0.22 (±0.50)	0.26 (±0.57)	0.20
Baby weight	2.67 (±0.50)	2.54 (±0.62)	0.00*

*statistically significant

Table 3: Indication of c-section in direct and referred admission group (n= 2196)

Indication	Direct admission No. (%) (n_1=1276)	Referred admission No. (%) (n_2= 920)
Post c-section in labour	406 (31.8)	170 (18.5)
Fetal distress	242 (19.0)	122 (13.3)
CPD	178 (13.9)	82 (8.9)
Breech presentation	70 (5.5)	46 (5.0)
IUGR & oligohydomnions	69 (5.4)	72 (7.8)
PIH	66 (5.2)	54 (5.9)
Less fetal movement	56 (4.4)	32 (3.5)
Dribbling	53 (4.2)	24 (2.6)
Repeat c section	40 (3.1)	44 (4.8)
Induction failure	34 (2.7)	12 (1.3)
Non progress of labour	24 (1.9)	40 (4.3)
Twin pregnancy in labour	22 (1.7)	62 (6.7)
APH	10 (0.8)	72 (7.8)
Transverse lie	10 (0.8)	8 (0.9)
Scar tenderness	6 (0.5)	6 (0.7)
Eclampsia	4 (0.3)	66 (7.2)
Obstructed labour	2 (0.2)	4 (0.4)
Hand prolapse	0 (0.0)	6 (0.7)
Total	1276 (100.0)	920 (100.0)

Table 4: Co-morbidities in direct and referred admission group (n= 2196)

Co morbidities	Direct admission No. (%) (n_1=1276)	Referred admission No. (%) (n_2= 920)
Diabetes mellitus	18 (1.4)	12 (1.3)
Hypothyroid	9 (0.7)	5 (0.5)
High Blood pressure	70 (5.5)	62 (6.7)
Heart disease	9 (0.7)	3 (0.3)
Kidney disease	6 (0.5)	0 (0.0)
Gynaecological	35 (2.7)	11 (1.2)
HIV +ve mother	0 (0.0)	3 (0.3)
Nil	1130 (88.6)	824 (89.6)

and 59.8%) and were followed by second gravid (38.8% and 22.8%) [Table1]. Most of them had no history of abortion but 2.6% mother in direct admission group and 5.3% mother in the referred group had history of two abortions [Table 1]. The difference in mean number of living child and number of abortion between two groups was not statistically significant [Table 2].

Time interval between admission and delivery was ranged from 20 min to more than 24 hours in both the groups [Table 1]. In most of the cases emergency CS was done within 1-6 hours following admission in both groups (40.55 and 46.8%). The difference of mean time from admission to CS between two groups was statistically significant (p= 0.006) [Table 2]. Mean weight of delivered baby was 2.67 ±0.50 kg in direct admission group and 2.54 ±0.62 kg in referred group. The difference was statistically significant (p <0.001) [Table 2].

There were many indications for performing c-section in both groups, among which post c-section in labour was the most frequent in two groups (31.8% and 18.5%) followed by fetal distress (19.0% and 13.3%) and cephalo pelvic disproportion (13.0% and 8.9%) [Table 3]. Other important indication in direct admission group included breech presentation (5.5), intra-uterine growth retardation(5.4), pregnancy induced hypertension (PIH; 5.2%). In referred group, ante partum haemorrhage (APH; 7.8%), eclampsia (7.2%) and twin pregnancy in labour (6.7%) were important indication apart from the above [Table 3].

Presence of any co-morbidity was not mentioned in 88.6% cases in direct admission group and 89.6% in the referred group. High blood pressure was mentioned in the indication in 5.5% cases in direct admission group and 6.7% cases in the referred group. Other than that diabetes mellitus, hypothyroidism, heart disease were common. HIV was mentioned as co-morbidities in 0.3% cases. [Table 4].

DISCUSSION

The present study noted that, total number of delivery from September 2013 to February 2014 was 11,617 in the tertiary hospital under study, of which 2437 (20.9%) cases were referred from other institutions. CSs were done either in planned session or as emergency basis. Total emergency CS done in six months were 2,196 (18.9%) out of which 1,276 cases were admitted to this tertiary hospital directly and 920 cases were referred from other institutions. At all India level, the CS rate has increased from 2.9 percent in 1992-93 to 7.1 percent in 1998-99, further 8.5 percent in 2005-06 and a steep rise to 17.2 percent in 2015-16 with an Average Annual rate of increase of 8 percent.[9] A study from teaching hospital in Nigeria[6] showed that, during the study period, there were 10,097 deliveries and 1192 CSs giving an overall CS rate of 11.8%. Another study from Haryana of India showed much more incidence.[10] According to them, CS de-

livery rates rose from 144 (31.0%) to 354 (51.23%) from the year 2007 to 2012. Gibbons *et al*, (2010) reported that in United States of America, the proportion of caesarean birth to total births increased from 20.7% in 1996 to 31.1% in 2006.[11]NFHS-4 fact sheets for West Bengal showed that birth delivered by C Section was 23.8%, which is comparable with the study. The difference can be explained by the fact that, present study only included the 'Emergency' cases.[7] The present study found that, age of the mother ranged from 17-40 years with 18.9% of total women undergoing emergency CS fell below 20 years and 6.1% aged more than 30 years. Similarly, Gulfareen Haider[12] in his study mentioned that13.4% women were below 20 years of age and 21.3% were aged from 31-40 year. Time interval between admission and delivery, in this study, was ranged from 0.3hrs (20 min) to more than 24 hours in both the groups[Table 1], with mean time being 7.21(±) 5.37 hrs and 6.53(±) 4.43 hrs in direct admission and referred admission group, respectively. According to an observational series by Tuffnell DJ, it was stated that, 66.3% women were delivered by emergency CS in 30 minutes and 88.3% within 40 minutes.[13]It may be noted that, huge patient burden in the present study setup may be one factor for delaying the operation. Other than that, in this setup trial of labour is considered under supervision of a Residential Medical Officer (RMO) and if failed then only they go for emergency CS. Mean time taken from admission to CS significantly differs between direct and referred admission group in this study may emphasize that final decision for delivery was made earlier in the referred group to take care of the referrals.

The most important indication for performing emergency CS was post caesarean section in labour in two groups (31.8% and 18.5%) followed by fetal distress (19.0% and 13.3%) and cephalo pelvic disproportion (13.% and 8.9%) [Table 3]. Other indication were breech presentation (5.5%), intra-uterine growth retardation (5.4%), pregnancy induced hypertension (5.2%), antepartum haemorrhage (7.8%), eclampsia (7.2%) and twin pregnancy in labour (6.7%). The studies conducted in Haryana[10]and rural area of Thrissur district of Kerala[14]found almost similar order of indication. Their studies noted the commonest indication for CS in that series was post CS pregnancy (24.3%-41.4%) followed by non-progress of labour (12.4%-25.4%), fetal distress (5.3%-16.7%) and breech presentation (8%-15%). Other common indications were ante partum haemorrhage (5.9%-10.5%), cephalo pelvic disproportion (2.6%-6.4%) and pregnancy induced hypertension (3.5%-7.6%).Increased indication of breech presentation (10.3%) and eclampsia (6.4%) were also noticed in a study from mangalore[15]Fetal distress might be overestimated in our study because only Cardiotocographic (CTG) monitoring was done (in absence of scalp vein pH estimation) which is known to increase false positive cases[16]Increased frequency of APH and eclampsia in the referred group in this study points to the fact that in spite of improved diagnostic modalities and policy of repeated antenatal checkups few loopholes are still there. Present study found increased tendency to refer patient with pregnancy induced hypertension and non progress of labour, may be due to lack of infrastructure and or manpower in the peripheral health facilities.

Presence of any co-morbidity was not mentioned in 88.6% cases in direct admission group and 89.6% in the referred group. High blood pressure, diabetes mellitus, hypothyroidism, heart disease were some of the most frequently mentioned co-morbidities. Diabetes Mellitus was mentioned as co morbidities in 1.4% cases, which is same as the study of Srivastava *et al*[17]whereas in study by Karim ET al it was 15.7%.[18]This figure may have been under reported in the present study because the nature of co-morbidities may not be an indication for caesarean section per se, so that not written in the log book.

The study was done completely based on secondary data (emergency register and labour room logbook), so may have missed other socio demographic co relates of referral. Due to the vast area catered by this institution, it was not possible to verify the rural/ urban nature of the address. There is no standard protocol for writing indication for caesarean section. So, there may be some un-uniformity regarding presentation. Researcher had no scope to verify it.

CONCLUSION

The present study concluded that, proportion of emergency C Section was 18.9% in the tertiary health care facility under study, of which, Post C Section in labour, foetal distress and cephalo pelvic disproportion were some major indications among both direct and referred admission groups. Apart from that, ante partum haemorrhage, eclampsia and intra uterine growth retardation were other important indication for referral as well as C Section. Major co morbidities were Diabetes Mellitus, hypothyroidism, hypertension & heart disease in both the groups. Mean age of mothers was significantly higher in the referred group but mean baby weight was significantly lower.

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