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Caesarean section and its determinants: a hospital based cross-sectional study

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ABSTRACT

Background: The rapid rise in CS rate has become a serious public health issue now-a-days because unnecessary caesareans generate higher expenditure at individual and national levels and have the potential to divert human and financial resources from higher priority intervention. Therefore the present study was carried out to know the indications and determinants of caesarean births in a tertiary hospital of Odisha.

Methods: A hospital based cross-sectional study was conducted among women who delivered by caesarean section in O and G department of MKCG Medical College Hospital, Berhampur from July to October 2016 using a pretested semi-structured questionnaire. The data was analysed using appropriate statistical tests such as proportion, chi square test using SPSS software. P value of less than 0.05 is considered as statistically significant.

Results: Premature rupture of membrane with oligohydramnias was the major indication in 31.4% cases followed by previous CS in 20.1% cases. Out of socio-demographic factors age (P value = 0.001) and educational status of women (P value= 0.042) were significantly associated with type of CS. Foetal presentation (P value= 0.003), interval between labour and CS (P value <0.01) and type of admission (P value = 0.05) were major obstetric determinants of CS.

Conclusions: In order to safeguard the health of mother and child from effects of unnecessary caesarean births, regular antenatal checkups, proper birth preparedness along with timely diagnosis and management of complications is necessary.

Keywords: Caesarean section, Oligohydramnias

INTRODUCTION

The number of women having babies born by caesarean section is rapidly growing in both the developed and developing countries. Caesarean section (CS or Csection) is a surgical intervention which is carried out to ensure safety of mother and child when vaginal delivery is not possible (emergency CS) or when the doctors consider that the danger to the mother and baby would be greater with a vaginal delivery (planned CS). Proportion of CS to the total births is considered as one of the

important indicators of emergency obstetric.² The rapid rise in CS rate has become a serious public health issue now-a-days because unnecessary caesareans generate higher expenditure at individual and national levels and have the potential to divert human and financial resources from higher priority intervention.³ In India the rate of caesarean section delivery has increased from 3 per cent to 10 percent between 1992-93 and 2005-06 which is lower compared to some developing nations like Brazil and China. But as India is the second most populous

country in the world, a small percentage increase affects a huge number of people.⁴

In the case of developing countries like India, it is still unclear that what could be motivating the increasing preference for c-section. In general, it is argued that beside the medical factors, the physician's interest s determine the choice of c-section.⁵ In many studies in the past it was found that private sector deliveries had a higher odds ratio of a primary C-section delivery in comparison with public sector after covariate adjustment.⁵⁻⁷

In a country like India where only 1.3% of GDP is spent on health care, unnecessary C section can be a major impediment to achieve universal coverage of maternal health and equitable distribution of health services. Major emphasis is given on MCH services and major funds are being diverted to eliminate barriers to safe deliveries by providing cash benefits for institutional delivery, appointing ASHA at village level for providing basic antenatal services, arranging VHNDs for identifying danger signs of pregnancy and taking immediate correctives measures and most importantly addressing the 3 delays in accessing health care. In spite of all these measures a rising trend of C section is observed not only in private sectors but also in public hospitals. Therefore the present study was carried out to know the indications and determinants of caesarean births in a tertiary hospital of Odisha.

METHODS

A hospital based cross-sectional study was conducted among women who delivered by caesarean section in O and G department of MKCG Medical College Hospital, Berhampur from July to October 2016.

Sample size calculation- Percentage of Caesarean births in Ganjam as per HMIS data 2013 is 10%. Taking allowable error of 5%, the total sample size was calculated using the following formula -

$$N = 4pq/l^2$$

The total sample size came out to be 144.

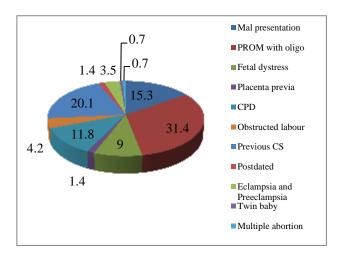
A pretested semi-structured questionnaire was developed as per the study objectives. An informed consent was obtained from each participant prior to the study after explaining the study purpose. Women who had delivered through C section and gave consent for the study were included in the study. Women who were very sick and those with still birth are excluded. The data was collected in the postnatal ward of O&G department of the tertiary hospital using the semi-structured questionnaire till the required sample size was obtained. The data included information on socio-demographic factors, obstetric and non-obstetric factors determining C -section. The data was analysed using appropriate statistical tests such as proportion, chi square test using SPSS software. P value

of less than 0.05 is considered as statistically significant. Ethical clearance was obtained from Institutional ethics committee, MKCG Medical College, Berhampur for the purpose of study.

RESULTS

The mean age of study population was found to be 23.6 years. As far as educational status was concerned 18.8% were illiterate and 39.6% had studied up to primary class. Out of total 144 women interviewed, about 68% were residing in rural areas and 98.6% were Hindus. Caste wise distribution showed that 45.1% were general followed by OBC (32.6%), ST (13.9%) and SC (8.3%).

Premature rupture of membrane with oligohydramnias was the major indication in 31.4% cases followed by previous CS in 20.1% cases. Other indications included cephalo-pelvic disproportion (11.8%), foetal distress (9.0%), malpresentation (3.5%), obstructed labour etc. (Figure-1).



Elective CS was performed in 14.6% women and emergency CS in 85.4%. Among those who had elective CS, 61.9 % were in the 26-30 years age group whereas emergency CS was more in 20-25 years age group i.e., 68.9%. The association between type of CS and age was found to be statistically significant.

Almost 2/3rd i.e. 66.6% of women who had undergone elective CS belonged to higher educational status (secondary, graduation or above) compared to those who had emergency CS. Among women who had undergone emergency CS, almost 62.6% were either illiterates or educated up to primary class. The association between educational status and type of CS was found to be significant.

There was no significance association between type of CS and place of residence or socio-economic status. Primi constituted67.5% of the total women who had emergency CS whereas only 28.6% were primi among women with elective CS. Significant association was found between type of CS and parity as well as history of previous CS as shown in Table 1.

Table 1: Distribution of non-obstetric determinants.

Characteristics		Elective CS	Emergency CS	P Value	
Age	<20	00	13(10.6%)		
	20-25	08(38.1%)	81(68.9%)	0.001	
	26-30	13(61.9%)	26(21.1%)	0.001	
	>30	00	03(2.4%)		
Education	Illiterate	02(9.5%)	25(20.3%)		
	Primary	05(23.8%)	52(42.3%)	0.042	
	Secondary	10(47.6%)	39(31.7%)	0.042	
	Graduates and above	04(19.0%)	07(5.7%)		
Residence	Rural	13(61.9%)	85(69.1%)	0.513	
	Urban	08(38.1%)	38(30.9%)	0.313	
Birth order	Primi	06(28.6%)	83(67.5%)	0.001	
	Multi	15(71.4%)	40(32.5%)		
Previous caesarean births	0	09(42.9%)	95(77.2%)	0.004	
	1	12(57.1%)	27(22.0%)		
	More than 1	00(0.0%)	01(0.8%)		
SES	Upper	01(4.8%)	05(4.0%)	0.505	
	Middle	07(33.3%)	27(22.0%)		
	Lower	13(61.9%)	91(74.0%)		

Table 2: Distribution of obstetric determinants.

Characteristics		Elective CS	Emergency CS	P value	
Complication during anyoness	Yes	03(14.3%)	18(14.6%)	0.067	
Complication during pregnancy	No	18(85.7%)	105(85.4%)	0.967	
DMI	Underweight	03(14.3%)	18(14.6%)	0.967	
BMI	Normal	18(85.7%)	105(85.4%)		
	<38 week	03(14.3%)	27(22.0%)	0.217	
Gestational age at labour	38-40week	15(71.4%)	90(73.2%)		
	>40 week	03(14.3%)	06(4.9%)		
Eastel presentation	Cephalic	18(85.7%)	121(98.4%)	0.003	
Foetal presentation	Breech	03(14.3%)	02(1.6%)		
	<2.5	01(4.8%)	29(23.8%)	0.129	
Neonatal birth weight	2.5- 3.9	20(95.2%)	93(75.6%)		
_	>=4	00(0.0%)	01(0.8%)		
ANCs	4 or more	18(85.7%)	95(77.2%)	0.382	
ANCS	Less than 4	03(14.3%)	28(22.8%)		
Type of admission	Direct	20(95.2%)	94(76.4%)	0.05	
Type of admission	Referred	01(4.8%)	29(23.6%)		
Interval between Admission and CS	Within 2 hours	15(71.4%)	71(57.7%)	0.237	
Interval between Admission and CS	More than 2 hours	06(28.6%)	52(42.3%)		
	Not started	08(38.1%)	06(4.9%)	<0.01	
	Within 2 hours	01(4.8%)	17(13.8%)		
Interval between labour and CS	Within 5 hours	05(23.8%)	42(34.1%)		
	Within 10 hours	06(28.6%)	46(37.4%)		
	More than 10 hours	01(4.8%)	12(9.8%)		

Table 2 depicts the distribution of common obstetric risk factors among study subjects. Out of total 144 study subjects, 21 women i.e. 14.6% had experienced any complication during pregnancy. As far as BMI of study subjects was concerned, 85.4% had normal BMI and 14.6% were underweight. Majority of women i.e. 72.9%

had delivered between 38-40 weeks and 20.8 % had preterm deliveries i.e. before 38 weeks and 6.3% had delivered after 40 weeks of pregnancy. However there was no significant association found between type of CS and the above factors i.e. complication during pregnancy, BMI and gestational age at labour.

There was significant association between type of CS and foetal presentation, type of admission as well as interval between onset of labour and CS. However birth weight, ANCs and interval between admission and CS were not significantly associated with type of CS.

DISCUSSION

Premature rupture of membranes with oligohydramnias was the main indication of caesarean section followed by previous CS. Previous CS and foetal distress were the common indications in a study by Unnikrishnan et al.⁸

Out of the total study subjects 123 (85.4%) had emergency CS compared to elective CS. MKCG Medical College Hospital is a teaching hospital and caters to southern Odisha and adjoining Andhra Pradesh. This high number of emergency caesarean sections may be due to delay in identifying a complication or deciding to seek appropriate care and also may be due to lack of appropriate surgical facilities at the peripheral health facilities. Increase in institutional deliveries with introduction of cash incentives may also lead to increase in emergency CS births due to complications which can arise during child birth. Similar finding was found in a study conducted by Saluja et al in 2014 where out of the total study subject undergone C section 94% had emergency surgery.

Emergency CS is higher in lower age groups compared to elective CS. Women with lower educational status had higher proportion of emergency CS compared to elective. This may be due to fact that low maternal age at birth associated with lower educational status is related to reduce awareness about the risk factors in pregnancy and lack of birth preparedness and complication readiness.

Of the emergency CS births majority were nulliparous whereas majority of women who delivered by elective CS were multiparous. It was observed that those who had one or more CS in the past were mostly opting for elective CS. So previous CS served as a major indication for elective CS. Emergency CS in primi is a major factor accounting for increasing proportion of total CS compared to normal deliveries in our setup and lower maternal age with illiteracy serving as most common additive factors.

Significant association was observed between type of CS and foetal presentation, type of admission as well as interval between onset of labour and CS. Majority of the cases, both elective and emergency CS cases had come directly to the hospital. This indicates lack of adequate obstetric care facilities in peripheral health centres.

A significant proportion of women who had undergone emergency CS had labour pain of more than 5 hours. It may be due to certain factors such as delay in deciding to seek medical attention due to unawareness, reaching health facility on time, lack of manpower and facility for emergency surgery at peripheral hospital.

CONCLUSION

Caesarean section is one of the most commonly performed surgical procedure in the world and it can be life-saving for the child, the mother, or both, in some cases. 10 However caesarean section poses a greater risk of maternal morbidity, mortality and high cost of health care. 11 It can be a matter of concern by adding significantly to financial burden of government and society both and ultimately affecting socio-economic development of the country. So in order to safeguard the health of mother and child from effects of unnecessary caesarean births, proper birth preparedness is necessary. Adequate staff and facilities with proper infrastructure at peripheral level hospitals will help to reduce emergency caesarean sections.

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