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Research Article

Institutional Study of Primary Cesarean Section among Multigravida

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Abstract

Background & Objectives: *It is a study of the analysis of primary caesarean section done in women who had previous vaginal delivery of a viable neonate. The various indications for caesarean section, incidence according to age, gravidity and maternal and fetal outcome were studied.*

Aim Of Study

1. *To know the indications of primary caesarean section in multigravida.*
2. *To study incidence according to age and gravida.*
3. *To study maternal and fetal outcome.*

Methods

Study Design: *Prospective observational study*

Study Settings: *Department of Obstetrics and Gynaecology, Government Medical College, Kottayam, Kerala, India.*

Study Duration: *April 2013 – September 2014*

Result: *Maximum numbers of patients were in the age group of 25-29 years and majority were second gravida. Majority had emergency caesarean section and main indications were pathological CTG and malpresentations .most common intraoperative complication was atonic PPH and most common postoperative morbidity were Wound infection and respiratory tract infection. There were no maternal deaths in the present study. Perinatal morbidity was seen in 27 cases and there were 4 cases of perinatal mortality.*

Conclusion & Interpretation: *Even with regular antenatal care, primary caesarean section may be unavoidable in parous women with previous vaginal delivery. Even though caesarean section is relatively safer than before, with emergency sections inherent complications do exist, but with good antenatal care, early recognition and timely intervention we can improve the maternal and fetal outcome.*

Keywords: *Caesarean section; Multipara, Abdominal Delivery, Postcaesarean Section*

Introduction

Caesarean delivery is defined as birth of a fetus through incisions in the abdominal wall (laparotomy) and uterine wall (hysterotomy). This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of uterus or in the case of an abdominal pregnancy[1].

Few countries report national caesarean section rates annually. From data published, we find that the caesarean section rates, which were hardly 1-2% in early thirty in the USA, gradually increased to 4.5% in 1965. Thereafter there has been annual rise by 1% so as to reach a peak of 24.7% in 1988. In Italy, national data on caesarean section rose from 4.2% in 1980 to 14% in 1983 and 17.5 in 1987. Highest rates are reported from Brazil,

where they have gone up to 15% in 1974 to 31% in 1980 and 32.5% in 1995 and in some states as high as 47.7%3. It must however be pointed that rising trends have not been uniform. They have been quite high in USA and Canada. But the lowest rates has been reported in Netherlands followed by Czechoslovakia, Norway and Hungary[2].

Institutional rates in Women's Hospital, Chennai, which were as low as 1- 2% from 1930 to 1960, gradually rose to 3% in 1970, 10% in 1980, 20% in 1992 and 38.6% in 2000. In the National University Hospital, Singapore, caesarean section rates went up from 9.7% in 1970 to 17 in 1995. Institutional rates in Middle East are about 10%. Rates for teaching hospitals in the South and South East Asia are slightly higher ranging from 8.1% in Delhi to 35.6% in Chennai[2].

Epidemic of rising caesarean section rates has not been limited to developed countries alone but has spread to developing countries. With increasing safety following the introduction of modern anaesthesia and blood transfusion, the operation which was primarily done as a last resort for severe contraction of the pelvis was liberalized to include other forms of dystocia, major degree of placenta previa and severe eclampsia with a view to reduce maternal mortality[2]. This was soon extended to cases of fetal distress, bad obstetric history (BOH) and as a safer alternative to difficult vaginal operative delivery so as to reduce perinatal mortality.

With the introduction of modern technology in the labour wards and neonatology units, there was a further rise in caesarean sections. Besides there have been numerous other obstetrics, medical, social, ethical, economic and medico legal factors which have added to the list of indications leading to alarmingly high rate of caesarean sections all over the world[3].

With the introduction of modern technology in the labour wards and neonatology units, there was a further rise in caesarean sections. Besides there have been numerous other obstetrics, medical, social, ethical, economic and medico legal factors which have added to the list of indications leading to alarmingly high rate of caesarean sections all over the world[3].

It is a common belief amongst lay public that once a mother delivers her child or children normally, all her subsequent deliveries will be normal. As a result such multiparous mother often neglects routine antenatal checkup[4]. The relative ease with which some multiparous are delivered in the presence of faulty positions and presentations may account for the false sense of security. This invites laxity on part of patients as well as the inexperienced and junior obstetricians[4].

Solomone coined the phrase, 'dangerous multiparous' while Feeney preferred the term "unpredictable multiparous'.[5]It is for these reasons that one attention has been directed to the indication for caesarean section in women who have previously delivered vaginally[6].

APH is the most frequent indication for caesarean section since multiparity increases the risk for abnormal placentation. Another major indication is Cephalopelvic disproportion (CPD). As per Adams (1957), with advancing parity forward subluxation of the sacrum can occur and with increased inclination of the pelvic brim due to lumbar lordosis and laxity of the joint ligaments, the AP diameter of the pelvic cavity may be reduced[7].Robinson (1930)[8] stated that repeated pregnancies lead to calcium depletion, subclinical osteomalacia and therefore pelvic deformity.

Also studies shows that grand multipara require caesarean section more frequently than non-grand multipara especially primary and emergency caesarean section.

Until late in the last century, the extreme risk to maternal life due to caesarean section made it the delivery method of last resort. Maternal mortality after caesarean section probably was at least 75% well into the late 1800s. By the end of 19th century, use of asepsis and anaesthesia, coupled with other surgical improvements in surgical technique, dramatically reduced maternal mortality after caesarean section. All deaths after caesarean section are not of course, attributable

directly to the procedure, and caesarean section may itself save many maternal lives. Similarly although caesarean section is responsible for some morbidity, failure to do a caesarean in appropriate circumstances also carried a morbidity risk for the mother. Further, difficulties estimating precisely the risk of mortality and morbidity after the caesarean section arise from the fact that then risks are related to the skill and experience of the surgeon, the quality of care from supporting staff, especially those in anaesthesia and the characteristics of the mother[9]. Caesarean section even when elective carries serious risk for mother and baby. An elective caesarean section with no emergency present a 2.84 fold greater chance of the woman death than if she had a vaginal birth. Other risks include the morbidity associated with any major abdominal surgical procedure (anaesthesia accidents, damage to blood vessels, accidental extensions of uterine incision, damage to urinary bladder and other organs). 20% of women develop fever after caesarean section. Other risk due to scaring of the uterus, including decreased fertility, miscarriage, ectopic pregnancy, placental abruptio and placenta previa.
After adjustment risk of caesarean delivery increased with each 5 years age increment among women 20 years of age or older. A similarly dramatic arise with advance in maternal age was seen in multiparous women A strong association between maternal age and primary caesarean section exist ($p<0.08$).
With respect to perinatal outcome, studies show inconsistent results to as whether outcome improved or worsened due to increasing caesarean section.

Aims and Objectives

1. To know the indications of primary caesarean section in multigravida.
2. To study incidence according to age and gravida.
3. To study maternal and fetal outcome.

Materials and Methods

It is a prospective study performed in the Department of Obstetrics and Gynaecology, Government Medical College, Kottayam during the period April 2013-September 2014 after approval from the ethical committee Government Medical College, Kottayam. Proper informed consent was obtained from all the patients after explaining the benefits of the study.

Study Population

All cases of primary caesarean section with previous normal vaginal delivery, satisfying the inclusion and exclusion criteria from Department of Obstetrics and Gynaecology, Government Medical College, Kottayam was recruited for the study. Study begins once the patient is admitted to the hospital, till the patient is discharged.
The study was analysed in terms of incidence, indications, maternal morbidity and mortality for number of deliveries conducted at Government Medical College, Kottayam during the period of study was recorded. Total number of deliveries conducted during the period, total number of caesarean section and primary caesarean sectionin multigravida were taken for the purpose of comparison.

Study Design: Prospective observational study
Study Settings: Department of Obstetrics and Gynaecology, Government Medical College, Kottayam.
Study Duration: April 2013 – September 2014
Inclusion Criteria

- Multigravida with pregnancy of >28 weeks gestation (gravida 2 and above), each of whom has had a previous vaginal delivery of viable neonate.
- Multiple pregnancy
- Pregnancy with medical disorders.

Exclusion Criteria

- Women with previous abortions/ non-viable pregnancies.

Sample Size: 211

Methodology: It is a prospective study of over 211 cases of caesarean section done for the first time in multigravida admitted at Government Medical College Kottayam during the study period from 1st April 2013 to 30th September 2014. This study consists of analysis of cases where caesarean section was done for the first time in parous women, who had previous vaginal deliveries. In the present study, multigravida mean, second gravida and above, each of whom has had a previous vaginal delivery of a viable neonate. Detailed history including present pregnancy and past obstetric history were taken .Thorough general, systemic and obstetric examination, dating of pregnancy confirmed and presentation, position and estimated weight of baby were assessed (Johnson's formula). Bishop Score, presence or absence of membranes and pelvic assessment was done. Biometry and biophysical profile assessed by ultrasound. Labour monitoring was done by partogram and fetal heart monitoring done by Cardiotocograph. Decision for caesarean section was based on clinical evaluation of progress of labour, fetal condition, and also maternal condition. Type of anaesthesia was decided by the anaesthetist. All intraoperative details were noted and complications managed promptly. All cases were attended by paediatrician. Postoperative period was monitored and all complications were managed promptly. The newborns were examined daily and any complication noted and managed accordingly. Patients with uneventful postoperative period were discharged on Post Caesarean Day-5. On discharge, discharge card was given and postop-erative visits after 6 weeks advised. Cases without sterilization were advised spacing methods and mandatory hospital delivery in next pregnancy.

Statistical Analysis

The data were collected and tabulated into excel sheet and SPSS software data variable. Chi-square analysis and paired t test were used for qualitative variables and Qualitative data were expressed as number and percentage and Quantitative data were expressed as mean ±SD.

Results and Observations

This is a prospective study undertaken to analyze 211 cases of caesarean section done for first time in multigravidae during the study period of 1st April 2013 to 30th September 2014.

Table 1: Incidence of Caesarean section

Characteristics		95% confidence limits
Age	28.2±2.7	27.8-28.6
Incidence of CS	2729(33.5)	27-40
Incidence of Primary CS in parous women	211(2.59)	0-5

There were 8146 deliveries during this period around 2729 caesarean sections were done, which represented 33.50% of all deliveries. Incidence of primary caesarean section in parous women is 2.59% of all deliveries and accounted for 7.73% of all sections done.

Table 2: Maternal characteristics studied

Gravida		95% confidence limits
2	143(67.8)	61.74
3	61(28.9)	23-35
4	7(3.3)	1-5

In the present study majority of the patients belonged to gravida-2 with incidence of 67.77% followed by 3rd gravida with incidence of 28.90%. There was no grand multipara in the present study.

Table 3: Previous obstetric history

Previous obstetric history		95% confidence limits
Normal delivery	205(97.2)	95-99
Abnormal delivery	6(2.8)	1-5
Maternal diseases present	90(42.7)	36-49

Above table indicates that 97.2% had previous full-term normal delivery and 3 had prolonged labour resulting in instrumental delivery and 3 had preterm delivery (2.8%).

Table 4: Showing Incidence of Type of Operation

Type of LSCS		95% confidence limits
Emergency	172(81.5)	76-87
Elective	39(18.5)	13-24

In 81.51% of women caesarean section was done when they were in labour. Remaining 39 women (18.48%) were posted for elective caesarean section, the common indication being, breech presentation (18 cases), placenta previa [6 cases].

Table 5: Various Indications for Primary Caesarean Section

Indications for CS		95% confidence limits
Pathological CTG	57(27.0)	21-33
Breech presentation	43(20.4)	15-26
Protracted active phase	16(7.56)	4-11
Placenta previa	17(8.1)	4-12
Failed induction	14(6.6)	
Abruptio placenta	13(6.2)	3-9
IUGR absent diastolic flow	9(4.3)	1-7
First degree CPD,failed trial	9(4.3)	1-7
MSAF,unfavourable cervix	8(3.8)	1-6
Others	25(11.8)	7-16

Main indication for induction of labour was gestational diabetes, gestational hypertension, pre-eclampsia, past date. PGE1 was used for induction labour in majority cases.

Here pathological CTG accounted for 27.01% followed by breech presentation 20.37% as the commonest indication. Placenta previa 8.05% and protracted active phase accounted for 7.58%. Pathological CTG was the most common indication for primary caesarean section (57 cases) followed by breech presentation (43 cases).

Table 6: Incidence of various Presentations

Presentation		95% confidence limits
Vertex	158(74.9)	69-81
Breech	43(20.3)	15-26
Twins	3(1.4)	0-3
Compound presentation	3(1.4)	0-3
Transverse lie	2(0.9)	0-2
Others	2(0.9)	0-2

Vertex was the commonest presentation (74.88%). Most common mal presentation was breech (20.37%) and followed by compound presentation (1.42%) and twin pregnancy [1.42%]. There were 3 cases of twin pregnancy. 1 case came with 1st twin as breech and 2nd twin with transverse lie. In other 2 cases first twin was breech presentation and 2nd twin presented with transverse lie.

Table 7: Anaesthesia used

Type of Anaesthesia		95% confidence limits
Spinal	200(94.8)	92-98
General	11(5.2)	2-8

Spinal anesthesia was the commonest anesthesia accounted for 94.8%. General anesthesia was used in 5.2% of cases and common indications being placenta previa, abruptio placenta, cord complications and antithrombin III deficiency.

Table 8: Showing various intraoperative and post-operative complications

Intraoperative complications		95% confidence limits
Atonic PPH	10(4.7)	2-8
Traumatic PPH	1(0.5)	0-1
None	200(94.8)	92-98
Maternal morbidity	16(7.6)	4-11
Post-operative complications		
Wound infection	5(2.4)	0-4
Febrile morbidity	4(1.9)	0-4
Urinary tract infection	2(0.9)	1-2
Respiratory tract infection	5(2.4)	0-4
None	195(92.4)	89-96

Around 11 patients had intraoperative complications with an incidence of around 5.21%. These complications were commonly seen in patients with antepartum hemorrhage. One case of traumatic PPH, occured in central placenta previa. Blood transfusion was given in 8 patients (3.79%). 4 patients who received blood transfusion had APH and atonic PPH.2 patients had APH alone. Remaining 2 cases received blood transfusion for complication of PPH alone.

Table 9: baby outcome

		95% confidence limits
Perinatal morbidity	27(12.8)	8-17
NNHB	14(6.6)	3-10
MSAF	4(1.9)	1-4
Hypoglycemia	2(0.9)	1-2
Septicemia	2(0.9)	1-2
RDS	2(0.9)	1-2
Others	3(1.4)	1-3
Perinatal morality due to maternal causes	4(1.9)	0-4
Abruptio placenta Grade 3	1	
Abruption Grade 3	2	
Cord prolapse	1	

27 babies had perinatal morbidity and requiring NICU admission. NNHB was the most commonest cause accounting for 14 cases. MSAF in 4 cases Hypoglycemia, septicemia and respiratory distress syndrome in 2 cases each.

Discussions

This study includes 211 cases of primary caesarean section in multigravida giving an incidence of 7.73% of all caesarean section. These cases were studied with respect to the indications for caesarean sections, postoperative morbidity, maternal morbidity and mortality, and perinatal morbidity and mortality. The results of the study have been compared with previous studies done on multiparous women by different authors.

Table 10: Incidence of total caesarean section in different series

Author	Incidence of total caesarean section (%)	Incidence of primary caesarean section (%)
Sen(1967)	1.15	0.89
Praag and Tovell(1968)	11.3	1.9
Kasturilal(1972)	8.52	2.45
Vashishta(1974)	11.9	0.60
Palanichamy(1975)	11.44	1.60
Jacob and Bhargava (1977)	4.19	2.06
Present Series	33.50	2.59

Incidence of caesarean section is high in our study which is 33.50%. In United States incidence of CS has increased from 5% in 1965 to 25% in 1990. Increase in the rate of caesarean section is proportional compared to rise in other places.

Table 11: Age group of patients undergoing primary caesarean sections in different Series

Age group (years)	Kiyoko M Parish series 1994(%)	Present Study(%)
15-19	5.50	0
20-24	3.80	11.37
25-29	6.50	51.60
30-34	7.80	28.43
35-39	9.90	6.16
>40	15.60	1.42

In the present series maximum number of women undergoing primary caesarean section in multigravidae was in the age group of 25-29 years (51.60%). In Kiyoko N Parish series (1994), maximum number of patients were in the age group of >40 years. This may be due to older child bearing women and delay in childbirth in the USA.

Table 12: Indication for Primary Caesarean Sections in Parous compared to other Studies:

Indications	Sen (%)	Prag and Tovel l (%)	Jacob and Bharga va(%)	Palani chamy (%)	Sikd ar (%)	Present Study(%)
Malpresentati on	13.8 3	10.20	30.0	32.60	24.4 0	23.22
Antepartum haemorrhage	47.8	19.2	17.30	32.40	19.6 0	14.21
Placenta Previa	46.8 0	14.20	17.30	29.25		8.05
Abruptio placenta	1.0	5.0	--	3.15		6.16
CPD	23.4 0	27.50	26.60	13.50	18.8 0	4.26
Fetal distress	1.1	7.60	8.0	9.2	18.8	27.07
Medical disorders	--	3.3	--	8.46		42.65
Previous pelvis operations	4.26	18.2	3.3	--		--

Malpresentation: Incidence in the present study is 23.22% which is in close proximity to that of sikdar.

APH: In the present study, there were 30 cases, which included 17 cases of placenta previa and 13 cases of abruption. Incidence is 14.21% which is less when compared to all other studies.

Cephalopelvic Disproportion: Incidence in the present study is 4.26% which is less than all other study.

Fetal distress: Section done for fetal distress as indication is around 27.07% and is more than that observed in all other study.

Table 13: Type of Placenta Previa in the Present Compared with Praag and Tovell Series

Type of placenta	Praag and Tovell		Present Study	
	No	Percent	No	Percent
Central (Type IV)	23	38.24	8	47.05
Partial(Type III)	18	30.00	3	17.64
Marginal(Type II)	19	31.66	6	35.29

Incidence of type IV (central) placenta previa was common in praag and Tovell series with an incidence of 38.24%. In our study also, central placenta previa was common with an incidence of 47.05%.

Table 14: Postoperative Morbidity in Different Series

Morbidity	Sen	Sarah and Jacob	Raksha Arora	Present Study
Wound Infection	10	11	12	2.36
Pyrexia	--	5	110	1.89
Urinary tract infection	--	2	17	.94
Endometritis	--	2	8	nil
Paralytic ileus	3	2	10	nil
Respiratory tract infection	4	--	2	2.36
Burst Abdomen	2	--	2	---
Others	--	8	4	--
Percentage	20.2	18.6	20.6	7.58

Incidence of postoperative morbidity in present study is less compared to the study conducted by Sen[10] and Raksha Araro[11] (1990), Sarah Jacob[6] study.

Table 15: Perinatal Mortality in Different Series:

Perinatal Mortality	Sarah and Jacob (1972)	Pal SK(1992)	Present Study
Still Births (1000 birth)	140	45	4.87
Early neonatal death (/1000 birth)	46.60	76	14.63
Total(/1000 births)	186.6	121	19.5

Perinatal mortality rates in the present series was (19.5/ 1000 birth) is less when compared to S.K.Pal[12] and Sarah Jacob[6] series.

Table 16: Perinatal Mortality in Different Indication

Obstetrical indications for perinatal mortality	Praag and Tovell(%)	Sarah Jacob(%)	Present Study(%)
Antepartum haemorrhage	31.66	23.00	75
Cord prolapse	3.33	--	25

In the present study antepartum haemorrhage formed the major indication for primary caesarean section in multigravida associated with perinatal mortality.

Table 17: Maternal Mortality following caesarean section in different series

Author	Maternal mortality (%)
Kasturilal (1972)	3.82
Palanichamy(1975)	2.58
Sikdar and Mitra(1978)	2.29
Frigelleto(1980)	Nil
RakshaArora(1990)	0-0.46
Present Study	Nil

Frigelleto and associates reported a zero maternal mortality in 10231 cases of caesarean sections from Boston. Raksha Arora found decrease in maternal mortality from 0.46% (1983) to nil in 1988. In the present study, there was no maternal mortality. This may be because of availability of antibiotics, blood transfusion facilities, safe methods of anaesthesia, timely intervention, better surgical techniques and operative skill of obstetrician. It may also be true that intensive care available for critical obstetrical patients at hospital have contributed to decrease in maternal mortality. However, maternal and perinatal mortality and morbidity are typically higher with caesarean deliveries than with vaginal deliveries in part because of the complications that led to the caesarean section and in part because of increased risks inherent in the abdominal route of delivery. But still Caesarean section is safer than difficult vaginal delivery. Difficult vaginal delivery is associated with high prenatal morbidity and mortality and also maternal morbidity.

Conclusion

From the above study it is very clear that, many unforeseen complications occur in woman who previously had a normal vaginal delivery. Here all patients had received regular antenatal care .pathological CTG and malpresentation were the most common indications for caesarean section. Though vaginal delivery is always safer than caesarean section, difficult vaginal delivery and obstructed labour carries more morbidity and perinatal mortality when compared to elective caesarean section. Today caesarean section is most common obstetric operations performed, and the advent of higher antibiotics, availability of blood transfusion facilities, anaesthetists' skill, better surgical procedures have all made caesarean section safer than before. Therefore early recognition of complications, timely intervention will decrease fetal loss and also improve pregnancy outcome.

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