



Study of Trends of Caesarean Sections In Tertiary Care Hospital With Respect to Indications And Outcome

KEYWORDS

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Introduction :

Caesarean section is one of the most common surgical interventions in modern obstetrics to save lives of the mothers and or the newborns, thus significantly reducing maternal and perinatal mortality¹. While in developing countries it is associated with significant increases in maternal and infant morbidity particularly following elective caesarean section and caesarean section without medical indications².

No standard classification system exists for caesarean indications¹. One major challenge is that definitions are not standardized and indications can be multiple or related. Despite this, identifying the most common indications for caesarean sections is important to target prevention strategies.

This present study was conducted to find out frequency & indications of caesarean sections and morbidity / mortality associated with it in our set up.

Methods :

This hospital based observational and retrospective study was carried out in Govt. run tertiary care hospital in the dept. of obstetrics and gynecology of Govt. Medical College and Hospital, Aurangabad, Maharashtra, India during the Two years period. Total 2912 out of 3329 women delivered by caesarean section were studied. Exclusion criteria being outside caesarean sections, uterine rupture on admission. Patients admitted for at least 7 days after caesarean section with basic investigations done irrespective of indication were included in the study.

Demographic and clinical data e.g. gestational age in weeks, indications for caesarean sections and complications were recorded.

Results:

Table 1 : Baseline characteristics of study population and the caesarean sections (n=2912)

Characteristics	No. of cases	Percentage
Age (years) < 20 21-30 31-40	306 2549	10.51% 87.53%
Parity Primi Multi	1205 1707	41.38% 58.62%
Period of gestation		
< 37 weeks ≥ 37 weeks	250 2662	08.59% 91.41%
Registered / Unregistered Registered Unregistered	740 2172	25.41% 74.59%

Type of Caesarean section	Planned	Emergency
Hospital stay (days)	295 2617	10.13% 89.87%
< 8 ≥ 8	2346 566	80.56% 19.43%

Emergency referrals caused more unregistered patients.

Total 3329 women underwent caesarean sections out of 15975 deliveries thus giving caesarean section rate of 20.84%. As table 1 indicates, 74.59% of the caesarean sections were performed on unregistered patients, 41.38% were primi gravida and 89.87% cases were emergency caesarean sections.

Table 2 : Indications of caesarean sections

Indications	No. of cases	Percentage
Fetal Distress	786	26.99%
Repeat caesarean delivery	670	23.01%
Abnormal presentation and position	377	12.95%
Cephalopelvic disproportion	312	10.71%
Antepartum haemorrhage	152	05.22%
Failure to progress	112	03.85%
Impending scar dehiscence	111	03.81%
Severe pre-eclampsia, eclampsia	105	03.60%
Severe oligohydramnias	69	02.37%
Prolonged PROM, early chorioamnionitis	62	02.13%
Cord presentation / prolapse	46	01.58%
Contracted pelvis	46	01.58%
Severe IUGR / fetal jeopardy	21	00.72%
Multifetal gestation	17	00.58%
Cervical mass, vaginal septum, fistula	10	00.34%
Precious pregnancy, Bad obstetric history, caesarean delivery on maternal request	09	00.31%
Placenta accreta	07	00.24%

As table 2 shows, fetal distress was most common indication of caesarean sections (26.99%) followed by repeat caesarean section (including impending scar dehiscence) (26.82%) and then labour dystocia (16.40%). Maternal request for caesarean delivery was relatively infrequent though (0.31%).

Table 3 : Intraoperative difficulties and complications

Complications	Planned CS		Emergency CS	
	No. of cases	Percentage (%)	No. of cases	Percentage (%)
Extension to lower uterine segment	03	01.02	22	00.84
Injury to uterine vessels	05	01.69	140	05.35
Atonic PPH	04	01.36	44	01.68
Bladder Injury	Nil	Nil	05	00.19
Adhesions	12	04.07	78	02.98
Scar Dehiscence	01	00.34	18	00.69
Broad ligament haematoma	01	00.34	11	00.42
Difficulty in removing placenta	Nil	Nil	03	00.11
Cardiac arrest	Nil	Nil	01	00.04
Obstetric hysterectomy	Nil	Nil	04	00.15
Total	26	08.81*	326	12.45*

(* $\chi^2 = 3.070$, $P=0.08$, not significant)

Table 3 indicates, intraoperative difficulty might have lead to traumatic injuries i.e. extension to lower uterine segment and injury to uterine vessels. This is the most common complication encountered intraoperatively and when compared between emergency and planned caesarean sections, found to be statistically insignificant. Intractable hemorrhage after all salvage methods failed to control postpartum hemorrhage lead to obstetric hysterectomy in 0.15% (4 cases). Complications were comparatively higher in emergency caesarean sections than planned caesarean section.

Table 4 : Incidence of postoperative morbidity and complications

Complications	Planned CS		Emergency CS		Total (%)
	Cases	%	Cases	%	
Febrile morbidity	5	1.69	85	3.25	3.09
Paralytic ileus	4	1.36	39	1.49	1.48
Puerperal psychosis	0	0.00	4	0.15	0.14
Wound sepsis	6	2.03	66	2.52	2.47
Wound gape	2	0.68	29	1.11	1.06
Urinary tract infections	Nil	Nil	6	0.23	0.21
Retention of urine	2	0.68	14	0.53	0.55
Sub involution	Nil	Nil	4	0.15	0.14
Burst abdomen	Nil	Nil	1	0.04	0.03
Secondary PPH	Nil	Nil	7	0.27	0.24
Breast engorgement	4	1.36	43	1.64	1.61
Post spinal headache	2	0.68	9	0.34	0.38
Skin burn	1	0.34	6	0.23	0.24
	26	8.81*	313	11.96*	11.64

(* $\chi^2 = 2.552$, $P=0.11$, not significant)

Febrile morbidity (3.09%) and wound sepsis (2.47%) could mainly be attributed to poor general condition of patients presenting in emergency (table 4).

Table 5 : Perinatal Morbidity

Complications	Planned caesarean section		Emergency caesarean section		Total (%)
	Cases	%	Cases	%	
Asphyxia	2	0.68	57	2.18	2.03
Prematurity	2	0.68	58	2.22	2.06
Congenital anomalies	2#	0.68	8	0.31	0.34
Hypoglycaemia	2	0.68	20	0.76	0.76
Respiratory distress syndrome	Nil	Nil	23	0.88	0.79
Hemolytic disease of newborn	Nil	Nil	3	0.11	0.10
Neonatal hyperbilirubinemia	Nil	Nil	24	0.92	0.82
Meconium aspiration syndrome	Nil	Nil	32	1.22	1.10
Neonatal seizures	Nil	Nil	8	0.31	0.27
Total	8	2.71*	233	8.90*	8.28

(* $\chi^2 = 13.39$, $P=0.0003$, Highly significant, # congenital anomalies were congenital talipse equino varus and polydactily)

The brunt of moderate to severe asphyxia and prematurity could be attributed to antepartum hemorrhage, pre-eclampsia and swmeconium aspiration syndrome. (Table 5)

There were 11 (0.38%) maternal deaths and deaths were strikingly high when caesarean section was done for antepartum hemorrhage and pre-eclampsia / eclampsia with altered coagulation.

Discussion :

This tertiary government run hospital provides health care services free of cost and most of the patients attending this hospital belong to low socio-economic group with minimal, if any, formal education. The caesarean section rate in our hospital (20.84%) is comparable to the rates in tertiary hospitals in managalore, India (23.27%), Raipur, India (26.2%)³ and other south-east Asian countries like Indonesia (29.6%), Philippines (22.7%)². This caesarean section rate is higher than the WHO recommended rates of between 5% and 15%². This may be attributable to the fact that being a referral centre, meaning a higher proportion of women with complications from other lower category nearby hospitals would have sent to this hospital.

Fetal distress, the most common indication for caesarean section at our set up, may be hypothesized due to caesarean performed at "a lower threshold of abnormality" i.e. with fetal heart changes less severe or for a shorter duration after few hours of variation compared to the normal progress of labour to be on the safe side³. Evidence based protocols for evaluating fetal status like cardiotocography (CTG) and fetal scalp pH estimation need to be developed and promoted. It is well known that CTG abnormalities lead to an over diagnosis of fetal distress. The most accurate parameter of intrauterine fetal hypoxia is 'pH sample' of the fetal scalp blood⁴. But due to absence of such methods at our set up, fetal heart sound heard by stethoscope and its correlation with amniotic fluid colour formed basis fetal distress.

Repeat caesarean section (26.82%) was second most common indication in our setup, this too is attributable to the fact "once a caesarean, always a controversy" factor, no consensus about the safety of vaginal birth after caesarean (VBAC) due lack of one to one monitoring and insufficient staff, medico-legal implications and fear of litigation, as such women were referred for caesarean section. Of note,

the steepest relative increase in caesarean sections (by 56%) occurred among women having a primary caesarean for their second birth⁵. Offering VBAC is one way of reducing high caesarean section rates. Women after making informed choice regarding the mode of delivery were allowed for VBAC, out of which 111 (3.81%) women required repeat caesarean for impending scar dehiscence as the indication.

Labour dystocia (16.14%) meaning abnormal labour, now a days cephalo pelvic disproportion, failure to progress are the expressions often used to describe dysfunctional labours, was the third common indication. Judicious use of oxytocics and maintenance of partogram is found to be beneficial in such cases³.

Current trend of liberalization of indications of caesarean section and in addition, modern indications like caesarean delivery on maternal request, elderly, obese women, precious baby conceived after fertility treatments, oligohydramnios, abnormal doppler reports and impending scar dehiscence are adding to the increase in caesarean section rate.

We have not classified indications in '10-group' or Robson classification of caesarean section, as this classification has inherent loop holes e.g. this classification has not included absolute indications like placenta praevia, contracted pelvis, obstructed labour and associated medical disorders⁶.

Intraoperative difficulties due to universal presence of adhesions in repeat caesarean patients and traumatic injuries lead to prolonged surgeries particularly to trainee doctors. Chances of any surgical complications were higher in emergency caesarean section group (12.45%) compared with elective caesarean section group (8.81%). Obstetric hysterectomy and bladder injuries were uncommon at 0.15% and 0.19% respectively, both being significantly common in emergency surgical births.

Where infectious morbidity is measured by the surrogate marker of antibiotic treatment after birth, women who birth by elective caesarean section are four times more likely than those who experience vaginal birth to require antibiotic treatment (62 V/s 24). This increases to five fold increased risk among women who require emergency caesarean section (70 V/s 24%)⁶ i.e. need for prolonged use of antibiotics. Anemia was frequently observed in our cases of febrile morbidity and wound sepsis, 66 cases (2.52%) received either one or two blood transfusions during or after caesarean section.

Perinatal morbidity and mortality was mainly attributed to prematurity, asphyxia, respiratory distress and was maximum when it was associated with prolonged labour, chorioamnionitis, antepartum hemorrhage as indications for caesarean section and had significant association with emergency caesarean section (8.90%) than elective caesarean section (2.71%). The improvements in neonatal intensive care services and widening in the field of indications for caesarean sections are possible causes of the decreased perinatal mortality⁸.

All maternal deaths after caesarean sections are not of course, attributable directly to the procedure and caesarean section may itself save many maternal lives. This fact complicates attempts to define a mortality risk benefit ratio for caesarean section.

Conclusion :

The caesarean section rate at our setup 20.84%, is higher than the WHO recommended rate, this may be hypothesized to more referrals and 89.87% emergency admissions. Modern indications like oligohydramnios, doppler abnormalities, elderly, obesity, women conceived after fertility treatments and caesarean delivery on maternal request are adding to the number of caesarean sections. Total 70.05% caesarean sections were done on unscarred uterus.

Thus, the present study concludes that every caesarean section should be reviewed critically to decide whether it is necessary and no rigid policy should be made to put a stop to this vicious cycle. It is always better to prevent primary scar as previous scar adds problem in mode of delivery in subsequent pregnancies and add to maternal morbidity due to trial of labour in previous scar. Overall morbidity is decreasing in caesarean sections due to advances in surgical techniques, antibiotic prophylaxis and anesthesia techniques. However, caesarean section morbidity is more in emergency than planned caesarean section.

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