Analysis of current trends in caesarean section in a tertiary care hospital

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Abstract

In the background of increasing rates of caesarean sections, this study was done to find the current trends of the surgery.
Aim: To study 500 consecutive caesarean sections in a tertiary referral maternity hospital in South India to understand the current trends in caesarean.
Objective:
1. To find out the incidence of caesarean sections and the pattern of the indications
2. To find the pattern of age distribution, parity, period of gestation, intra operative & post operative complications, fetal & maternal outcome in caesarean sections &
3. To compare elective and emergency caesarean sections
Method: This was a prospective study carried out in a District Maternity hospital in South India. We included 500 consecutive caesarean sections from the time of commencement of the study. The various characteristics of the patient & newborn profile, the surgical indications & complications were noted and compared in elective & emergency caesarean sections & the statistical significance was noted by applying Chi square test.
Results: The incidence of caesarean section was found to be 30.1% in our study. Of the total 500 cases studies, 68.2% were emergency sections. Most elective cases were in parous women (69.1%); whereas most emergency cases were in nulliparous women (68.03%). Commonest indication for caesarean section was previous caesarean section in the elective group; while in the emergency group, it was meconium and fetal distress. Intra operative complications and perinatal mortality were significantly more in emergency cases. Post operative morbidity was seen in 16.2% cases.
Conclusion: There is a need to avoid unwarranted surgeries, mainly primary caesarean section and also the need to give trial of scar in carefully selected cases so that the caesarean rate stabilizes with good maternal and fetal outcome.

Keywords: Caesarean trends, Caesarean section incidence, Indications of caesarean, Complication rate of LSCS

Introduction

Caesarean section is one of the most commonly performed surgeries today. It is one of the oldest surgeries in the world & the dramatic increase in caesarean rates is one of the most controversial features of modern obstetrics. It has evolved from being a procedure initially used as a desperate measure in post partum conditions to save the unborn child, to the present times when "previous caesarean section" has become one of the most common indications for a caesarean. Both the procedure and the indications for the surgery have shown drastic changes.

Incidence of caesarean section has risen dramatically over the last two decades worldwide. This is mainly attributed to the increased safety of the procedure, mainly due to improvements in anaesthesia, good antibiotics, availability of blood transfusion and improvement in surgical technique and operative skills. Though the indications of caesarean have increased, it is mainly the lowering of threshold that is responsible for the rise.

The rising rates may be attributed to a number of factors. Decrease in the number of vaginal breech deliveries, instrumental deliveries and vaginal birth after caesarean (VBAC) has contributed to the rise in caesarean rates. The major contributors to the rise have been increase in the number of induced labours (especially in nulliparas), increase in repeat caesarean sections, use of electronic fetal monitoring which has decreased the threshold for caesarean and liberal diagnosis of dystocia with vague indications like failure to progress and cephalopelvic disproportion instead of more precise definitions like secondary arrest of dilatation or arrest of descent. Tremendous improvement in neonatal care has increased the number of fetal indications. Increase in the average maternal age, increased prevalence of obesity & maternal risk factors like pre eclampsia and increase in the caesarean section at maternal request have also contributed to the rise. Another major factor for the rise in the incidence of caesarean is the increasing concern for malpractice litigation.

The aim of this study was to study 500 consecutive caesarean sections in a tertiary referral maternity hospital to understand the current trends of caesarean. The main objective was to find out the incidence of caesarean sections and the frequency pattern of the indications, to find the demographic parameters like age distribution, parity, period of gestation, intra operative & post operative complications, fetal & maternal

outcome in caesarean sections & to compare elective and emergency caesarean sections.

Method

This was a prospective study carried out in Lady Goschen Hospital, Mangalore. This is a District Maternity hospital (a tertiary referral centre) in South India. The study subjects included 500 consecutive caesarean sections from the time of commencement of the study. Data was collected from the case sheets of the patients. The various characteristics of the caesarean section cases; namely, the patient profile (age, period of gestation, parity), newborn profile (birth weight, Apgar score), the surgical indications & complications (both intra operative & post operative) were noted & compared. The different parameters were compared in elective & emergency caesarean sections & the statistical significance of the comparison was noted by applying Chi square test. As the study did not interfere with patients' management, no consent was obtained from the involved patients.

Results

This prospective study analyzed 500 consecutive caesarean sections and the following trends were noted.

Incidence: Total number of deliveries during the study period was 1661, out of which 500 (30.10%) were caesarean deliveries. Of the total caesareans studied, 67.4% were primary sections & 32.6% were repeat sections (Binomial p<0.001, Highly Significant-HS). Also, 31.8% of the caesarean sections were elective cases & 68.2% were emergency sections (p<0.001, HS).

Repeat sections constituted 64.7% of the elective cases, whereas primary cases contributed to 82.5% of the emergency cases. This was found to be statistically significant.

Demographic variables:

Age: Overall, most cases (45.2%) were in 26-30 yrs age group. Mean age was found to be slightly lesser in primary and emergency cases, but it was not statistically significant.

Parity: Most elective cases were parous women (69.1%); whereas most emergency cases were nulliparous women (68.03%) and this difference was found to be statistically significant. Of the 337 primary sections, 83.3% were in nulliparas and this was found to be statistically significant.

Period of gestation: Maximum cases had period of gestation beyond 37 wks (90.8%). None of the elective cases were done at a period of gestation less than 34 weeks.

Newborn parameters: Mean birth weight in the elective group was 3.01kg, whereas in the emergency group it was 2.93 kg. The difference was not statistically significant.

Apgar score: 94.4% of the babies born had a normal five minute Apgar (8-9), whereas 2.5% of the babies were either intrauterine demises or stillborns. IUD and stillbirths were more common in the primary (2.3%) & emergency (2.5%) groups & this was statistically significant.

The overall perinatal mortality was 2.4%. All the cases with stillbirth had fetal distress prior to caesarean, either associated with thick meconium or abruption. Most common cause of neonatal mortality was low birth weight associated with either sepsis or respiratory distress syndrome

Indications: (Table 1) Commonest indication for caesarean section in the elective group was previous section (17% of the total sections); while in the emergency group, meconium stained liquor (14.4% of all sections) & fetal distress (11.2%of all sections) were the commonest indications followed by previous LSCS (6.8%). Malpresentations were an indication in 12% cases.

Table 1: Indications of caesarean sections

Indications	Elective		Emergency		Total	Primary		Repeat	
	No.	% (of all cases)	No.	%(of all cases)	No (%)	No	% (of all cases)	No	% (of all cases)
Previous caesarean	85	17	34	6.8	119 (23.8)	-	-	119	23.8
Fetal distress	-	-	56	11.2	56 (11.2)	48	9.6	8	1.6
Meconium stained liquor	-	-	72	14.4	72 (14.4)	70	14	2	0.4
Arrest of descent	-	-	45	9	45 (9)	44	8.8	1	0.2
Arrest of dilation	-	-	11	2.2	11 (2.2)	9	1.8	2	0.4
Failed induction/ failure to progress	-	-	26	5.2	26 (5.2)	26	5.2	-	-
Severe pre eclampsia	-	-	7	1.4	7 (1.4)	1	0.2	6	1.2
Malpresentation	29	5.8	31	6.2	60 (12)	52	10.4	8	1.6
Multiple gestation	2	0.4	5	1	7 (1.4)	7	1.4	-	-
Placenta previa	9	1.8	6	1.2	15 (3)	13	2.6	2	0.4

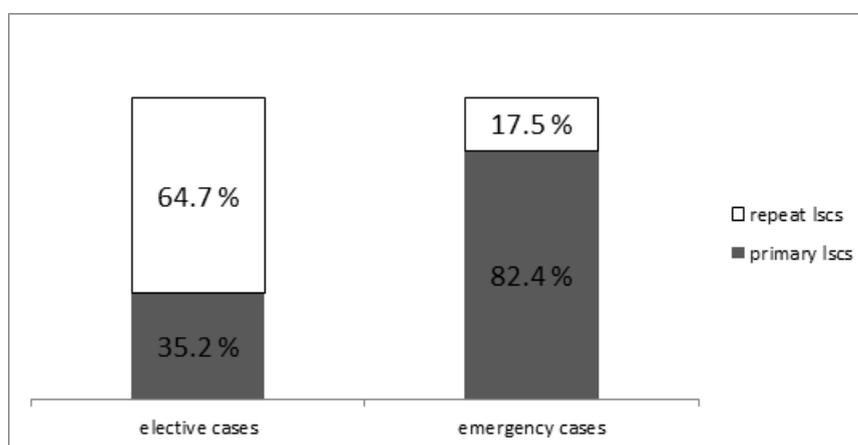|								
Suspected chorioamnionitis	-	-	12	2.4	12 (2.4)	10	2	2	0.4
Cord prolapse	-	-	1	0.2	1 (0.2)	1	0.2	-	-
Precious pregnancy/ BOH	5	1	4	0.8	9 (1.8)	9	1.8	-	-
Abruption	-	-	9	1.8	9 (1.8)	6	1.2	3	0.6
Oligohydramnios/ IUGR	7	1.4	6	1.2	13 (2.6)	11	2.2	2	0.4
Previous myomectomy	2	0.4	1	0.2	3 (0.6)	2	0.4	1	0.2
CPD	20	4	9	1.8	29 (5.8)	22	4.4	7	1.4
Failed instrumentation	-	-	5	1	5 (1)	5	1	-	-
Obstructed labour	-	-	1	0.2	1 (0.2)	1	0.2	-	-
Total cases	159	31.8	341	68.2	500	337	67.4	163	32.6

Fig. 1: Incidence of primary & repeat cases among elective & emergency cases (%)

Intra operative complications: were seen in 9% cases (Fig 2). Incidence of intra operative complications, in general, were more in emergency cases and it was statistically significant (p<0.001); whereas the incidence of uterine angle extension in primary cases was statistically highly significant (All cases of extension were seen in primary cases).

Post op morbidity: (Table 2) was seen in 16.2% cases, of which 5.8% was due to fever & 4% due to wound discharge. There were no cases of burst abdomen or maternal mortality during the study period.

Table 2: Post operative complications in elective and emergency sections

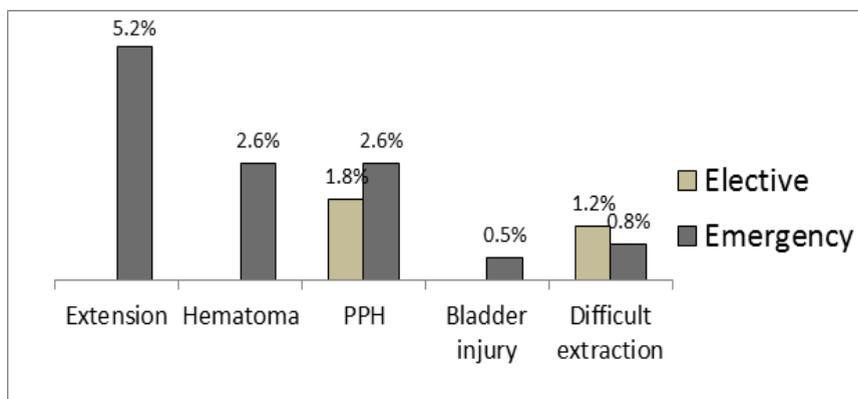| Post op complications	Elective		Emergency		Total
	No	**%**	**No**	**%**	**No (%)**
Fever	9	5.6	20	12.5	29 (5.8)
Wound discharge	4	2.5	16	4.3	20 (4)
UTI	3	1.8	16	4.6	19 (3.8)
RTI	2	1.2	8	2.3	10 (2)
Pleural effusion	-	-	1	0.2	1 (0.2)
Renal failure/ altered RFT	-	-	1	0.2	1 (0.2)
Bleeding	-	-	1	0.2	1 (0.2)
Total cases	18/ 159	11.3	63/ 341	18.4	81/500(16.2%)

Chi square exact test p=.867, Not Significant

Fig. 2: Incidence of complications (in %)

Hospital stay: (Table 3) 91.4% patients got discharged within 9 days of surgery. Only 3% had to stay beyond 13 days and this was significantly more in the emergency group.

Table 3: Hospital stay duration in elective and emergency sections

Hospital Stay (days)	Elective		Emergency		Total
	No	%	No	%	No (%)
< 9 days	152	95.4	305	89.3	457 (91.4)
9-12	6	3.7	22	6.4	28 (5.6)
≥13 *	1	0.6	14	4.1	15 (3)
	159		341		500

*χ2=8.928,p=.030, significant

Discussion

Since 1985, the international healthcare community has considered the ideal rate for caesarean sections(CS) to be between 10% and 15% based on a panel of reproductive health experts at a meeting organized by the World Health Organization (WHO) in 1985 in Brazil.[1] However, there is a rise in caesarean section rates all over the world, including both developing and developed countries.[2,3,4]

Main concern in the rise of caesarean section, especially in primigravidae, which has long term sequelae, include high chances of repeat caesarean apart from other morbidities associated with a major surgery. Future efforts to reduce overall CS rate should be focused on increasing vaginal birth after caesarean and reduce primary CS rates, which in turn will reduce the number of pregnant women with a previous CS.[5] Among primary caesarean deliveries, it has been found that more subjective indications (e.g. Non reassuring fetal status and arrest of dilation) contributed larger proportions than more objective indications (e.g. malpresentation, maternal-fetal, and obstetric conditions).[6] This needs careful reassessment including stricter diagnostic criteria and management including appropriate use of oxytocin, partogram, etc. to ensure that labour is effective before diagnosing dystocia. Also, careful selection of cases for trial of scar will reduce the rate of repeat caesarean section without adversely affecting the fetus and mother.

When medically justified, caesarean section can effectively decrease the maternal and perinatal mortality and morbidity.[7] But as with any other surgery, caesarean sections are associated with short and long term risks which can affect the health of the woman, the child, and future pregnancies.[8,9,10] Determining the adequate caesarean section rate, while avoiding medically unnecessary operations is a difficult task mainly due to the lack of a reliable and internationally accepted classification system to produce standardized data, enabling comparisons across populations and providing a tool to investigate drivers of the upward trend in caesarean section.[11]

In 2011, WHO conducted a systematic review of systems used to classify caesarean section, and concluded that the Robson classification is the most appropriate system to fulfill current international and local needs.[12] The classification is simple, robust, reproducible, clinically relevant, and prospective – which means that every woman admitted for delivery can be immediately classified into one of the 10 groups based on these few basic characteristics. This allows a comparison and analysis of caesarean section rates within and across these groups. In 2014, WHO conducted a second systematic review of the experience of users with the Robson classification[13] and proposed it as a global standard for assessing, monitoring and comparing caesarean section rates in the "WHO statement of caesarean section rates"

To conclude, judicious employment of caesarean sections to improve maternal and fetal outcome when genuinely indicated, and avoiding unwarranted surgeries should be the ideal approach so that the caesarean rate stabilizes with good maternal and fetal outcome. Also to facilitate assessment and monitoring of caesarean section rates worldwide, a uniform classification system as recommended by the WHO would be a helpful tool.

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