

A STUDY OF SHORT AND LONG TERM MORBIDITIES FOLLOWING CAESAREAN SECTION*Shailaja L¹, Sujatha Thankappan Lakshmi², Nirmala Chellamma³, Sreelatha Sumangala⁴*¹Junior Resident, Department of Obstetrics Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.²Associate Professor, Department of Obstetrics Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.³Professor, Department of Obstetrics Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.⁴Associate Professor, Department of Obstetrics Gynaecology, SATH, Government Medical College, Trivandrum, Kerala.

ABSTRACT

BACKGROUND

During the past few decades, the worldwide incidence of Caesarean births has increased markedly. The current range is around 40% of all deliveries. A study of long and short term morbidities following caesarean will create awareness on these adverse outcomes so that efforts can be taken to reduce the high rates of caesarean section.

AIM

Aim of the study was to assess the short-term and long term morbidities associated with caesarean sections and compare with that of vaginal deliveries.

MATERIALS AND METHODS

This is a prospective study conducted for 1 year in SATH hospital, Govt. Medical College Trivandrum, a tertiary care center. Women delivered at SATH hospital during this period were included in the study. Sample size calculated as 500 in each group. Of the total 1000 cases studied, 500 cases were caesarean sections, and 500 vaginal deliveries. They were followed up during labour, in the postpartum period, 6 weeks, 6 months and 1 year from the time of delivery and the morbidities were studied. Statistical tests used were mean, percentage, chi square and Fischer's exact test to assess association of the selected parameters with the type of delivery.

RESULTS

Majority of caesarean sections (73.4%) were emergency. Previous caesarean section (53.6%) was the leading indication. Intra operative morbidities like excessive blood loss had significant association with caesarean section. 3.2% in the caesarean group required blood transfusion compared to 1% in vaginal delivery group. Intraoperative complications like broad ligament hematoma, adhesions and bladder injury and anaesthesia complications were present in 7% of cases. Short term morbidities like fever, urinary retention, sepsis were significantly more in the caesarean group (9.2%) versus 0.8% in vaginal deliveries. Occurrence of Severe Acute Maternal Morbidity following caesarean section was 0.2-2%. Caesarean section group had longer duration of hospital stay. Long term morbidities like backache and wound related problems were significantly high in caesarean group.

CONCLUSION

Caesarean section was associated with significantly high incidence of maternal morbidities both intraoperative as well as short and long term morbidities compared to vaginal deliveries.

KEYWORDS

Caesarean Section, Vaginal Delivery, Short Term Morbidity. Long Term Morbidity.

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BACKGROUND

Caesarean section rates are increased due to a variety of reasons. A number of reasons have been proposed for the

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Corresponding Author:

Dr. Sujatha Thankappan Lakshmi,

Associate Professor,

Department of Obstetrics Gynaecology,

SATH, Government Medical College,

Trivandrum, Kerala.

E-mail: kuttugayathri@gmail.com

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increasing rates of caesarean section like advanced maternal age, multiple pregnancy, breech, and interventions in pregnancy like induction of labour, use of CTG, increasing maternal BMI, decreasing use of instrumental deliveries, fear of litigation and maternal preferences. If medically indicated caesarean can effectively prevent maternal and perinatal mortality and morbidity.¹ But if caesarean done for unindicated cases it can cause short term and long term risks associated with the surgery. Hence there is every reason to attempt prevention of further increase in caesarean section rates.² The risks of infection and complication from surgery are dangerous especially in poor settings that lack facilities to conduct safe surgery.²

Intraoperative complications include excessive blood loss, damage to adjacent organs including bladder, urinary tract or bowel, as well as unintentional damage to uterus or cervix.³ Bladder injuries are the most common.⁴ Phipps and colleagues reported that bladder injuries were reported in 0.28% of deliveries. Sepsis and thromboembolism are significant contributors to maternal mortality and morbidity. Caesarean section is a recognized risk factor for thromboembolism increasing the risks by two to four fold compared with vaginal delivery.⁵ Any type of caesarean birth was associated with a five-times increased risk of Severe Acute Maternal Morbidity.⁶ Febrile morbidity is frequent after caesarean delivery. Postoperative pelvic infection is the most frequent cause of febrile morbidity and develops in up to 20 percent of these women despite peripartum prophylactic antimicrobials.⁷ Urinary tract infection complicates 2-6% of all fevers. Risks of caesarean to future pregnancies like uterine rupture and abnormal placentation increases substantially with increasing number of prior caesareans.⁸ The effects of caesarean section on maternal and perinatal morbidity are still unclear.

MATERIALS AND METHODS

This is a prospective study conducted at SAT Hospital, Govt. Medical College, Trivandrum, a tertiary care center. Duration – One year.

Inclusion Criteria

Patients delivered at SAT hospital during this study period which included both caesarean sections and vaginal deliveries.

Exclusion Criteria

Patients delivered in other hospitals and referred to SAT for further treatment.

Sample size was calculated from the following formula.

$$N = 2 \frac{(Z_{\alpha} + Z_{\beta})^2 \bar{P}(1-\bar{P})}{\Delta}$$

$$\Delta = P_t - P_c$$

In the present study

$P_c = 0.17$ (proportion of infection in vaginal delivery)

$P_t = 0.25$ (proportion of infection in cesarean delivery)

$\Delta = 0.08$ (based on previous study)

$$N = \frac{2 (1.96 + 0.84)^2 \times (0.21) \times (0.79)}{(0.08)^2} = 407$$

Final sample size for this study is 407 rounded to 500 in each group considering 20% drop outs. 500 cases of cesarean section both elective and emergency done in SATH hospital were compared with 500 vaginal deliveries. History, socio economic status, and details regarding obstetric history noted by a structured questionnaire after taking informed consent. Details of labour and intraoperative complications were noted. They were followed up in the ward till discharge and subsequently at 6 weeks, 6 months and one year. Short term morbidities studied were febrile

morbidity (temperature elevation of 100. 4 F on any 2 days of the first 10 days postpartum after the first 24 hrs.), sepsis, urinary complications, breast problems and duration of hospital stay. Serious complications if any like deep vein thrombosis and secondary postpartum haemorrhage noted. During post-natal checkup, they were asked about any ailments, breast feeding practices and a clinical examination was done.

Statistical test used were mean, standard deviation, percentage, chi square and fisher's exact test to assess association of selected parameters to the type of delivery.

OBSERVATION AND RESULTS

Majority of patients in both groups were less than 25 years. It was also observed that caesarean section rates increased as age increased to more than 30 years. 67.8% of caesarean group were multigravida and only 32.2% were primigravida. This is because most of the caesarean sections were repeat caesareans. Medical morbidities like hypertension (7.4% vs 4.8%) and diabetes (8.2% vs 5%) were high in caesarean group. Among the caesareans 53.6% of cases were done for previous caesarean section. 73.4% of caesarean sections were done as emergency and 26.6% were done electively.

In our study women with Body mass index less than 25 had higher rates of vaginal delivery and as Body mass index increased caesarean section rates also increased.

Intrapartum complications in vaginal delivery group were retained placenta, 0.4% Postpartum haemorrhage and third degree perineal tear constituting 0.8%. Intraoperative complications in caesarean section were excessive blood loss, difficulties in caesarean due to adhesions and bladder injury. Blood transfusion required in 3.2% of caesarean cases whereas only 1% of vaginal deliveries needed blood transfusion.

Short term morbidities like febrile morbidity, secondary Postpartum haemorrhage, wound infection, urinary complications and severe complications like sepsis and deep vein thrombosis were significantly high in caesarean group. 79.8% in vaginal delivery group were ambulant within 12 hours compared to only 2.8% in caesarean group.

Our study showed higher neonatal morbidity including increased admissions to nursery due to respiratory problems in caesarean group but no significant difference between two groups.

Caesarean group had longer duration of stay in hospital compared to vaginal delivery group. 92.6% in the vaginal delivery group were discharged within 6 days of delivery compared to only 26.4% in caesarean group and 7% in caesarean group had to stay for around 2 weeks.

Out of 1000 cases 864 patients reported for follow up, 437 women from vaginal delivery group and 427 from caesarean group reported for follow up at 6 weeks. At 6 months 825 women, 406 from vaginal delivery group and 399 from caesarean group reported for follow up. At the end of one year total 757, 380 from vaginal delivery group and 377 from caesarean group reported for follow up. Lost to follow up at one year was 24% in vaginal delivery group and 24.6% in caesarean group. As the sample size was raised

considering the dropout rates of around 20% the sample required for the study was met.

It was observed that pain and wound related problems, fatigue, and backache were significantly high in caesarean group at 6 weeks. Urinary symptoms and abnormal uterine bleeding seen more in caesarean group, but no significant difference between two groups.

At 6 months follow up, fatigue (17% versus 7.9%), backache and constipation were significantly high in caesarean group compared to vaginal delivery.

At one year follow up fatigue, backache, pain and wound related problems were significantly high in caesarean group. Anaemia and abnormal uterine bleeding seen in both groups with no significant difference.

Blood Transfusion	Caesarean section		Vaginal		χ^2	P
	N	%	N	%		
Required	16	3.2	5	1	4.684	0.027
Not Required	484	96.8	495	99		

Table 1. Comparison of Requirement of Blood Transfusion in Caesarean Section and Vaginal Delivery

3.2% caesarean patients required blood transmission where as only 1% in the vaginal delivery group.

		CS		Vaginal		P
		N	%	N	%	
1.	Febrile morbidity	46	9.2	4	0.8	<0.001
2.	Secondary PPH	3	0.6	1	0.2	0.353
3.	Wound infection	11	2.2	1	0.2	0.005
4.	Urinary retention	7	1.4	2	0.4	0.108
5.	UTI	5	1	3	0.6	0.506
6.	Sepsis	7	1.4	0	0	0.071
7.	DVT	1	0.2	0	0	0.500
8.	Psychosis	1	0.2	0	0	0.500

Table 2. Distribution and comparison of Post-operative Morbidities Following Caesarean Section and Vaginal Delivery

Comparing the morbidities, febrile morbidity and wound infection were significantly high in the caesarean group.

Duration of Hospital Stay in Days	CS		Vaginal		χ^2	P
	N	%	N	%		
<6	463	92.6	132	26.4	454.68**	0.000
6-14	34	6.8	333	66.6		
>14	3	0.6	35	7		
Mean±SD	4.7±3.4		8.8±3.8			

Table 3. Comparison of Duration of Stay in Caesarean Section and Vaginal Delivery

92.6% in the vaginal delivery group were discharged within 6 days whereas only 26.4% in CS group.

Complications at 6 weeks	Vaginal		CS		P*
	N	%	N	%	
Fatigue	34	6.8	120	28.1	0.000
Breast problems	24	5.5	51	11.9	0.001
Anaemia	12	2.4	29	5.8	0.024
Headache	14	3.2	48	11.2	0.000
Constipation	24	5.5	42	9.8	0.011
Pain and wound complication	2	0.5	12	2.8	0.005
Abnormal uterine bleeding	5	1.1	6	1.4	0.484
Urinary symptoms	12	2.7	17	3.7	0.262
Backache	18	3.6	140	28	0.000

Table 4. Comparison of Complications at 6 weeks following Caesarean and Vaginal Delivery.

Fatigue, breast problems, pain and wound related problems and backache were significantly high in the caesarean group.

Complication at 6 Months	CS		Vaginal		P*
	N	%	N	%	
Fatigue	3.2	7.9	68	17	0.000
Breast problems	10	2.5	16	4.0	0.149
Anaemia	12	3.0	28	7.0	0.006
Backache	8	2	90	22.6	0.006
Headache	4	1.0	12	3.0	0.034
Constipation	12	3.0	30	7.5	0.003
Pain and wound related complications	0	0.0	10	2.5	0.001
Vaginal discharge	12	3.0	15	3.8	0.331
Abnormal bleeding	8	2.0	12	3.0	0.237
Urinary symptoms	8	2.0	14	3.5	0.131

Table 5. Comparison of complication at 6 months following caesarean and vaginal delivery.

Fatigue, breast problems, pain and wound related complications, and back ache were significantly high in the CS group.

Complication at 6 Months	CS		Vaginal		P*
	N	%	N	%	
Fatigue	6	1.6	40	10.6	0.000
Breast problems	4	1.1	8	2.1	0.188
Anaemia	12	3.2	12	3.2	0.574
Backache	4	1.1	74	19.6	0.000
Headache	10	2.6	35	9.3	0.000
Constipation	4	1.1	12	3.2	0.036
Wound related complication	0	0	4	1.1	0.061
Abnormal Uterine bleeding	16	4.2	19	5	0.356
Urinary symptoms	6	1.6	14	3.7	0.053

Table 6. Comparison of Complication at 1 year Following Caesarean and Vaginal Delivery

Fatigue, back ache, pain and wound related complications are significantly high in the caesarean group.

DISCUSSION

Background Characteristics

In the present study we have studied the sociodemographic factors affecting caesarean section and vaginal delivery, short and long term morbidities in both the groups. It was found that 60% of caesareans belonged to rural areas. This is explained by the fact that SATH being a government institution rural patients from the surrounding hospitals were referred to here for emergency care. About 99% of deliveries in Kerala are Institutional. With increase in maternal age, education, occupation and socioeconomic status higher chance for caesarean was seen. This is comparable to the other study.⁹

Among the caesarean group 8.2% had diabetes and 7.4% had hypertension which is higher than in vaginal delivery group.

In this study most of the caesarean section patients were multigravida when compared to vaginal delivery group in which majority were primigravida. This difference was noted because most of the caesareans in this study were repeat caesareans. Our study is comparable to study by Kambo et al 2002. in which caesarean in primi was 42.4% and multi 57.6%. Significant association was seen with increasing body mass index which is comparable to other studies.^{10,11}

Intraoperative complications in the present study showed that more number of caesarean patients had excessive blood loss of more than 1000 ml. 3.2% of caesarean cases required blood transfusion whereas only 1% in vaginal delivery group needed transfusion. In Bergholt's review of 1000 cases estimated blood loss of greater than 1000 ml was recorded in 9.2% of caesarean births with 1% of women requiring blood transfusion. This higher rate of blood transfusion in our study is because in the caesarean group there were referred cases of placenta previa, 1 case of placenta percreta requiring massive transfusion and 4 cases of abruption.

In the present study adhesions were found in 7% of cases and thinned out lower segment in 4% of cases because more than 50% of our cases had previous 1 or 2 caesarean section. In a study by Lyell DJ.¹² showed that incidence of adhesion development after primary caesarean is high.

Bladder injury was seen in 0.8% and scar dehiscence seen in 0.4% of cases in our study. The incidence of bladder injury that was assessed in a study over a 7 year period was found to be 0.8% which is comparable to our study.¹³

Among vaginal delivery group intrapartum complications were less compared to intra operative complications of caesarean section. Two cases of retained placenta required manual removal under anaesthesia. Both were preterm labours. 0.8% had anal sphincter tear compared to other studies which showed risk of 1%. However, it is estimated that 1/3rd of women delivered vaginally had occult anal sphincter trauma which can be diagnosed by anal ultrasound scanning.¹⁴

Morbidities in the Post-operative Period

Febrile Morbidity- The incidence of febrile morbidity was more following caesarean, 9.2% vs 0.8% in vaginal delivery group. In our present study urinary tract infection, urinary retention, and paralytic ileus were more in caesarean group than in vaginal delivery group which is similar to Cochrane review.

SAMM (Severe acute Maternal Morbidity)- Our study showed 0.2-2% incidence of life threatening complications like deep vein thrombosis, severe sepsis, haemorrhage, and operative intervention after birth. Any type of caesarean birth was associated with 5 times increased risk of SAMM. Serious infectious morbidity was reported following 1-2% of caesarean births.^{15,12}

In our study caesarean patients took more time to initiate ambulation, majority more than 24 hours compared with vaginal group who started ambulating within 4 hours of childbirth.

Initiation of breast feeding was also delayed in caesarean group compared to vaginal delivery group where majority started breast feeding within 15 minutes of childbirth.

In the present study significant difference was noted in antibiotic requirement. All caesarean patients received parenteral antibiotics and 9.6% patients received broad spectrum combination antibiotics compared to vaginal delivery group who mostly received oral antibiotics.¹³

92.6% in the vaginal delivery group were discharged within 6 days of delivery where as only 26.4% in caesarean group within 6 days and 7% in caesarean group had to stay for around 2 weeks.

In our study it was observed that duration of hospital stay was significantly high in caesarean group than vaginal group putting high physical, psychological and financial burden on patient and family.

In long term follow up of both the groups it was observed that at 6 weeks patients who had caesarean delivery had higher incidence of almost all morbidities. Caesarean patients complained of excess fatigue (28% versus 6.8%), wound infections and suture related problems and pain. This is comparable to another study where it was found that women in the planned caesarean group were more likely to report pain than women in the vaginal delivery group.⁽¹⁶⁾

At 6 months pain and wound related problems (2.5% versus 0%), urinary symptoms (3.5% versus 2%) and readmission (1.5% versus 0.2%) were significantly higher in caesarean delivery. This is comparable to another study where 7% of women who delivered by caesarean continued to report incision pain compared with 2% of mothers delivered vaginally who reported perineal pain.¹⁶

Our study showed significant difference in weight gain between the two groups. More than 10 kg weight gain was seen in 17.6% of post caesarean group compared to only 10 % in the vaginal delivery group.

At the end of one year back ache, head ache, fatigue, and constipation were significantly high in caesarean group.

Limitation

As the study duration is limited to one year the complications in future pregnancies like scar rupture, abnormal placentation etc were not looked into.

CONCLUSION

Caesarean section was associated with significantly high incidence of maternal morbidities both intra operative as well as post-operative compared to vaginal deliveries. Intra operative morbidities observed were excessive blood loss, anaesthesia complications, difficulties in surgery in repeat caesarean sections due to adhesions and bladder injury.

Short term morbidities like febrile morbidity, secondary post-partum haemorrhage, sepsis, severe acute maternal morbidity (SAMM) and duration of hospital stay all significantly increased following caesareans.

Long term complications like pain and wound related complications, backache and weight gain were significantly increased in post caesarean group.

Recommendation- Though caesarean section is a lifesaving procedure in medically indicated cases it should not be accepted as an easy mode of delivery as it is associated with significant short and long term morbidities.

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