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COMPARISON OF MATERNAL AND PERINATAL OUTCOME IN ELECTIVE REPEAT CAESAREAN SECTION DONE BEFORE 39 WEEKS AND THOSE DONE AT OR AFTER 39 WEEKS OF GESTATION

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ABSTRACT: INTRODUCTION: Caesarean sections are one of the commonest surgeries performed in the world today. The timing of scheduling an elective repeat cesarean section has been an issue of debates Because of increased risks of complications for the infants of respiratory and other complications. We assessed associations between elective cesarean delivery before 39 weeks compared to delivery at or after 39 weeks of gestation and studied the maternal and neonatal outcomes in these two groups. **OBJECTIVES:** To compare the maternal and neonatal outcomes in the women with previous cesarean sections who underwent elective repeat caesarean section before 39 weeks gestation to those who had it at or after 39 weeks gestation. **MATERIAL AND METHODS:** The study period was of one year duration from April 2011 to March 2012 during which the patients who underwent elective repeat caesarean section in our institution The Institute of Maternal and Child Health, Government Medical College, Kozhikode a tertiary level referral center were studied. This was a prospective cohort study involving a total of 300 cases of elective repeat cesarean section during this period. **STATISTICAL ANALYSIS:** Statistical significance of different variables were analyzed using the Pearson chi-square test. The data obtained were analyzed using the SPSS program. **RESULTS:** The No of repeat elective caesarean sections performed in the institution during the study period was 1817. Of these 300 cases were included in the study with 150 patients having repeat elective caesarean section before 39 weeks and 150 women having it at 39 weeks or after 39 weeks. The study showed that early elective delivery before 39 weeks did not significantly reduce the risk of adverse maternal outcomes compared to delivery after 39 weeks. However our study showed a significant difference in the neonatal outcome between the two groups with the babies in the group delivered before 39 weeks requiring more NICU admissions (24 compared to 1 case in the control group P value <0.0001) with increased incidence of respiratory distress, hypoglycemia, sepsis and seizures. **CONCLUSIONS:** The study highlights the benefits of delaying elective repeat caesarean sections until completion of 39 weeks of gestation which was shown to significantly improve the perinatal morbidity.

KEYWORDS: Elective caesarean section, maternal outcomes, Neonatal outcomes, Neonatal intensive care admission.

INTRODUCTION: Caesarean section is the most common major surgical procedure done in women. The British and American societies in obstetrics recommend elective caesarean section to be scheduled after 39 completed weeks of gestation.^{1,2}

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This recommendation is based on a subset of several observational studies suggesting a strong association between earlier gestational age at elective caesarean section delivery and risk of respiratory morbidity.³⁻⁷ In addition, two recent, large cohort studies investigated timing of elective caesarean section and the incidence of a composite adverse neonatal outcome including neonatal death or any of a series of adverse events. Both showed a decreasing incidence of the composite outcome with increasing gestational age from 37 to 39 completed weeks of gestation.^{8,9} In contrast, any maternal benefit of postponing elective caesarean section to 39 completed weeks has not been shown, but knowledge is sparse when it comes to maternal consequences of elective caesarean section timing.^{10,11} We therefore conducted a prospective cohort study of neonatal and maternal morbidity after elective caesarean section scheduled before 39 weeks compared with those at 39 or after 39 weeks of gestation. The primary study objective was to investigate the risk of neonatal intensive care unit (NICU) admission associated with elective caesarean delivery scheduled before versus after 39+0 weeks of gestation.

MATERIAL AND METHODS: We conducted this study from the patients admitted to the Institute of Maternal and Child Health (IMCH), Calicut medical college, Kerala for whom an elective caesarean section was decided. The period of study was one year from April 2011 to March 2012.

The caesarean section rate in the institute during this period was 32.9 %. A total no of 4901 cesarean sections with a primary section in 2649 women and repeat section in 2252 women were done in this period. 1817 cases of the repeat caesareans were done electively. Of this a total of 300 patients were included in the present study. Among these 300 patients 150 had caesarean section before 39 weeks and 150 had caesarean sections at or after 39 weeks gestation. Approvals were obtained from the institutional ethics committee. Women having elective repeat sections in the absence of labour and absence of any other complications that might influence the timing of delivery were included in the study.

Women with multiple pregnancies and fetus with congenital anomalies were excluded, so were the women with any medical or other obstetric complications requiring early delivery. period of gestation were calculated with the menstrual dates confirmed by ultrasound dating scans. Deliveries were categorized according to the completed weeks of gestation. All the women in the study received prophylactic antibiotics an hour before surgery. The problems encountered during repeat elective caesarean section were adhesions, increased blood loss during the surgery, extension of uterine angles damaging the vessels and difficulty in delivering the baby. All these patients were studied during the post-operative periods. Patients with uncomplicated post-operative periods were discharged on the 6th post-operative day any type of morbidity encountered during the post-operative period were evaluated.

Neonatal outcomes were recorded by the Apgar scores at 5 minutes. Any admissions to the NICU and the reason for admission including requirement of oxygen therapy and ventilator support were documented. the neonatal outcomes studied included adverse respiratory outcomes(respiratory distress syndrome, transient tachypnoea of the newborn) ,hypoglycemia, hyper bilirubinemia, neonatal sepsis, neonatal seizures, hypoxic ischemic encephalopathy, necrotizing enterocolitis, cardiopulmonary resuscitation or ventilator support within 24 hours of birth, prolonged hospitalization (5 days or longer). The neonates were followed up until discharge from the hospital.

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The diagnosis of respiratory distress syndrome required signs of respiratory distress consistent with radiological features and requiring oxygen therapy. Transient tachypnoea was defined by the presence of tachypnoea within hours after birth and with the typical radiological findings. the diagnosis of hypoglycemia was made if the plasma glucose level were equal to or less than 35 mg % and required treatment with IV dextrose. Newborn sepsis included both the suspected and proved infections.

DATA COLLECTION AND STUDY METHODS: Patients were included and excluded from the study as per the criteria stated above. An informed consent form in the local language was used. Maternal and perinatal outcomes stated were recorded and analyzed including maternal age, parity, gestational age, religion, socio-economic status, marital history, addictions, previous obstetric history, antenatal care, antenatal complications, no of previous caesarean sections, investigation results, immunization status, post-partum complications, morbidity, mortality, perinatal outcome and other neonatal complications. Data were collected on a customized proforma. The statistical significance of different variables was analyzed using the Pearson chi-square test. The data obtained were analyzed using the SPSS program.

RESULTS: 96.7 % of the women in those who underwent caesarean section below 39 weeks gestation were booked cases while the remaining 4% were referred. In the group who underwent caesarean at after 39 wks 95.3% were booked and 4.7% referred.

66% of the women who underwent caesarean section below 39 weeks gestation were in the age group 25-30 yrs, 26.7% below 25 yrs, 3.3% in 30-35 yrs age group and 4 % above 35 yrs, in those undergoing caesarean at or after 39 weeks 50.7% were in the 25-30 yrs age group, 39.3% below 25 yrs, 8% in the 30-35 yrs age group and 2% above 35 yrs. 81.3% of the women who underwent caesarean section below 39 weeks gestation were second gravidas and 18.7% were third gravidas. In those who underwent caesarean at after 39 wks 85.3% were second gravidas and 14.7 % were third gravidas.

Of the 150 cases who underwent caesarean section below 39 weeks gestation 39.3% were done between the gestational age of 37w +0 and 37+6 days, while the remaining 60.7% were done between 38w +0 and 38w+6 days, in the remaining 150 cases the caesarean section were done between 39w +0 and 40 w. no cases in the study group went beyond 40w +0.

89.3% of the women who underwent caesarean section below 39 weeks gestation had undergone their first caesarean section as emergency and 10.7% as an elective procedure. While in those who underwent caesarean at after 39 wks 80.7% were done as emergency and 19.3 % were done electively. Women with any medical or other obstetrical complications necessitating early deliveries were not part of the study.

Duration of surgery was 30-45 minutes in 99.3% of the women who underwent caesarean section below 39 weeks gestation and exceeded 45 minutes in 1 case. The findings in the women who underwent caesarean at after 39 wks were similar, 30-45 minutes in 99.3% of the women and one case exceeding 45 minutes.

Excessive hemorrhage were reported in 4 cases and adhesions in one case of the women who underwent caesarean section below 39 weeks gestation while in those who underwent caesarean at after 39 wks it was 3 cases of excessive hemorrhage and 2 cases of adhesions.

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Post-operative febrile illness was 1.3% and wound infection was nil in the women who underwent caesarean section below 39 weeks gestation while there were no cases of febrile illness and 1 case of wound infection in those who underwent caesarean at after 39 wks. 94.7% of the women who underwent caesarean section below 39 weeks gestation stayed in the hospital for 6 days and were discharged on the 6th post-operative day while the remaining 5.3% had to stay longer. in those who underwent caesarean at after 39 wks 98.7% were discharged on the 6th post-operative day while the remaining 1.3% had to stay longer.

Of the women who underwent caesarean section before 38 weeks 22.7% of the babies weighed less than 2.5 kgs, 72.9% weighed between 2.5 to 3.5 kgs and 4.7% weighed more than 3.5 kgs, in those women who underwent caesarean at or after 39 wks it was 13% below 2.5 kgs, 79.3% between 2.5 to 3.5 kgs and 7.7% above 3.5%.

4.7% of the babies in those who underwent caesarean before 39 wks had a 5 min Apgar less than 9, while all of the babies in those who had undergone caesarean at or after 39 wks had an Apgar score above 9. 16.1% of the women who underwent caesarean before 39 weeks had babies admitted to the NICU, while it was only 8.4% in the babies delivered at or after 39 weeks. Among the 24 babies admitted in the NICU among those delivered before 39 weeks 14 had breathing difficulties, 3 had hypoglycemia, and one had neonatal seizure. While in those delivered at or after 39 weeks none of the babies had respiratory distress, one had hyper bilirubinemia and two had neonatal sepsis.

DISCUSSION: This study compared the maternal and perinatal outcomes in timing of elective repeat caesarean before with those at/or after 39 weeks. The percentage of the cases belonging to both the groups was comparable with respect to proportion of booked and referred cases, age and parity of the patients. Intraoperative complications seen were severe adhesions seen in 1 case in the less than 39 weeks group compared to 2 cases in the at/or after 39 weeks group. Excessive hemorrhage was noticed in 4 cases in the less than 39 weeks group compared to 3 cases in the at/or after 39 weeks group. The duration of surgery was prolonged to more than 45 minutes in 2 cases each in both groups.

Postoperatively wound infections in 2 cases in the less than 39 weeks group compared to no cases in the at/or after 39 weeks group. Reported wound infection rate with caesarean section range from 2.5% to 16.1% (Neilson and Hokegard found rates of 4.7% for elective and 24.2% for emergency cases.¹²) febrile morbidity noted in 1 case in more than 39 weeks was found to be due to an urinary tract infection on evaluation. urinary tract infection are a common complication in caesarean section and occur with a frequency of 2-16 %.the rate depends on the duration of catheterization and the pre-operative health of the women (Farell SJ, Anderson HF.¹³) The duration of hospital stay was more than 6 days in 8 mothers who were delivered before 39 weeks as compared to 2 mothers in those delivered at or after 39 weeks. The study did not show any maternal benefit from early delivery. A similar study conducted by Tita AT, Lai Y et al, University of Alabama, USA 14 also reported similar findings of absence of any maternal benefit from delivery before 39 weeks.

The Birth weight showed significant increase in cases delivered at or after 39 weeks. 4.7% of the cases in those who underwent cesarean before 39 weeks had a Birth weight of above 3.5 kg compared to 10.7 % in those at or after 39 weeks. Similar findings were seen in the study by Alan TN, Tita MD.¹⁴ 7 babies (4.7%) of the babies in the deliveries before 39 weeks has a Apgar below 9 at 5 minutes as compared to n-one of the babies in those delivered at or after 39 weeks (P value – 0.007).

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24 babies (16.1%) in those delivered before 39 weeks required admission to NICU as compared to only one baby delivered after 39 weeks.

A study conducted by Lubna Rias Dar et al¹⁵ showed similar results. Of the 24 babies 14 (63.6%) had respiratory problems, with 3(13.6%) having hypoglycemia, 2(4.5%) having hyperbilirubinemia, 3(13.6%) with sepsis and 2(4.5%) with neonatal seizures. Alan TN, Tita MD et al reported similar results. So the study showed that neonates born by elective repeat caesarean section before 39 weeks have increased NICU admissions, oxygen supplementation and ventilator support.

CONCLUSIONS: The findings from the study suggest strict adherence to guidelines which recommend that elective repeat cesarean be done at or after 39 weeks. The study showed no maternal benefit in resorting to early caesarean sections before 39 weeks and in fact showed improved perinatal outcomes in delaying the elective repeat caesarean sections to 39 completed weeks of gestation.

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Birth weight		Cases		
		<39 weeks	>= 39 weeks	Total
< 2.5 kg	Count	34	5	39
	percentage	22.7%	3.3%	13%
2.5-3.5kg	Count	109	129	238
	percentage	72.7%	86%	79.3%
>2.5 kg	Count	7	16	23
	percentage	4.7%	10.7%	7.7%

TABLE 1: BIRTH WEIGHT

APGAR		Cases		
		<39 weeks	>= 39 weeks	Total
5 ' < 9	Count	7	0	7
	percentage	4.7%	0%	2.3%
5 ' > 9	Count	143	150	293
	percentage	95.3%	100%	97.7%

TABLE 2: APGAR SCORES

NICU ADMISSION		Cases		
		<39 weeks	>= 39 weeks	Total
YES	Count	24	1	25
	percentage	16.1%	0.7%	8.4%
NO	Count	125	149	274
	percentage	83.9%	99.3%	91.6%

TABLE 3: NICU ADMISSION

PERINATAL OUTCOME		Cases		
		<39 weeks	>= 39 weeks	Total
RDS	Count	14	0	14
	percentage	63.6%	0%	56%
HYPOGLYCEMIA	Count	3	0	3
	percentage	13.6%	0%	12%
HYPER BILIRUBINEMIA	Count	1	1	2
	percentage	4.5%	33.3%	8%

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NEONATAL SEPSIS	Count	3	2	5
	percentage	13.6%	66.6%	20%
NEONATAL SEIZURES	Count	1	0	1
	percentage	4.5%	0%	4%

TABLE 4: PERINATAL COMPLICATIONS

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