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Materno-fetal outcome in women undergoing repeat caesarean section after previous 2 caesarean sections in a tertiary care centre

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Abstract
There is always a dilemma for the gestational age at which caesarean can be planned in cases of previous two caesarean sections to reduce both maternal and fetal adverse outcome. Obstetricians always try to balance between poor perinatal outcomes of early term delivery and poor maternal outcomes of late term delivery. A Prospective observational study was conducted in Women with previous two caesarean deliveries at 34-42 weeks of gestation with singleton live pregnancy admitted in a tertiary care hospital for repeat caesarean section for a period of 6 months in 100 cases, to study the maternal and fetal outcome in patients undergoing repeat caesarean section in case of two previous 2 caesarean cases.

Keywords: Caesarean section, perinatal outcome, maternal outcome

Introduction
The American College of Obstetricians and Gynecologists(ACOG) and the American Academy of Pediatrics (AAP) have jointly issued clinical practice guidelines that strongly recommend deferring elective delivery until 39 completed weeks of gestation [1]. But this *"one size fit for all"* does not hold true for patients with previous two caesarean sections. There is always a dilemma for the gestational age at which caesarean can be planned in cases of previous two caesarean sections to reduce both maternal and fetal adverse outcome. Obstetricians always try to balance between poor perinatal outcomes of early term delivery and poor maternal outcomes of late term delivery. There will be more chances of prematurity, respiratory distress, need for NICU admission and rarely fetal deaths when cesarean conducted in early term gestation [2]. There will be more chances of uterine scar dehiscence, scar rupture, need for blood and blood product transfusions, uterine atony, need for uterine artery ligation peripartum hysterectomy, need for ICU admission, wound site infection, prolonged hospital stay when cesarean conducted in late term gestation [3]. This prospective observational study was conducted to study the maternal and fetal outcome in patients undergoing repeat caesarean section in case of two previous 2 caesarean deliveries.

Materials and Methods
Source of data: Study includes women with Previous 2 cesarean deliveries admitted in Dept. of OBG, KBNIMS KBN University

Study design: Prospective observational study
Study period: 6 months

Place of study: Dept. of OBG, KBNIMS, KBN University.
Sample size: 100

Inclusion criteria: Women with previous two caesarean deliveries at 34 -42 weeks of gestation with singleton live pregnancy admitted in KBNIMS hospital for repeat caesarean section.

Exclusion criteria: Pregnancy association with medical and obstetric complications requiring early delivery like:
1. Hypertensive disorders of pregnancy
2. Gestational Diabetes

3. Antepartum Haemorrhage
4. Multiple gestation
5. Liquor abnormalities

Methodology

A prospective observational cohort study was conducted a KBNIMS, a teaching tertiary care facility in the setting of a level III neonatal intensive care unit (NICU). The study proposal was approved by the Institutional Ethical Committee. Data was prospectively collected from the medical records within 48 h of mother/newborn discharge. Women satisfying the selection criteria will be enrolled in the study after taking informed written consent. Hospital policy was to post Previous 2 Caesarean Cases at 37 completed weeks for ERCS (Elective Repeat Caesarean Section) unless any emergent condition arises such as Preterm labour, PPROM, Scar Dehiscence etc. Detailed history of present pregnancy and detailed examination, routine investigations (Blood group Rh typing, CBC, RBS, HIV, HBsAg, Urine analysis & Admission CTG) was taken at the time of admission. Gestational age was determined on the basis of ultrasound done in the first trimester of pregnancy. Obstetric Ultrasound was done and AFI, BPP, EFW, placental location & scar thickness was documented.

Maternal Outcome was measured in terms of: Intra operative Complications (Scar Dehiscence, PPH {atonic & traumatic}, Placental Abnormalities) and Post-Operative complications (Febrile illness, Wound complications)

Fetal outcome was measured in terms of: Birth weight, Apgar score, NICU admission

Results

1. Study observes that, majority of cases 40 (40.0%) are in the gestational age of 38-39 weeks, followed by 24 (24.0%) of cases are in the gestational age of 39-40 weeks and 20 (20.0%) of cases are in the gestational age of 37-38 weeks. The mean gestational age is 38.30 weeks. (Table No 1)
2. Most of the patients (32%) were taken for elective repeat caesarean section (ERCS) at term i.e. 37 completed weeks (Table No 2).
3. Study observed that, 87 (87.0%) of cases are observed term deliveries and 13 (13.0%) of cases are observed pre-term deliveries. Majority of neonates 46 (46.0%) birth weight is in the range 2.6-3.0 kg followed by 24 (24.0%) neonates birth weight is in the range of > 3 kg and 23 (23.0%) of neonates birth weight is in the range of 2.1-2.5 kg and 99 (99.0%) of cases Apgar score at 5 minute is ≥5. (Table No 3)
4. Study observed that 17 (17.0%) of neonates are admitted in NICU. There is statistically highly significant association between NICU admissions and different gestational age of delivery (p<0.01). Lower the gestational age of delivery associative with higher the NICU admissions. (Table No 4)
5. There no was statistical significant difference of distribution of cases of intra operative & post operative complications with different gestational age of delivery (p>0.05). (Table No 5)
6. There was statistical significant difference of mean birth weight of NICU admitted neonates with gestational age of delivery (p<0.05). Lower the gestational age of delivery associative lower birth weight of NICU admitted neonates. There no was statistical significant difference of distribution of neonates reason for NICU admission (other than prematurity) with different gestational age of delivery (p>0.05).

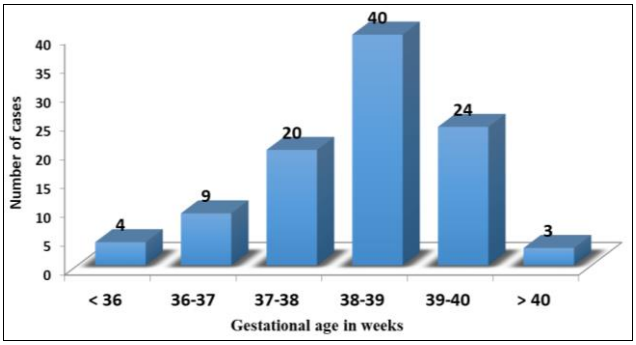

Fig 1: Simple bar diagram represents age wise distribution of cases

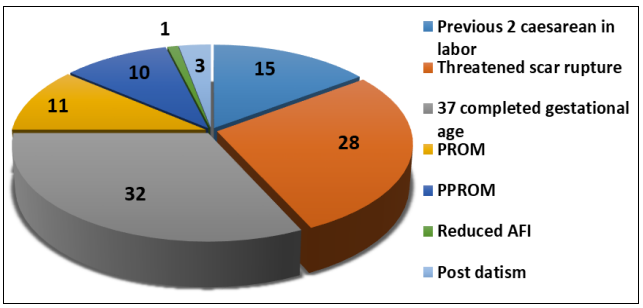

Fig 2: Pie diagram represents indication for delivery wise distribution of cases

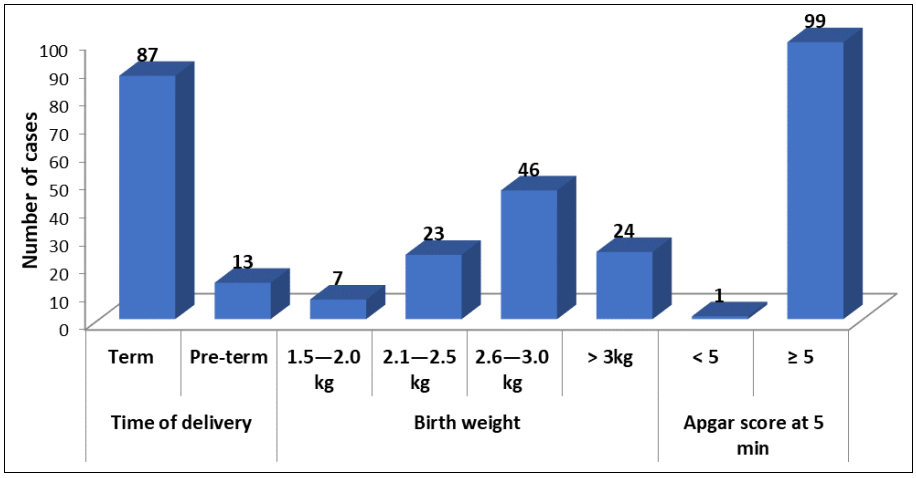

Fig 3: Multiple bars represent fetal outcome wise distribution of cases

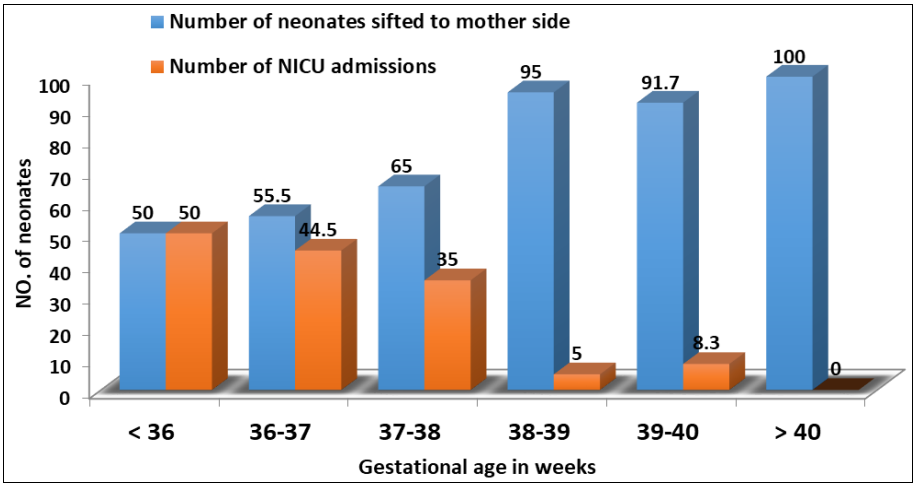

Fig 4: Multiple bars represent association between NICU admissions with gestational age of delivery

Table 1: Gestational age at delivery wise distribution of cases

Gestational age in weeks	Number of cases	Percentage
< 36 weeks	4	4.0
36-37 weeks	9	9.0
37-38 weeks	20	20.0
38-39 weeks	40	40.0
39-40 weeks	24	24.0
> 40 weeks	3	3.0
Total	100	100.0
Mean GA in weeks	38.30 ± 1.67	-----

Table 2: Indication for delivery wise distribution of cases

Indication for delivery	Number of cases	Percentage
Previous 2 caesarean in labor	15	15.0
Threatened scar rupture	28	28.0
37 Completed gestational age	32	32.0
PROM	11	11.0
PPROM	10	10.0
Reduced AFI	1	1.0
Post datism	3	3.0
Total	100	100.0

Table 3: Fetal outcome wise distribution of cases

Fetal outcome		Number of cases	Percentage
Time of delivery	Term	87	87.0
	Pre-term	13	13.0
Birth weight	1.5—2.0 kg	7	7.0
	2.1—2.5 kg	23	23.0
	2.6—3.0 kg	46	46.0
	> 3kg	24	24.0
Apgar score at 5 min	< 5	1	1.0
	≥ 5	99	99.0

Table 4: Association between NICU admissions with gestational age of delivery

Gestational age in weeks	Number of neonates sifted to mother side No. (%)	Number of NICU admissions No. (%)	Total	Fisher exact probability test, p-value
< 36 weeks	2 (50.0%)	2 (50.0%)	4	P=0.007 HS
36-37 weeks	5 (55.5%)	4 (44.5%)	9	
37-38 weeks	13 (65.0%)	7 (35.0%)	20	
38-39 weeks	38 (95.0%)	2 (5.0%)	40	
39-40 weeks	22 (91.7%)	2 (8.3%)	24	
> 40 weeks	3 (100.0%)	0 (0.0%)	3	
Total	83 (83.0%)	17 (17.0%)	100	

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

Table 5: Comparison of intra & Post-operative complications with gestational age of delivery

Maternal complications	Gestational age in weeks	Number of cases	Percentage	Fisher exact test, P-value & sign.
Intraoperative complications				
Thinned out lower segment	< 36 weeks	1	25.0	P=0.097 NS
	36-37 weeks	4	44.4	
	37-38 weeks	4	20.0	
	38-39 weeks	10	25.0	
	39-40 weeks	11	45.8	
	> 40 weeks	1	33.3	
Total	----	31	31.0%	---
Scar Dehiscence	< 36 weeks	0	0.0	P=0.138 NS
	36-37 weeks	1	20.0	
	37-38 weeks	0	0.0	

	38-39 weeks	2	5.0	
	39-40 weeks	1	4.2	
	> 40 weeks	1	33.3	
Total	---	5	5.0%	---
Atonic-PPH Medical/surgical	< 36 weeks	0	0.0	P=0.383 NS
	36-37 weeks	0	0.0	
	37-38 weeks	0	0.0	
	38-39 weeks	1	2.5	
	39-40 weeks	1	4.2	
	> 40 weeks	0	0.0	
Total	---	2	2.0%	-----
Placental Abnormalities	< 36 weeks	0	0.0	P=0.856 NS
	36-37 weeks	0	0.0	
	37-38 weeks	0	0.0	
	38-39 weeks	1	2.5	
	39-40 weeks	0	0.0	
	> 40 weeks	0	0.0	
Total	---	1	1.0%	-----
Post-operative complications				
Febrile illness &Wound complications	< 36 weeks	0	0.0	P=0.814 NS
	36-37 weeks	0	0.0	
	37-38 weeks	0	0.0	
	38-39 weeks	0	0.0	
	39-40 weeks	1	4.2	
	> 40 weeks	0	0.0	
Total	---	1	1.0%	-----

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

Table 6: Comparison of NICU admitted neonate's birth weight and reason with gestational age of delivery

Gestational age of delivery in weeks	Number of NICU admissions	Mean birth weight in kg	Reason for NICU admission
< 36 weeks	2	1.75 ± 0.61	Pre-term—1, RDS-------1
36-37 weeks	4	2.35 ± 0.57	LBW-------2, RDS--------2
37-38 weeks	7	2.80 ± 0.34	LBW-------1, RDS--------6
38-39 weeks	2	2.76 ± 0.15	Peripheral cyanosis—1, RDS-------1
39-40 weeks	2	2.95 ± 0.25	RDs-------2
> 40 weeks	0	0.0	---
Total	17	2.54 ± 0.61	----
P-value & Significance	--	P = 0.044, S	P =0.273, NS

NS= not significant, S=significant, HS=highly significant, VHS=very highly significant

Discussion and Conclusion

In the present study majority of cases were taken for ERCS at 37 completed weeks as per hospital policy. Hence, there were statistically less significant maternal complications in present study. Similar results were observed by Mohammed K *et al.* [4]. The implication of scheduling delivery to 37 weeks is that a proportion of ERCS may go into labor prior to the scheduled date of surgery if they are scheduled at 39 completed weeks. Maternal and neonatal outcomes may be adversely affected when CS is preceded by labor, even if labor is not advanced especially in patients with higher order caesarean section [5]. Neonatal complications were significant but majority were arising due to prematurity. A number of studies examined the outcome of parturients with two or more previous cesarean deliveries and found increased maternal and neonatal morbidities and recommended delivery prior to 39 weeks' gestation [6]. Hence, we conclude that in cases of Previous 2 Caesarean Section patients 37 completed weeks is the optimal time to post for ERCS instead of waiting till 39 completed weeks.There is also a need for more studies with bigger sample size.

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