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Research Article

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No Take Home Baby After Caesarian Birth for Foetal Distress in Women with Risk

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Background

Sometimes interventions are done for the baby in women with risks but it turns out to be unnecessary caesarian section (CS). However it may be delayed decision and / or delayed execution of intervention, CS too, with no take home baby. While lack of adverse outcome reflected that the decision was not for a compromised foetus, still birth or asphyxiated baby at birth meant delayed decision and / or execution. Recent studies revealed an estimated 9.04 million perinatal deaths related to birth asphyxia. Of them 1.02 million were intrapartum deaths leading to still births, many after CB for foetal concern. Birth asphyxia is a significant global health problem, responsible for around 1.2 million neonatal deaths each year worldwide [1-3]. Those who survive often suffer from a range of disorders. Chauhan et al. conducted, a meta analysis comprising of 169 articles and 37 reports and concluded that the overall risk of prompt CB for fetal concern was 3.1 % (43,340 of 13,98,9740 cases) [4,5]. From time to time several hospital based studies have proved the role of various antepartum or intrapartum maternal & foetal risk factors which lead to foetal asphyxia. It is known that some disorders which could cause foetal asphyxia are obvious during pregnancy, some are labour related, be it mother or baby. Kaye reported association of primiparity, anaemia, hypertensive disorders of pregnancy, foetal growth restriction, malpresentation, antepartum haemorrhage, premature rupture of membranes, prematurity, fever, oxytocin augmentation of labour, umbilical cord prolapse, as risk factors ,with complex interplay between factors which predispose foetuses to poor outcome, due to decreased oxygenation, ACOG reported that foetal hypoxemia which if not compensated or corrected in time progressed to birth asphyxia and even death, either in utero or immediately after birth [6,7]. Gaffineet and James have reported, intrapartum hypoxia complicating around 1% of labours, resulting in foetal / neonatal deaths in 0.5/1000 pregnancies and cerebral palsy in 1 in 1000 cases diagnosed after swift delivery for clinically diagnosed "fetal distress" [8]. Earlier Murphy et al had suggested that reduced uterine perfusion uteroplacental vascular disease, low fetal reserve foetal asphyxia, foetal sepsis and cord compression with other gestational and antepartum factors could affect the fetal response which needed to be known. However diagnosis of FD also has to be correct and timely [9]. Cardiotocography (CTG) has been criticized for unnecessary high rate of operative delivery [10-12]. In the study by Roy, non-reassuring fetal heart rate (FHR) detected by CTG did not correlate well with neonatal outcome [13]. In the era of defensive practices, 'play safe' attitude results in high CS rate for non-reassuring FHR. The concept of detecting fetal acidosis, using fetal scalp blood appeared attractive, but practical difficulties in carrying it out restricted its use [14,15]. Roy et al suggested that since non-reassuring FHR detected by CTG did not correlate well with adverse neonatal outcome and resulted in unnecessary CS, fetal ECG needed to be introduced in addition to conventional CTG, wherever possible [13]. There are many such issues about timely appropriate authentic diagnosis and action.

Objectives

To know the neonatal outcome in low resource settings in cases of CS performed with diagnosis of FD in women with risk factors.

Material Methods

Present study was done in a rural institute in Central India after approval of the ethics committee of institute. Study was done by analysis of case records of women who had risk factors and had CS for FD. It was analysis of retrospective records of 5 years. Prospective information was collected for 2 years. However the information collected was similar for retrospective as well as prospective cases. It included risk factors, neonatal outcome, baby at birth, vigorous, still born, born with birth asphyxia, improved and discharged after neonatal intensive care (NIC) or neonatal death. It was with a mission to know scenario of CB for FD with plans for prospective study related to CS for FD.

Study was about getting information of happenings in day to day practice. Consent was taken in all the cases, that the information could be used for academic purposes without disclosing the identity of the case .Total deliveries during retrospective period were 21,517, of which 13,871 were vaginal and 7646 CB, CS rate of 35.54 %. Over all 2121(27.74 % of all CS) CS were for FD and 1312 CS (61.86% of all CS for FD) were for FD in women with risk factors. Overall 809 had CS for FD in women who had but no risk. These cases were analyzed separately and were not part of the study.

In the prospective span of 2 years, there were 9186 deliveries. Out of them 5801 (63.15%) were vaginal & 3385 (36.85%by CS), 948 (40% of CS) CS were for FD (p value 0.77, insignificant difference

from retrospective cases of same category), 696 (73.41%) had some or other risk factor (study cases) (p value 0.0000001, highly significant difference from retrospective cases of same category). The remaining252 (26.58%) women who underwent CS for FD had no risk factor and were not part of the study. So in retrospective segment 1312 cases and in prospective segment 696 were part of the present study. Intermittent auscultation of foetal heart, Non Stress test (NST), intrapartum presence of meconium in liquor were the modalities of diagnosis of FD in both segments. Mean Apgar score, immediately after birth and beyond were recorded for neonatal outcome (Table 1).

Table 1: Diagnostic Modalities

	NUMBER	%	NUMBER	%
Non Reassuring FHR	810	61.74	435	62.50
Meconium	438	33.38	215	30.89
FoetalBradycardia	38	2.9	34	4.88
Foetal Tachycardia	26	1.98	12	1.72
	1312	100	696	100

Results

Analysis of records of CS done for FD in women with risk factors in the mother and / or baby, revealed that the mean age of women was 23.2 ± 3.12 years , mean parity 1.33 ± 0.82 , 0.59±0.48.More women who had CS for FD were primigravida, (962 (73.32%)) and 304 (23.17%) second or third gravida. Of1321 women155 (7.31%) mothers had lower genital tract infection,118 (5.56%) oligohydramnios,113 (5.33%) pregnancy induced hypertension, 106 (5%) heart disease, 86 (4.05%) prelabour rupture of membranes, 74 (3.49%) eclampsia, 66 (3.11%) placental abruption and 30 (1.41%) had gestational diabetes. So a total of 863 (65.78%) of 1312 had risk factors in the mother and 449 (34.22%) cases had risk in the baby, 393 (18.53%) prematurity & 56 (2.64%) malposition (Table 2 & 3).

Table 2: Age Gravidity, Parity and Gestation

Case	Retrospective		Prospective	
	1312		696	
	Number	%	Number	%
AGE				
<20	0011	00.83	009	01.29
>20 - 24	0660	50.76	359	51.58
25 – 29	0527	40.17	250	35.92
30 – 34	0093	07.08	065	09.33
>35	0021	01.60	013	01.86
Gravidity	With risk	%	With risk	%
Primi	0962	73.32	408	58.62
Second or Third	0304	23.17	226	32.47
Multigravida	0046	03.51	062	08.90
	1312	100.00	696	100.00
PARITY				
Nullipara	1162	88.57	612	87.93
Primipara	0145	11.05	078	11.20
≥2	0005	00.38	006	00.86
	1312	100.00	696	100.00
Gestation				
<34	0288	21.95	106	15.22
>34-<37	0105	08.00	082	11.78
>37-40	0804	61.28	508	72.98
>40	0115	0 8.77	-	-

In prospective cases 696 with risk factors, 132(13.92) had oligohydramnious, 124(13.08%) pregnancy induced hypertension 86(9.06%) PLROM, 42(4.43%) gestational diabetes, 36(3.79%) eclampsia, 34(3.58%) placental abruption 22(2.32%) heart disease. Overall of 696 cases, 476 had risk factors in the mothers and 220 cases had risk factors in babies [188(19.83%) prematurity and 32(3.37%) malposition] (Table 3).

Table 3: Risk Factors and Perinatal Outcome

	CS for FD (n = 2121) CS in cases with RF No	%	CS for FD 948 CS in cases with RF No	%
Risk Factors Maternal	1312	61.86	696	73.41
Maternal infections	155	7.31	-	
Oligohydramnios	118	5.56	132	13.92
Post datism	115	5.42	-	
Pregnancy Induced Hypertension	113	5.33	124	13.08
Heart Diseases	106	5.00	22	2.32
Prelabour rupture of membranes	86	4.05	86	9.06
Eclampsia	74	3.49	36	3.79
Placental abruption	66	3.11	34	3.58
Gestational Diabetes Mellitus	30	1.41	42	4.43
Foetal				
Preterm	393	18.53	188	19.83
Malposition	56	2.64	32	3.37
PERINATAL OUTCOME				
	No	%	No	%
Stillbirths	048	03.66	005	00.71
Vigorous baby at birth	500	38.11	286	41.38
NICU admissions	764	58.23	405	58.23
Improved & discharged	330	43.19	383	94.63
Neonatal deaths	434	56.81	22	05.37

Of the 1312 CS performed for FD in women with risk factors, 288(21.95) were very preterm (<34 weeks). Overall preterm cases who had CS for foetal concern in women with risk were significantly more than general preterm births (12%).Overall in retrospective cases 500 (38.11% of 1312) neonates were vigorous at birth, 764 (58.23%) required admission to NICU. Of those who were admitted in NICU 330 (43.19%) were discharged, but 434 died (56.81%) and 48 (3.66%) were still born so there were a total of 482 perinatal

deaths, 36.73% cases of CB for FD when CS were performed for fetal interest in women with various disorders, a matter of real concern.

In the prospective cases of the 696 CS performed for FD in women with risk factors, 106 (15.22% of 696) women were very preterm (<34 weeks). Out of 696 cases, 286 (41.38 % of 696) neonates were vigorous at birth, 5 (0.72%) still born and 405 (58.18%) required admission to NICU, almost similar numbers as in retrospective cases. However of them 383 (94.56%) improved & were discharged and 22 (5.43 % of 405) died, total of 27 (3.87 %) perinatal deaths, significant difference in perinatal loss in retrospective (36.73%) and prospective cases (3.87%). The take home babies were 830 (63.26%) in retrospective group and 669(96.49%) in prospective group (p value is 0.0000001, highly significant difference.

Discussion

A number of obstetric and medical problems during pregnancy may cause chronic or acute distress in fetus. Such cases need to be monitored carefully. These cases are likely to cause hypoxia to the baby during labour, as labour itself is considered a process of repetitive hypoxic event. Vigilant antepartum and intrapartum fetal monitoring of such cases is required to decrease the risk of further fetal compromise. This is possible if such high risk cases are picked up during pregnancy and managed appropriately and timely. Cardiotocography can give high false positive rates. Diagnosis of metabolic acidosis is a more reliable predictor, but is not always available (https://en.wikipedia.org/wiki/Fetal_distress) [16].

Harrison et al did a population based study and reported that CS was associated with an increase in all adverse outcomes so needs be critically looked into [17]. Stephanie et al did a study on CS for abnormal fetal heart tracings for setting appropriateness indicators based on neonatal outcome and reported that in the absence of objective measures of intrauterine fetal well-being, CS were performed for fetal distress when they were not required [18]. Developing indicators for CS appropriateness may guide strategies to reduce CSR. Surface et al. reported that it is essential to verify CTG and ST interval analysis (STAN) of fetal ECG to reduce the risk of CB for FD in high-risk cases [19].

In a study about 76% cases of FD were attributed to hypertensive disorders of pregnancy, prolonged labour, premature rupture of membranes and postdatism [20]. In another study it was revealed that incidence of CS for FD dropped from 23% to 17% during the two biennial periods studied by early detection of fetal jeopardy by antenatal monitoring and better intrapartum surveillance including fetal blood pH estimation [21].

In practice emergency CS for FD should be undertaken as quickly as possible and ideally within 30 minutes of occurrence / diagnosis but it shouldn't be considered poor care if it takes a few minutes longer [16]. Great care should be exercised by the obstetrician while making a decision for CS for FD so as to avoid unnecessary procedure and also neonatal complications. Many primigravida undergo CS for such indication which affects their future obstetric course, making them vulnerable to the complications associated with scarred uterus as happened in the present study. Najmi et al have also reported 60% of the cases in primigravidas, hence marking their future obstetric course and making them vulnerable to all the complications associated with scarred uterus [22]. In 40% of cases labour was either induced or augmented. The decision of induction of labour should be well justified because it is likely to end up with the CS for fetal compromise. The study also revealed that because of state of cervical dilatation and station of presenting part, in 80% of parturients alternative modes of delivery could have been considered.

In the present analysis, the NICU admissions were almost equal in retrospective and prospective cases (58%) but the improved and discharged cases were 43 % in retrospective cases and 94% in prospective cases and neonatal deaths were 56% in retrospective cases and 5.37% in prospective cases and also still births reduced to 0.71% from 3.66%. It seems to be quality related issues in prospective cases.

Present analysis of CS for FD revealed significantly increased number of CS for FD in women with risk factors for FD from retrospective 27.74% to 40% in prospective cases increased from 61.86% to 73.74%. So when someone is keeping track of things (invisible auditing) things change. In retrospective cases 36.73% (more than 1/3) were lost and in prospective phase 5.4%.Though over all CS for FD increased outcome was better. However a lot of foetal / neonatal loss after CB in mothers with risk factors is a matter of concern [23-28].

It appears a lot of more research is needed. And it also appears that issue of quality of services needs to be critically looked into.

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