

Pregnancy Outcome in Women with Decreased Fetal Movement Beyond 34 Weeks of Gestation

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ABSTRACT

Introduction

The fetal movement though subjective still is considered an important sign of fetal well-being. It is used as the first method for fetal well being assessment. Decreased fetal movement (DFM) always alerts the obstetricians and needs appropriate intervention as it is generally found to be associated with poor fetomaternal outcome. This study was conducted to determine the pregnancy outcome in women with decreased fetal movements at gestational age ≥ 34 weeks to 42 weeks of gestation.

Methods

This was a hospital- based retrospective observational study done in Obstetrics and Gynecology Department of Tribhuvan University Teaching Hospital, Kathmandu, Nepal from April 2020 to April 2021. Descriptive analysis and data processing was done by using IBM SPSS Statistics 22.

Results

There were a total of 82 women with decreased fetal movement. Among these, induction of labor was done in 35.5%, while 23.1% had preterm delivery, 47.6% had cesarean delivery and 51.1% had vaginal delivery with 1.2% vaccum delivery. Though there were higher rates of low APGAR score (15.8%), meconium stained liquor (MSL) (21.9%) and Neonatal Unit admission (NNU) (21.9%), all the babies admitted were discharged except for one perinatal death (1.2%). There was no still birth.

Conclusion

Although perinatal mortality was low in women with decreased fetal movement with negligible still birth, however there were increased MSL and neonatal admission. Hence raising awareness of DFM among women, its early identification, further assessment with ultrasound, cardiotocogram and structured management protocol is beneficial .

Keywords

Decreased fetal movement; maternal; outcome ; perinatal

INTRODUCTION

Maternal perception of fetal movements has been a traditional indication of fetal well-being. Adequate fetal movement implies proper oxygenation, nutrition, osseous, neurological and muscular development of the fetus. Decreased fetal movement (DFM) is associated with an increased risk of perinatal death¹, thus it is always worrisome to both the clinician and mother. The effectiveness of fetal movement count in improving perinatal outcome is questionable, but it is still preferred for fetal surveillance in day-to-day practice. Being subjective this counting allows the clinician to make appropriate interventions at right time to improve prenatal outcomes.² Counting fetal movement from 28 weeks onwards is recommended by clinicians till birth. It has been suggested that active maternal perception of intrauterine FM is an economical and convenient method for early detection of fetal impairment.³ Although DFMs are associated with infants being born with small for gestational age (SGA), stillbirth, higher rates of induction of labor, emergency cesarean delivery and adverse neonatal outcomes⁴⁻⁶ its use in predicting poor obstetric and perinatal outcome is still questionable as most women who report DFM in the third trimester have outcomes without complications.⁷

Decreased fetal movement can be a warning sign of potential fetal impairment or risk, and therefore warrants further evaluation by the healthcare provider.^{8,9} So this study was undertaken to evaluate pregnancy outcome in women with reduced fetal movement beyond 34 weeks to 42 weeks of gestation which will help clinicians to take necessary steps in reducing perinatal morbidity and mortality.

METHODS

This was a descriptive hospital-based retrospective observational study conducted from April 2020 to April 2021 in the Obstetrics and Gynaecology Department of Tribhuvan University Teaching Hospital, Nepal. The study was ethically approved by IRC, IOM (ref no:496(6-11)E2 077/078). Convenience sampling was used. The sample size was calculated using the formula $n = Z^2pq/e^2$, where, n = minimum required sample size, $Z = 1.96$ at 95% Confidence Interval (CI), p = prevalence taken as 5%,¹⁰ $q = 1 - p$ and e = margin of error, 5%. The calculated sample size = $[1.645^2 \times 0.05 \times 0.95] / 0.10^2 = 73$. However, 82 samples were taken in this study.

All women with a history of the DFM with either one or more episode either admitted in the ward or presenting in general OPD from 34 weeks onwards to 42 weeks were included in the study. All information was retrieved from the medical record section from the antenatal card, partograph,

admission chart and pediatrician record book. A detailed history of gestational age verified by Last menstrual period (LMP) or early scan was noted after fulfilling the inclusion and exclusion criteria. All pregnant women with singleton pregnancy 34 weeks onwards with history of DFM were included in the study while those with malpresentations, multiple pregnancies, intrauterine fetal death, antepartum hemorrhage and fetal anomalies were excluded. The primary outcome measure included stillbirth while secondary outcomes included rates of induction of labor (IOL), planned preterm birth, SGA (birth weight less than 10th percentile for gestational age), mode of delivery, APGAR Score, meconium-stained liquor (MSL), neonatal unit (NNU) admission, cause of NNU admission, neonatal death less than 28 days and mode of delivery.

In 1973 Sadowsky¹¹ proposed a method of fetal movement counting, which involves counting fetal movement in a fixed time. Sadowsky method of fetal movement counting was taken as standard in which patients count fetal movement for one hour in the morning, afternoon and evening. Two or fewer movements in one hour were considered as a decreased fetal movement. Women with DFM with gestational age <37 weeks of gestation were admitted and further assessment was done with fetal movement counting, Cardiotocogram (CTG) and Ultrasonography (USG). If they repeatedly complained of DFM then induction of labor was done after a steroid dose. In all women with DFM, a further fetal assessment was done by USG and CTG. CTG was classified as normal, suspicious and pathological¹² as per the International Federation of Gynaecology and Obstetrics (FIGO) guidelines. Women with normal USG and CTG findings were induced with misoprostol or syntocinon as per Bishop's score status while women with fetal heart rate (FHR) <110 or >160 beats per minute and amniotic fluid index (AFI) <5 or those with suspicious and pathological CTG were delivered by Cesarean section. Women with Bishop's score <6 were induced with misoprostol and ≥ 6 were induced with syntocinon.

The details like age, parity, FHR, CTG pattern and mode of delivery (cesarean, vaginal or instrumental) were noted. Fetal outcome in terms of still birth, APGAR score at 5 minutes, liquor status and causes of NNU admission were recorded including meconium stained liquor, birth asphyxia, respiratory distress (RDS) and stillbirth. The data were analyzed using IBM SPSS Statistics version 22.0.

RESULTS

During the study period there was a total of 2621 deliveries, with an average of 220 deliveries per month and 7 deliveries per day. Among them, 82

patients complained of DFM. The prevalence of decreased fetal movement was 3.1%.

The mean age of the patient was 30.5 years (19-42 years). Among them, 52 (63.4%) women were primigravida whereas 30 (36.6%) were multigravida. Suspicious and pathological CTG was seen in 18 (21.9%) women and had immediate emergency cesarean delivery whereas those with normal CTG pattern 64 (78.0%) were subjected to induction of labor either with misoprostol or syntocinon based on Bishops score. Among the induced cases, 11 underwent cesarean section either due to fetal distress or meconium staining of liquor and three women had cesarean delivery due to low AFI <5.

Among the 82 women, 12 (14.6%) women had suspicious CTG patterns and 4 (4.9%) had a pathological pattern with decelerations and underwent cesarean section whereas in those 66 (80.6%) women with normal CTG pattern induction of labor was done.

Induction of labor was done in 29 (35.5%) women and 14 (17.1%) women had spontaneous vaginal delivery with preterm delivery in 19 (23.1%) women. Among all of the women with DFM including induction of labor and preterm delivery 39 (47.6%) women underwent cesarean delivery due to different indications.

Among all the cases 64 (78%) women had clear liquor during delivery whereas 18 (21.91%) women

had MSL including both moderate and thick meconium- stained liquor.

Although there were 13 (15.8%) cases of low APGAR score no still birth occurred. There were 14 (17.07%) SGA babies and one early perinatal death due to severe Intrauterine growth restriction (IUGR). All the other babies admitted to NNU were discharged.

DISCUSSION

Decreased fetal movement is always an alarming sign for obstetrician due to fear of stillbirth. Woman start feeling baby movement between 16-20 weeks

Table 2. CTG pattern and FHR among women with DFM

Characteristics	Number (%)
Fetal heart rate	
<120	3 (3.6%)
120-160	72 (87.8%)
>160	7 (8.6%)
CTG findings	
Normal	66 (80.6%)
Suspicious	12 (14.6%)
Pathological	4 (4.87%)

Table 3. Indications of LSCS in women with DFM

Characteristics	Number (%)
Abnormal pattern of CTG	16 (41.02%)
MSL	6 (15.38%)
Fetal distress	4 (10.25%)
IUGR	4 (10.25%)
Abruptio placenta	1 (2.56%)
Oligohydromnios AFI <5	3 (7.69%)
Women with previous cesarean section	5 (12.82%)

Table 4. Neonatal Complications in women with DFM

Characteristics	Number (%)
APGAR score	
<4	1 (1.2%)
>4- ≤6	12 (14.6%)
≥7	69 (84.1%)
NNU admission	18 (21.9%)
MSL	5 (27.7%)
RDS	12 (66.6%)
Perinatal Asphyxia	1 (5.5%)
None	64 (78.04%)

Table 1. Demographic parameters of women with DFM

Characteristics	Number (%)
Age category (years)	
20-25	26 (31.7%)
26-31	42 (51.2%)
32-37	12 (14.63%)
38-43	2 (2.4%)
Gestational age category (weeks)	
34-36 +6	19 (23.1%)
>37	63 (76.8%)
Gravidity	
Primigravida	52 (63.4%)
Multigravida	30 (36.6%)
Liquor during labor	
Thick meconium	6 (7.31%)
Moderate meconium	12 (14.6%)
Clear	64 (78.0%)
Comorbidities	
None	51 (62.1%)
Diabetes	12 (14.6%)
Hypertension	7 (8.5%)
Obstetric cholestasis	11 (13.4%)

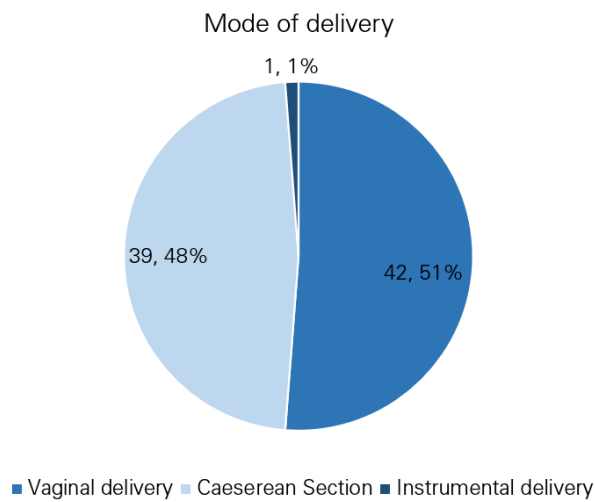


Figure 1. Mode of delivery in women with DFM

of gestation which increases till 32 weeks and then remain the same until term. Fetal movement is defined to be, any kick, flutter, swish or roll, that the mother senses.¹³ It can be perceived with an average number of movements at term is 31 per hour, ranging from 16-45, the longest period between movements being 50-75 minutes with - sleep cycles lasting for 20-40 minutes and rarely exceeding 90 minutes.² If there is difficulty in perceiving fetal movement, the woman should lie on the left side and count the movements for 2 hours and if they do not feel 10 movements in 2 hours, they should contact their health care provider.² Studies have shown that the number of intrauterine movements towards a pregnant woman can last for days or even weeks from decreasing to disappearing, and doctor interventions during this period may result in a healthy, living baby.⁴ In 1973 Sadowsky¹¹ proposed a method of fetal movement counting, which involves counting of fetal movement in a fixed period of time.

In the present study, Sadowsky's method (counting of FM for one hour at three different times a day at fixed time) was used and fetal movement was considered decreased if found less than 2 movements in one hour. Maternal perception of fetal movements may be reduced with fetal sleep, anterior placenta, primiparity, IUGR, SGA, placental insufficiency oligohydramnios, threatened preterm labor, antepartum hemorrhage, obesity, narcotics, chronic smoking and hypoxia. Fetal movement is always worrisome for obstetricians and sometimes lead to unnecessary induction or delivery before term. So other tests like CTG, BPP, and doppler velocimetry are considered for further fetal surveillance.

In our study 52 women were Primigravida as compared to multigravida (Table 1) similar to

the study by McCarthy et al.¹⁴ In our study there was a higher rate of planned early preterm birth, induction of labor and cesarean delivery (Figure 1). Induction of labor was shown to be increased in many other studies^{15,16} due to fear of stillbirth. In contrast McCarthy et al.¹⁴ showed 15.2% women had IOL and among all of the women within the RFM group 46.3% had a spontaneous vaginal delivery with 32.6% delivered by cesarean section (CS) which may be because there was a high rate of spontaneous delivery in comparison to our study where only 14 (17.07%) women underwent spontaneous labor. In a study by Akselsson et al.¹⁷ women who were using a counting method daily to focus on fetal movements were more likely to have CS in comparison to the control group.

In the present study there was a high rate of low APGAR SCORE <6, NNU admission but the perinatal mortality was low and no stillbirth occurred (Table 4). Contrary to the present study, in a case-control study by McCarthy et al.¹⁴ 275 women with Reduced fetal movements (RFM) were compared with a control of 265 women without any RFM, the incidence of stillbirth was 14.5% and NICU admission was higher (10.6% vs 7.2%). Sterpu et al.¹⁸ conducted a retrospective study on the outcome of pregnancies with reduced fetal movements and the risk of stillbirth is five times higher with reduced fetal movements than in normal pregnancies. Also the outcome of pregnancies with reduced fetal movements and found a higher frequency of low APGAR score <7 min (3.3%) and more babies admitted to NICU (3.9%). In our study the high rate of NNU admission is due to respiratory distress syndrome (RDS) as women from 34 weeks onwards were included and there were 19 (23.1%) cases of preterm delivery (Table 4). In a randomized controlled trial done by Saastad et al.¹⁹ on the effect of fetal movement counting, women in the intervention group using the modified count to ten method had a better recognition of FGR fetuses with a decrease in fetuses with very low APGAR score at birth. In the present study - DFM was more commonly associated with - SGA infants¹⁴ (17.07%), low APGAR score < 6 (15.8%) and there was one early perinatal death due to severe IUGR.

A study by Warland et al.²⁰ including 1,714 women who experienced late 4 stillbirths found that 30-55% of women who experienced an episode of RFM within a week may face stillbirth. McCarthy et al. in a cohort study found a higher incidence of 14.5% stillbirth and an incidence of 10.6% of NICU admission, which may be as he included women after 28 weeks onwards. Regarding stillbirth, present results are contrary to those of some other studies^{19,21} which found an increased risk among women with decreased fetal movement. This may be due to timely presentation to the obstetrician and patient counseling done at each

visit starting from 28 weeks onwards in our center thus increasing awareness among women regarding fetal movement. Also we excluded cases with decreased fetal movement with intrauterine fetal death (IUFD) as including this will give a false presumption of decreased fetal movement as a symptom of fetal death rather than a risk factor for subsequent stillbirth. Another reason could be as we included cases ≥ 34 weeks onwards and further assessment was done by USG and CTG which also further reduced the poor fetomaternal outcome leading to timely interventions.

In the current study, a further fetal assessment was done with USG and CTG and those with an abnormal pattern of CTG were not subjected to induction of labor and had a cesarean delivery. This could be the reason low low perinatal mortality and morbidity in our study. All the babies admitted to NNU were discharged except one early perinatal death due to severe IUGR. Steroids were given to all women with delivery < 37 weeks of gestation.

The limitations of the study are as it is a retrospective observational study so data could have been missed. Furthermore better findings could have resulted if it has been compared to women without having DFM. Management of women with DFM was based on individual experience rather than protocols.

Health care provider should pay more emphasis on educating women about the importance of self monitoring of fetal movements during each antenatal visit. This simple implication of fetal movement counting charts or 'kick charts' will increase its awareness and importance and will be helpful in minimizing many of the adverse perinatal outcomes. More structured protocols and hospital guidelines are needed for further improvement in context of DFM thus improving the perinatal outcome ultimately.

CONCLUSION

Although MAS and low APGAR babies were more commonly found in women with DFM, however no stillbirth occurred. DFM is a valuable alarming sign of fetal well-being but further testing with USG, CTG and structured protocols for management is beneficial.

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CONFLICT OF INTEREST

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