

Association Between Battledore Placenta and Perinatal Complications

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Abstract

Background: To ascertain the possible association between battledore placenta and perinatal complications, and to identify the various clinical presentations of battledore placenta.

Methods: In this descriptive study all the patients who delivered battledore placenta were enrolled. Standardized evaluations were performed at delivery and retrospective analysis of perinatal complications and clinical presentations was done

Results: Out of 7180 abdominal and vaginal deliveries, in one year, 60 were of battledore placenta. Complications associated with battledore placenta were fetal distress, intrauterine growth restriction, preterm labour and cord prolapse.

Conclusion: Battledore placenta was found as a possible cause of many perinatal and intrapartum complications. Maternal morbidity was increased and fetal complications were common in patients having Battledore placenta.

Key Words: Battledore, intra uterine growth restriction, lower segment caesarean section

called because of the fancied resemblance to the racquet used in badminton. The shortest distance between the cord insertion and placental edge is within 2cm. The incidence of battledore placenta is 7-9% in singleton pregnancies, and 24-33% in twin pregnancies. Complications associated with battledore placenta are fetal distress intrauterine growth restriction, preterm labor, and slightly decreased birth weight.^{3,4}

It has been estimated that 30% of births have some type of umbilical cord abnormality. This statistic implies a potential for fetal harm that may not be appreciated by public health authorities. Because of limited research in this issue it is not known how many fetuses are harmed by their umbilical cords.⁵

The issue of umbilical cord related fetal harm and fetal stillbirth is unaddressed in modern reproductive care. Although observations of umbilical cord related deaths have not necessarily proven causation, it is difficult not to ask. What is the relationship? It is time to answer this question and to see the full relationship of abnormal umbilical cord and perinatal complications.

Introduction

Placenta is the sole interface between the mother and developing fetus. It is a very active organ having specialized mechanism to promote fetal growth and survival. Placenta ensures the proper growth of embryo. Umbilical cord is the source of contact between fetus and placenta. Any pathological event concerning the mother or the fetus may influence the normal function of the placenta. Severe abnormalities of the placenta may lead to adverse fetal outcome. However placental lesions are not necessarily the cause of unfavourable obstetric outcome, and some structural changes may be the consequences of poor fetal condition. The location of umbilical cord attachment to the fetus and placenta is also important. Placental attachments can be in the center, off center, on the edge, or in the membranes.^{1,2}

Battledore placenta is a placenta in which the umbilical cord is attached at the placental margin; so

Patients and Methods

This descriptive study was conducted in Gynae and Obstetric department of DHQ hospital, from Jan 2011 to December 2011. It included all pregnant women who delivered both via abdominal and vaginal route from Jan to Dec 2011 at our hospital. After delivery of the placenta, it was examined to assess the relationship between the placenta and the cord insertion. If it was found to be battledore retrospective evaluation was done to assess any antenatal or intrapartum complication.

Results

Out of total 7180 deliveries normal placenta were 7120 (99.2%) and 60 patients delivered battledore placenta (0.8%). Out of these, 37 cases were associated with fetal distress. Ten cases were of intrauterine growth restriction, 3 cases of preterm labor and 2 cases

of cord prolapse. Two patients who underwent lower segment caesarean section due to previous 2 lower segment caesarean sections were also found to have battledore placenta. One patient who had a twin pregnancy with one normal fetus and 1 molar pregnancy also had a battledore placenta. Two patients who had a complete uneventful pregnancy with no peripartum complication were also found to have battledore placenta (Table 1 & 2).

Table 1: Associations of battledore placenta (n=60)

Association	No(%)
Fetal Distress	37(61)
IUGR*	10(16.6)
Preterm labor	3(5)
Cord prolapse	2(3.3)
Previous 2 LSCS**	6(10)
Normal outcome	2(3.3)
Complete mole with coexisting twin	1(1.6)

*IUGR=Intra Uterine Growth Restriction; LSCS=Lower Segment Caesarean Section

Thirty Seven cases which were associated with fetal distress had to undergo LSCS, 30 cases for persistent nonreassuring cardiotocograph patterns during labor in the form of decreased beat to beat variability, 5 patients had intrapartum fetal heart rate tracings containing persistent variable decelerations. In the remaining 2 cases persistent tachycardia was the fetal heart rate abnormality, followed by late deceleration (Table 3).

Most common fetal heart rate abnormality associated with battledore placenta was nonreassuring fetal heart rate pattern in the form of decreased beat to beat variability in 30 out of 37 cases. In these 37 cases 27 patients did not have any medical disorder, 5 patients had pregnancy induced hypertension and 5 patients had anaemia.

Ten cases of intrauterine growth restriction were also associated with battledore placenta. Mean gestational age and birth weight of these 10 fetuses was 31.4 weeks and 1670 g. Fetal mortality rate was higher in patients with birth weight less than 1.5 kg. Three patients presented with preterm labor. Two patients who underwent emergency LSCS for cord prolapse were also found to have battledore placenta. 6 patients who had elective LSCS done due to previous 2 LSCS and 2 patients who had normal vaginal deliveries were also found to have battledore placenta.

Majority (87%) of the cases of battledore placenta were associated with antenatal and intrapartum complications as compared to only 22% with normal placenta, which shows strong association between battledore placenta antepartum complications. Number of LSCS which were performed were 2569 among which those carried out for fetal distress were 485 ie 33% with a LSCS rate of 33.15%, in which 13% of the cases were of Battledore placenta.

Table 2: Comparison of peripartum complications between normal and battledore placenta

Peripartum complication	Normal placenta n=7120	Battledore placenta n=60
Fetal distress	448	37
IUGR	24	10
Preterm labor	33	3
Cord prolapse	4	2
Total cases with Peripartum complications	1565(22%)	52(87%)

Table 3: Relationship between fetal distress and battledore placenta.

Total no of deliveries	7180
Cases with normal placenta	7120(99.1%)
Cases with battledore placenta	60(0.8%)
Total LSCS	2569(33%)
LSCS due to fetal distress	485(18.8%)
Fetal distress with normal placenta	425(87%)
Fetal distress with battledore placenta	37(13%)

Discussion

There are many factors that can affect fetal well being during labor and delivery, such as good functioning of placenta and good supply of nutrients and oxygen from the maternal blood circulation. Inadequacy in maternal supply or placental function puts the fetus at risk of asphyxia that may be indicated by abnormal heart rate pattern. As fetal distress was the most common complication, it suggests there may be some form of uteroplacental insufficiency in pregnancies with battledore placenta which manifests itself during the stress of labor in the form of abnormal fetal heart rate patterns. Marginal cord insertion could contribute to non-reassuring tracing that requires emergency delivery as observed in this study, but what is unknown is the degree to which

abnormal cord insertion affects placental perfusion, leading to fetal intolerance of labor.⁵⁻⁸

Intrauterine growth restriction (IUGR) represents a reduction from the physiological growth rate. Fetal growth depends on the maternal supply of nutrients through the placenta into the umbilical circulation. Ten cases of IUGR were identified in this study which can be associated with a reduced nutritional placental supply resulting in reduced placental transport capacity due to marginal cord insertion. Studies revealed that birth weight of baby and placental weight are reduced in battledore insertion of cord. Velamentous placental cord insertion is associated with increased rate of low birth weight.⁹

Studies have shown an association between preterm labor and marginal insertion of cord. As this study suggests strong association of battledore placenta with perinatal and intrapartum complications so antenatal detection of marginal cord insertion may help to reduce maternal and perinatal morbidity. The use of colour and power doppler sonography together with grey scale sonography allows placental cord insertion to be identified with a high degree of specificity. Visualization of placental cord insertion can be achieved in almost 100% of cases during second trimester.^{11,12}

It has been suggested in a study that if placental cord insertion is within 0.5 cm of placental edge, more likely it would progress to velamentous cord insertion with a corresponding increase in complications but this was not substantiated in present study. As visualization of the placental cord insertion site becomes more difficult with advancing gestation, determination of the placental cord insertion site should be included in the second-trimester ultrasound examination. Since fetal distress was the most common complication the woman should be offered delivery in a unit where facilities of continuous electronic fetal heart rate monitoring, fetal scalp pH monitoring were available. Pediatrician should be available in case aggressive resuscitation of the neonate is necessary

Conclusions

1. Second trimester ultrasound should include placental cord insertion site and transvaginal

ultrasound may be considered in women with marginal insertion of the cord

2. If battledore placenta is diagnosed antenatally, tertiary care facilities should be offered prior to the onset of labour.

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