

Variations in Placental Attachment of Umbilical Cord.

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ABSTRACT

Background: Our study aims to evaluate the variations in umbilical cord attachment to placenta by dissection method. **Methods:** Placentas for this study were obtained from the OBG Department and collected by the Department of Anatomy SRMS IMS. The placentas were washed, cleared, dissected and site of placental attachment to umbilical cord were observed. Variations in the type of insertion were noted. **Result:** Majority of the placentas showed central and eccentric attachments of the cord. Few abnormal placentas were observed with velamentous and marginal insertions of the umbilical cord. **Conclusion:** Abnormalities in the placental attachment of the umbilical cord can result in various complications of pregnancy and adversely affect the fetal outcome as well. Knowledge of the variations in attachment of the umbilical cord is very significant and of extensive use to obstetricians as well as anatomists. Frequently abnormal cord insertions may be associated with intrauterine growth retardation, preterm labour and congenital abnormalities.

Keywords: Battledore, Placenta, Umbilical cord, Velamentous.

INTRODUCTION

The umbilical cord is a conduit between the developing embryo and the placenta. It is embryologically derived from both mother and fetus and normally contains two arteries and one vein, buried within Wharton's jelly and all enclosed within a layer of amnion.

The cord deserves attention right from the first trimester. The probability of identifying congenital anomalies will be much higher with careful cord assessment in the earlier period of gestation.^[1]

Abnormalities in the development and site of insertion of the umbilical cord can affect maternal and fetal well-being.^[2] The umbilical cord is usually attached eccentrically to the placenta but may also be inserted at any point between the centre and margin - a condition known as a battledore placenta.

Occasionally, the cord fails to reach the placenta itself and ends in the membranes as a velamentous insertion. In such cases branches of the vessels travel unprotected through the membranes to the placenta, which puts the fetus at risk because compression or tearing of the vessels can disrupt blood flow to and from the fetus.^[3]

The cord may branch off before the cord inserts onto the surface of the placenta resulting in a furcate cord insertion.^[4]

MATERIALS AND METHODS

This study was conducted in the Department of Anatomy, SRMS IMS, Bareilly. Placentas were obtained from the labour room of the Department of Obstetrics and Gynecology, SRMS IMS, Bareilly. The patient history was taken from the hospital records and patients with diseases of pregnancy were excluded from the study.

A total of 32 placentas were studied and site of attachment of the umbilical cord was examined.

Five different types of cord insertions were observed [Table I]. Of these, the commonest cord insertion was eccentric type, seen in 19 cases (59.38%) [Figure I].

Table I: Types of cord attachments.

Type of Cord attachment	Number of placentas	Incidence
Eccentric	19	59.38%
Marginal	6	18.75%
Central	5	15.62%
Furcate	1	3.12%
Velamentous	1	3.12%

Marginal insertion of the cord was found in 6 cases (18.75%) [Figure II].

5 cases (15.62%) showed a central insertion of the umbilical cord [Figure III].

In 1 case each (3.12%) furcate [Figure IV] and velamentous [Figure V] attachment of the umbilical cord were observed.

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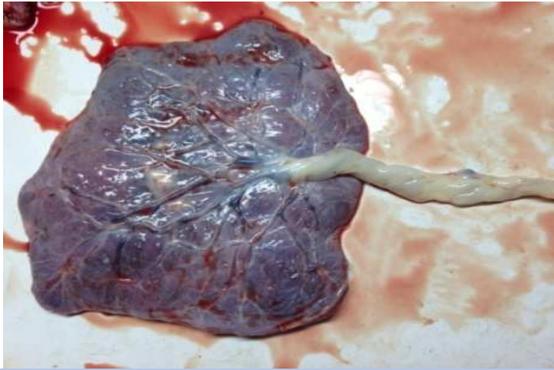


Figure I: Eccentric.



Figure V: Velamentous.



Figure II: Marginal.



Figure III: Central.

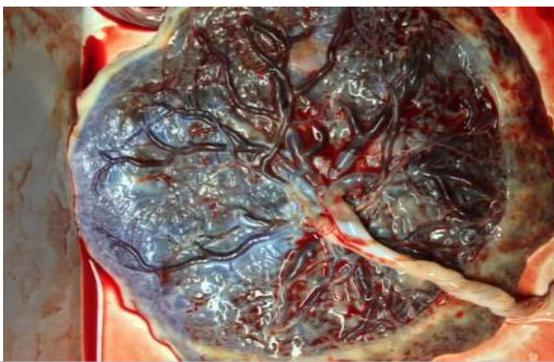


Figure IV: Furcate.

DISCUSSION

There are many factors that can affect fetal well-being during labour and delivery, such as the good functioning of the placenta and good supply of nutrients and oxygen from the maternal blood circulation to the fetus. Variations in umbilical cord insertions may alter fetal well-being.

In the present study, eccentric cord attachment was the most commonly observed finding, seen in 19 cases, with an incidence of 59.38%. 5 cases (15.62%) in the present study showed a central insertion of the umbilical cord. Donald N. Di Salvo et al^[5] studied 54 placentas and W. Sepulveda et al^[6] studied 825 placentas and reported 38 (70.37%) and 773 (93.69%) cases with central cord insertions respectively [Table II]. Our finding corresponds to the findings of Udaina et al who studied 25 placentas and found eccentric attachments in 15 cases (60%).^[7] These authors did not study eccentric cord attachments as a separate finding.

6 cases (18.75%) in the present study had a marginal insertion of the cord. This finding was comparable with the findings of Donald N. Di Salvo et al^[5] who found 12 cases (22.22%) with marginally inserted cords. Whereas Udaina et al^[7] and W. Sepulveda et al^[6] found only 1 (4%) and 43 (5.21%) placentas respectively, with marginal insertions of the cord in their study, which were significantly lower as compared to the present study.

In the present study, 1 case each (3.12%) was observed, of furcate and velamentous attachments of the umbilical cord to the placenta. Both findings are rare and the observations of other workers correspond to those of the present study. Donald N. Di Salvo et al^[5], W. Sepulveda et al^[6] and Udaina et al^[7] found velamentous cord insertions in 4 (7.41%), 8 (0.96%) and 0 cases respectively. Furcate cord insertions were not reported by these workers.

Studies have shown an association between preterm labour and other perinatal and intrapartum complications and abnormal insertions of cord.

Thus antenatal detection of marginal, velamentous or furcate cord insertions may help to reduce

maternal and perinatal morbidity.^[8]

Table II: Comparison with other studies.

Type of cord attachment	Number of cases	Eccentric	Marginal	Central	Velamentous
Donald N. Di Salvo et al ^[5]	54	-	22.22%	70.37%	7.41%
W. Sepulveda et al ^[6]	825	-	5.21%	93.69%	0.96%
Udaina et al ^[7]	25	60%	4%	36%	0
Present study	32	59.38%	18.75%	15.62%	3.12%

CONCLUSION

The most common type of cord insertion observed is eccentric. Velamentous and furcate insertions of the cord are less common findings. This can account for increase in morbidity and mortality rate of the population. Association of these attachments with different pathologies needs to be further investigated for evaluation of the progress of pregnancy.

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