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Prediction of migration of low lying placenta in mid trimester Ultrasound

Radiology

KEYWORDS: Low lying placenta, placenta praevia, placental migration.

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ABSTRACT

Objective: To predict the migration of low lying placenta in the second trimester ultrasonogram (USG).

Methods: routine obstetrics USG in second trimester(13 weeks onwards) was done in all the patients attending antenatal clinic. Those cases who had low lying placenta i.e lower edge of placenta within 3.0 cms from the cervical internal os were included in the study. These cases were followed up at 4 weekly interval to repeated serial transvaginal USG well through 3rd trimester of pregnancy or delivery which ever was earlier.

Result: Of the total 1000 second trimester USG, 270 (25.3%) women had low lying placenta in the second trimester. Follow up of this 270 cases indicated that in 250 (92.5%) cases it had migrated to upper segment by 3rd trimester. The migration of placenta was 95.2% and 69.0 % where the distance between the leading edge of placenta and cervical internal os was more than 2.0 cm or less than 2 cm respectively. Migration was not observed in women where the distance was less than 1.5 cm. Placental migration was 95.8% in anteriorly situated placenta and 91.3 % in posteriorly situated placenta. The rate of placental migration was 96%, 71.4%, 50% in women who had previous normal delivery, previous caesarean delivery and prior history of dilatation and curettage (D & C) or manual removal of placenta (MRP), respectively.

Conclusion: The prevalence of low lying placenta in 2nd trimester is 27%, which reduces to 7.4% at term. The rate of placental migration was over 90.0 %. Factor like initial distance between the lower edge of the placental and cervical internal os. placental position and previous birth by caesarean section influence the placental migration.

Introduction

Low lying placenta is common finding in second trimesrer obstetrics USG which alarms the obstetricians about the possibility of placenta continuing to remain in the lower segment and its associated complications. Placental migration is subsequent conversion of low lying placenta or placenta praevia in the 2nd trimester of pregnancy to upper uterine segment placenta by the end of the 3rd trimester. Placental migration has been well documented since the advent of transabdominal sonogram (1-4). Diagnosis of placenta praevia by USG has an excellent record of accuracy and safety. Transvaginal sonography is superior to transabdominal as it allows accurate visualization of cervical internal os and lower edge of placenta at any stage of the pregnancy and allows accurate measurement of distance between the edge of placenta and internal cervical os .(4-5). The prevalence of low lying placenta in the 2nd trimester where the placenta is lying within 3.0 cm from the internal os ranges from 6-46% and reduces to as low as 0.5 % at term (1,2,6). The high rate of false positive diagnosis of placenta praevia in early pregnancy is explained by the false impression of lower part of the uterus by the over distended bladder which is required during transabdominal ultrasound .Placental migration is related to atrophy of the placental margin due to a poor vascular supply, compared with other placental region that continue to grow and therefore migrate towards more vascular sites. In addition it is also possible that the placenta only appears to migrate to a more fundal position with advancing pregnancy because of more rapid growth of the lower uterine segment. Both of these mechanisms operate in placental migration(5-10). As per the studies, the rate of caesarean delivery has been increasing steadily over the past two decades and it has been observed that there is an increased frequency of placenta praevia among women with a prior history of caesarean delivery or abortion suggesting an association with surgical procedures that disrupts the uterine cavity(11). The present study was done to study role of factors influencing the placental migration..

Methods

All the registered antenatal women attending RAMA medical college and research centre from 18 June 2011 to 3 Feb 2014 who underwent routine obstetric transabdominal USG at 18-20 weeks of gestation were subjected to transvaginal USG. TVS was performed

using 5 MHz probe (Siemens, Sonoline 50) after ensuring empty bladder.. Antenatal women with low lying placenta, i.e. the distance between the leading edge of placenta and the internal os of less than 3 cm at 18-20 weeks were included in the study(4). The placental distance from the internal cervical os was measured in a longitudinal and axial scan of the cervix in all patients.The line of cervical canal was visualized and the distance between the center of the internal cervical os and the leading edge of the placenta measured. An average of three measurements was used to calculate this distance in centimeters and the total placental praevia was diagnosed if the placental tissue extended to or covered

the internal cervical os. When the placental edge was visible but did not cross the internal os, the smallest intervening distance was measured. TVS was repeated every 4 weeks until either the lower edge of the placenta migrated beyond 3 cm or the patient had delivered, which ever is earlier. The attending obstetrician was informed of the USG findings but the management decision was based on the usual clinical parameters.

RESULTS

A total of 1000 antenatal women had routine second trimester USG, during the study period of 18 JUNE 2011 to 3 feb 2014. Out of these, 270 cases (27%) had low lying placenta . Follow up USG of these 270 cases at four weeks interval well into the term showed that 250 cases (92.5%) had migrated to upper uterine segment and 20 cases (7.4%) remained with low lying placenta. Thus the prevalence of low lying placenta was found to be 7.4 % around term (Table-1).

Table-1: Prevalence of low lying placenta in second trimester of pregnancy and rate of placental migration

No. of second trimester low lying placenta at term	No. of low lying placenta	Rate of placental migration
n. (%)	n. (%)	92.5%
270 (27)	20(7.4)	

Age and parity of the women did not influence either the incidence or the migration of low lying placenta in the present study. The rate of placental migration depends upon the initial distance between the lower edge of the placenta and internal cervical os. The placental migration occurred in 95.2 % (200/210) where the lower edge of placenta lies up more than 2.0 cm from the internal cervical os. Only 69% (31/45) migration was observed where the distance was in the range of 1.5-2.0 cm. None of the low lying placenta showed migration where the initial distance was less than 1.5 cm (Table-2).

Table-2: Placental migration in relation to initial distance from internal cervical OS

Initial distance from internal OS	No. of second trimester low lying placenta	No. of placenta migrated	Percentage of migration
<1.5 cm	15	00	0
1.5-2 cm	45	31	69.%
2.1-3 cm	210	200	95.2%

The rate of placental migration was 96.0 % in women with previous vaginal deliveries when compared with women having previous caesarean section delivery where rate was 71.4 % and in women with prior history of dilatation and curettage or / manual removal of placenta (MRP)rate was 50% (Table-3).

Table-3: Relation between pervious pregnancy events or outcome and placental migration

Pregnancy events/ outcome	No. of second trimester low lying placenta	No. of placenta migrated	Percentage of migration
Vaginal delivery	225	215	96%
Caesarean section	35	25	71.4%
D&C/ MRP	10	05	50%

Anteriorly situated placenta showed placental migration at the rate of 95.8% (115/120) which is slightly higher than posteriorly situated placenta with rate of migration of 91.3% (137/150). But the difference was not statistically significant (Table-4).

Table-4: Placental migration in relation to the position of placenta

Position of placenta	No. of low lying placenta in second trimester	No. Of placenta migrated	Percentage of migration
Anterior	120	115	95.8%
Posterior	150	137	91.3%

DISCUSSION

Placenta praevia are now diagnosed before they become symptomatic with the practice of routine obstetric USG from second trimester onwards.4-7 . The incidence of sonographically diagnosed low lying placenta in the second trimester range from 6-46% [Ghourab 2000 reported 6-46%, Mustafa el al in 2002 reported 3.9% and Chama el al 2004 reported 14.6 % of placenta to be low lying in the second trimester.2,8-10 This rate however decreases to as low as 0.5% at term.2,8-10 In this study the prevalence of low lying placenta in second trimester is 27% which decreases to 7.6% by third trimester both of which is higher compared to other studies.1,2,8-10 The factors responsible for this increased prevalence could be due to increased number of antenatal women undergoing routine obstetric ultrasonogram (USG) in early second trimester and increased prevalence of prior caesarean section births.Though advancing maternal age and multiparity are risk factors for low lying placenta in the mid trimester they do not appear to be the risk factors for persistence of the placental previa at term. Thus age and parity do not adversely affect the migration of low lying placenta.Women with prior cesarean section are more likely to have increased incidence as well as persistence of low lying placenta. It has been suggested that damage to the endometrium during cesarean section predisposes to low implantation of the placenta and also impairs the ability of placenta to migrate(11).. Almost four decades ago Bender,3 first observed an increased frequency of placenta praevia among women with uterine scarring (caesarean delivery or abortion) in prior pregnancy. Damage to the endometrium and myometrium can predispose to a low implantation of the placenta in the uterus. likewise curettage of uterus during spontaneous or induced abortion may significantly damage the endometrium and the uterine cavity so as to predispose to low `implantation of the placenta which also impairs the ability of placenta to migrate.11. Women with at least one prior cesarean section were 2-6 times at greater risk for development of placenta previa in the subsequent pregnancy and in women with prior MTP the risk was 1.7 times higher 11,14. Placental migration observed depends mainly on the initial distance between the lower leading edge of the placenta and the internal os. The migration rate was maximum when the distance was more than 2 cm4. In our study placental migration was slightly more in anterior placenta 95.8 % compared to posterior placenta 91.3% which is similar to other studies.4,6 But the difference was not statistically significant in all above studies.

Conclusion

Rate of migration of second trimester low lying placenta to upper segment at term is 92.5%. However 100% of the low lying placenta within 1.5 cm from the os continue to persist as placenta previa at term. Factors like previous LSCS and D&C may prevent placental migration.

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