ULTRASOUND CORRELATION OF PLACENTA PREVIA IN ANC FEMALES WITH PREVIOUS LSCS PREGNANCIES

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Introduction:

The placenta is a highly specialized tissue that serves a number of crucial functions for survival of the foetus. It allows the foetus to receive oxygen and nutrition before it can breathe or nourish itself. The placenta releases multiple hormones that initiate and maintain the essential changes of pregnancy in both the mother and the foetus. (1, 2) The normal human placenta averages 22 cm (9 inch) in length and 2–2.5 cm (0.8–1 inch) in thickness, with the center being the thickest, and the edges being the thinnest. It typically weighs approximately 500 grams (1 lb). It has a dark reddish-blue or crimson color. It connects to the fetus by an umbilical cord of approximately 55–60 cm (22–24 inch) in length, which contains two umbilical arteries and one umbilical vein. The umbilical cord inserts into the chorionic plate (has an eccentric attachment). Abnormalities in the placenta raise concerns not only for the healthy growth of the foetus but also the antenatal and perinatal health status of the mother. (4-6) It has been observed that survival and growth of the fetus is affected by different aspects of the placental morphology, and its efficient functioning. Different factors affect the placental morphology and physiology. During pregnancy, complications like hypertension and gestational diabetes make changes in the placenta. (10-13) A previous surgery makes the next pregnancy vulnerable to different complications due to the associated post-operative changes in the uterus. Careful examination of the placenta can give information which can be useful in the management of complications in the mother and the fetus. (3) Hence sonography has a large role to play in the screening of the placenta to be able to preempt possible complications. Thereby the Radiologist can help the clinician to be better prepared to handle complications efficiently. Obstetrical haemorrhage continues to be an important cause of maternal mortality, accounting for

15-20% of maternal deaths. Recent epidemiological studies have also found that the strongest risk factor for Abnormal Trophoblastic invasion is a previous LSCS where a failure of decidualisation in the area of a previous uterine scar can have an impact on both implantation and placentation. [14] The absence of Decidua Basalis precludes to abnormal villous migration/adherence in this region. The incidence of LSCS has been rising [15] in the past 3 decades. With the increased number of Caesarean sections, the number of pregnancies with previous LSCS rises as well. Abnormal placentation can result in life threatening maternal complications [16-18] such as haemorrhage and shock and increased number of cases of Caesarean Hysterectomies. Also seen, is an increase in adverse infant outcomes such as prematurity, still birth and neonatal death.

Aim and objective

To assess the placental morphology in pregnancies with Previous LSCS and find out the association between abnormal placental morphology and pregnancy outcome in pregnancies with Previous LSCS with selected demographic variables. The study also aims to establish the association between placenta previa and abnormal trophoblastic invasion and study the Maternal & Foetal outcomes in cases of abnormal placentation.

Material and method

It is a prospective study conducted on 50 ANC females with previous LSCS pregnancies reporting to Department Of Radiodiagnosis between Gestational Age of 18-32 Weeks and who are willing for the study and available for follow-up. All patients were registered strictly adhering to the Guidelines of PCPNDT Act. Ultrasound scanning was used for all the ladies in the study group. Thus cases with low lying placentae and any other abnormality were

followed-up with repeat ultrasound scans throughout the pregnancy while those diagnosed to have normal placentae were followed up only for the outcome. The grey scale real time ultrasonographic examinations were performed using GE Voluson P8 machine. The transducer used for the study was a 3.5MHz curvilinear array transducer, Linear array 7.5MHz and Transvaginal 6.5MHz array SOS,. Hard copy images of the cases were acquired using thermal printer and photographs.

Results

A prospective study of all pregnancies with previous history of Lower Segment caesarean Section reporting for Obstetrics Ultrasound at the Obstetric Unit of the tertiary care centre from December 2019 to October 2020 was done. A total number of 100 pregnancies with previous history of Lower Segment caesarean Section were evaluated during the same period. Total number of normal placentation in these cases was 83(83%) and incidence of placenta previa was 17(17%). In the study group of 100 patients, 57 patients had previous 1 CS, 31 previous 2 CS and 12 had previous 3 CS. Maximum number of placenta previa cases were in the age group of 20– 24 which is the period corresponding to the maximum fertility and also represents the greatest proportion of population in our study. In this study majority that is a total number of 56 (56%) pregnancies were in the age 44 group of 20-24, of which 9(52.9%) were in pregnancies with abnormal placentation and 47(56.6) in pregnancies with normal placentation. 10(10%) pregnancies were in age group. Out of 17 placenta previa - 2 had malpresentation and 15 had normal presentation. 3 out of 83 normal placentation had malpresentations and 80 had normal presentation. The risk of breech presentation is 3.2 times higher in placenta previa compared to normal placentation and it is statistically significant. Out of the total of 17 placenta previa 2 had anomalies that is 11.8% and 15 were normal that is 88.2%. Among the normal placentation 3(3.7%) cases were found to have anomalies and 80 cases(96.3%) were normal. The risk of getting anomalies is around 4 times higher among the placenta previa cases than normal placentation. Radiologically 12 patients were diagnosed as Placenta Previa without adherent placenta that is 12%, 3 were diagnosed as Placenta Percreta which was 3% and 2 were diagnosed as Placenta Previa with accreta that is 2%. Intra-operatively, 10 patients had placenta previa without adherence, 5 placenta percreta, and 4 with placenta previa with Accreta. Out of 17 cases, 6 (35.2%) had

Type I-Placenta Previa, 2 had Type II-Anterior placenta which was about 11.7%, 1 had Type II-posterior placenta about 5.8%, 4 had Type III placenta which was around 23.52% and 4 cases were of Type IV placenta previa which was about 23.52%. Out of total 17 cases 8 cases had minor degree of placenta previa and 9 cases major degree. Out of 17 cases of placenta previa 3 pregnancies had 1 previous history of Lower Segment caesarean Section that is 17.64%, majority that is 10 had 2 previous history of Lower Segment caesarean Section which is 58.8% and 4 had 3 previous 52 history of Lower Segment caesarean Section which is about 23.5% Among 83 cases of normal placentation 54 had 1 previous history of Lower Segment caesarean Section which is about 65.3%, 21 had 2 previous history of Lower Segment caesarean Section that is 25% and 8 had 3 previous history of Lower Segment caesarean Section which is about 9.63%. Previous 2 cesarean section has around 2.3 times higher risk of placenta previa in subsequent pregnancy than those without it. In our study Uterine Dehiscence/Rupture was seen in a total of 5 (5%) cases out of which 2 cases were from pregnancies with abnormal placentation which is about 11.76% and 3 cases from pregnancies with normal placentation which is about 3.61% In our study, uterine artery ligation was done in 41.18% of pregnancies with abnormal placentation that is 7 cases and 8.43% cases of normal placentation that is 7 cases, 5.88% cases of abnormal placentation that is 1 and 18.07% cases of normal placentation that is 15 cases required internal iliac ligation and similar number required obstetric hysterectomy. 55 In our study placenta was kept in situ for 3 patients of abnormal placentation that is 17.65%. A total of 5(5%) cases required ICU admission out of which 2 pregnancies were with abnormal placentation that is 11.76% and 3 pregnancies were with normal placentation that is 3.61% A total of 20 patients (20%) had surgical site infections in our study group. 52.94% of cases with abnormal placentation had surgical site infection that is 9 cases and 13.25% of normal placentation that is 11 cases. Majority of them required (77%) required secondary suturing and 23% had healed with secondary intention. In our study, 14 neonates (14%) required resuscitation. 35.29% (6) neonates born of mother with abnormal placentation required resuscitation whereas 9.64% (8) of neonates born of mother with normal placentation required resuscitation. 18% (18) of neonates in our study required neonatal intensive care unit (NICU) admissions. Out of 17 neonates born of mother with

abnormal placentation 7 (41.18%) required NICU admission and 11(13.25%) neonates born of mother with normal placentation required NICU admission.

Discussion

The rate of Caesarean delivery has been increasing steadily over the past two decades and is the most common obstetric operative procedure worldwide. Some studies have observed an increase in the frequency of placental location abnormalities among women with history of prior Caesarean deliveries. Bender first suggested that a uterine scar could predispose the mother to the development of placenta praevia in subsequent pregnancies. (17) Recent studies by Clark et al (18) and Rose and Chapman (19) have confirmed the significant relationship between placenta praevia and previous CS. Placenta praevia is strongly associated with placenta accreta. The incidence of placenta accrete is as high as 67% in patients with placenta praevia and multiple previous CS. This association of previous CS, placenta praevia and placenta accrete is becoming increasingly acknowledged and is causing concern since it carries a significant risk of caesarean hysterectomy with its incumbent morbidity and mortality (20). Bellala Swetha (21) reported that most of the patients ranged between 20-30 years of age. Median age was 27 years which is approximately similar to our study. Z Parvin et al (22) revealed that the mean age of the patients was 27.25 ± 3.43 years with maximum number of patients having age between 25 to 29 years. Placenta Praevia is the partial or full attachment of placenta in lower uterine segment. The relationship of placenta praevia and number of previous caesarean section was assessed in this cross-sectional type of study. Many studies conducted around the world confirm a 2 to 5 fold increased risk of placenta praevia with previous history of c-section. Ultrasonographic and peroperative findings were found similar in all cases in this study. Incidence of placenta praevia after one caesarean section was 17% which is much higher than that in a study of Clark and colleagues which showed 0.67% (23). It was confirmed that previous caesarean section increases the risk of placenta praevia and the risk is proportional to the number of previous uterine scars. The study conducted by Nielson⁸⁰ showed risk of placenta praevia 1.22% which is much less than our study. The results are also comparable to study of Cande (24) which showed increased number of placenta praevia with increasing number of caesarean deliveries. Usta et al (25) conducted study in 347 placenta praevia cases. One of the factors highly

associated with Placenta praevia was previous CS, where the rate of PP increased with the number of previous caesarean sections. The risk for PP in patients with one CS was 8- fold higher compared with those with an unscarred uterus that is 1.9% with one prior caesarean section and 15.6% with two prior caesarean sections(25). Pathological changes in the myometrium and endometrium of the uterus have been described in the presence of previous cesarean delivery scar. These include polyp formation, lymphocyte infiltration, capillary dilatation, and infiltration of the endometrial tissue that surround the scar by free red blood cells. These observations suggest that the pathological changes in the vicinity of cesarean delivery scars may create suboptimal implantation of the placenta, increased vascular malformations, and increased fragility of vessels that are known risk factors for abruption. Furthermore, rupture of the spiral arteries may lead to the formation of decidual hematomas, which may likely culminate in placental abruption. The same pathological changes of the endometrium and uterine cavity may be responsible for the increased risk of placenta previa among women with prior caesarean delivery. Tayyaba Majeed et al (26) in their study revealed that 67 patients were between G2-G4, 42 between G5-G7, and 5 were more than G7. Tayyaba Majeed et al in their study reported that out of 114 cases of placenta Previa, 18 had history of previous one LSCS, 26 had two LSCS, 29 had three LSCS, and 4 had previous four LSCS. The frequency of placenta Previa found in previously scarred uterus was 5.70%, while it was 10.67% in non scarred uterus. Based on the results of the present study, it can be said that a cesarean birth is an important risk factor for placenta previa and placental abruption in a subsequent pregnancy. The presence of a dose-response pattern in the risk of placenta previa with increasing number of prior caesarean deliveries, coupled with a biologically plausible association, provides compelling evidence in support of the association. Irrespective of the method of delivery in the first pregnancy, a short interpregnancy interval appears to be associated with increased risks of both placenta previa and placental abruption. The effects of these associations on adverse pregnancy outcomes remain unknown.

Conclusion

It can be concluded that in our study population the caesarean section had a significant relationship with placenta praevia and this risk becomes very high with escalation in number of caesarean sections. There is a

strong association between previous LSCS and risk of subsequent development of placenta praevia. The study also reinforces the importance of advocating vaginal delivery as far as possible and reduces the number of LSCS and future placenta praevias. Women with previous LSCS scar are at high risk for developing placenta praevia in subsequent pregnancy. The nature of

placenta previa can be unpredictable and harsh on the mother and baby. So, Careful monitoring of high risk pregnancies is of utmost importance. Avoidance of unnecessary caesarean sections and early week's pregnancy terminations can minimize the Obstetricians' nightmare.

Figure 1: Gray scale and doppler ultrasound showing low lying placenta completely covering the internal os of cervix.

Figure 2: Gray Scale ultrasound showing low lying placenta 2.5 cm from the internal os.

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