Original Article

Association of placenta praevia with repeat cesarean section in Omdurman Maternity Hospital, Sudan 2010- 2012

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ABSTRACT

Background: Several risk factors for placenta praevia exist, including previous cesarean section(C/S). This association has been investigated long time ago, however in this hospital there is no documented evidence. This study was done to assess the risk of placenta praevia based on number of previous cesarean sections.

Methods: A hospital-based study, at Omdurman maternity hospital- OMH during; January 2010-December 2012. Deliveries in OMH were reviewed by trained registrars. Patients diagnosed prenatally or during delivery as placenta praevia were included. All women operated were followed till discharge from hospital.

Results: Total number of deliveries during the study period is 94758.Of them 68415 (72.2%) delivered vaginally and 26343 (27.8%) by C/S.Of the latter 10643 (40.4%) underwent elective and 15700 (59.6%) emergency CS.448 (0.5%) were diagnosed as placenta praevia. Placenta praevia was more common in patients with scarred uterus being found a 250 out of 9853 CS (2.5%). Its frequency increased with the number of uterine scars: one scar; (1.7%), (RR = 1.45, CI= 1.12-1.88), 2-4 scars (2.8%), (RR = 2.32, CI= 1.87-2.87) & five or more scars; (12.7%), (RR = 10.54, CI= 7.34-15.13). Nineteen patients (7.6%) had adherent placenta, (RR = 42.41, CI =5.69-315.83), 68(15.2%) had history of dilatation and curettage (D&C) or evacuation,(RR = 1.5, CI = 1.18-1.94), 37 (8.3%) had previous history of placenta praevia, (RR= 8.30, CI = 6.17- 11.19). Three maternal deaths were encountered (0.7%).

Conclusion: The frequency of placenta praevia in this study increased with increasing number of previous C/S, and was associated with adverse feto-maternal outcome. This study provides a reason to reduce primary C/S and encouraging vaginal birth after C/S (VBAC).

Key words: Placenta praevia. Repeated cesarean section. Sudan.

Cesarean section is indicated when vaginal delivery is not safe for the mother or the baby.

Maternal mortality – MMR and morbidity associated with C/S is twice that associated with vaginal delivery, where 30-60% was reported to be directly related to the procedure itself[1]. It became safe after the introduction of antibiotics, blood banks, anesthesia and improved surgical techniques with significant reduction in mortality and morbidity of both mother and fetus[2].

Placenta praeviaoccurs when the placenta completely or partially occludes the internal cervicalos.It complicates approximately 1 in 200 deliveries. It is one of the leading causes of second and third trimester bleeding, postpartum hemorrhage, increased risks of maternal/neonatal mortality andmorbidity[3]. Several risk factors for placenta praevia exist including multiparity, multiple gestations, advanced maternal age, previous abortion, prior cesarean delivery, myomectomy scarred uterus, manual removal of placenta and smoking[4]. Women with placenta praevia and prior cesarean section are at high risk for placenta accrete due to lasting damage to the myometrium and endometrium[5].

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Association of placenta praevia with prior C/S had been investigated long time ago, however, it remains unclear whether these rates increase with the number of C/S or not [6]. There is no documented evidence in this hospital or in the country regarding this association, which necessitates the need for this study to determine whether prior C/S andtheir number have any associated increased risk for placenta praevia.

Patients and Method:

Ahospital-based study conducted at OMH in the period 2010-2012 to examine the association between previous cesarean delivery and placenta previa. The study was approved by institutional review committee-IRC at OMH. Data were collected by reviewing of all deliveries occurring in OMH during the period from 1st of January 2010 to 31st of December 2012 by trained registrars. Detailed obstetrical andsurgical history was recorded; patients diagnosed as placenta praevia antenatally or during labour were included after an informed consent. Patients' information included; socio-demographic characteristics, history of previous caesarean sections, dilatation and curettage, evacuation, myomectomy, and placenta praevia, outcome, and operative complications were recorded, pre- and postoperative hospital stay was calculated. All women were followed up till discharge. Data entered into computer database, SPSS software version 18 was used for analysis.

Results:

Total number of deliveries in OMH during the study period was 94758. Of them 68415 (72.2%) delivered vaginally, 26343 (27.8%) delivered by C/S. Elective C/Scomprised 10643 (40.4%), while emergency C/S were 15700 (59.6%). A total of 448 (0.5%) were diagnosed to have placenta praevia. Placenta praevia was more common in patients with scarred uterus; 250 (2.5%), than non- scarred uterus 198 (1.2%). It is increased with the number of uterine scars: one scar; (1.7%), 2-4 scars (2.8%), and five or more scars (12.7%). Nineteen patients (7.6%) had adherent placenta, 68 (15.2%) had history of dilatation and curettage (D&C) or evacuation, 37(8.3%) with previous history of placenta praevia.We have encountered three maternal deaths (0.7%).

Table1: Association of placenta praevia with the number of previous C/S:

The scars	Population	No of PP
No scars.	16490(62.6%)	198(01.2%)
One scar	04552(17.3%)	079(01.7%)
2-4 scars	05064(19.2%)	141(02.8%)
≥5 scars	00237(00.9%)	030(12.7%)

One scar: (RR= 1.45, CI= 1.12-1.88).
2-4 scars: (RR =2.32, CI=1.87-2.87).
≥ 5 scars: (RR =10.54, CI =7.34-15.13).

Most of women with placenta praevia 253 (56.5.4%) were multigravidae (2-4 deliveries), grand multiparae, (five or more deliveries) were 164 (36.6%) while primigravidae were 31 (6.9%). Patients of young age 20-30 years were 207 (46.1%), 31-40 years were 183 (40.9%) and more than 40 years were 58 (13.0%). The majority 288 (64.3%) were discharged within 2-3 days, but, 160 (35.7%) stayed for 4-7 days. Male babies were found more common with placenta praevia 253 (56.2%) while female were 197 (43.8%), there were two sets of twins.

Table2: Distribution of patients with placenta previa according to risk factors.

Risk factors	Number
Previous scar	250(55.8%)
D&C or evacuation	068(15.2%)
Previous placenta praevia	037(08.3%)
Grandmultiparity	040(08.9%)
MRPA	019(04.2%)
Perpetual infection	034(07.6%)
Total	448(100.0%)

D&C or evacuation:(RR=1.52, CI=1.18-1.94)
Previous placenta praevia:(RR=8.30,CI=6.17-11.19).

One hundred seventy eight (39.7%) delivered at term by elective C/S, 148 (33.1%) by Emergency C/S of the latter 122 (27.2%) were preterm due to massive bleeding. Excessive bleeding occurred in 279 (62.3%), (table 3) all of them received blood transfusion, 71 (25.4%) received at least two units, 131 (47.0%) received 3-5 units and 77

(27.6%) received more than six units of blood while 8.7% ended in hysterectomy.

Table 3: Distribution of patients with placenta praevia according to maternalcomplications:

Complications	Number
No complications	108(24.15)
Excessive bleeding	279(62.3%)
Hysterectomy	039(08.7%)
Adherent placenta	019(04.2%)
Maternal death	003(00.7%)
Total	448(100.0%)

Adherent placenta: (RR = 42.41, CI =5.69-315.83).

Maternal death: (RR=3.45, CI= 1.10-10.75)

Discussion:

Placenta praevia is a major cause of obstetric haemorrhage in the third trimester. It is associated with significant mortality and morbidity to both mother and the fetus. This study showed that, the overall incidence of placenta praevia among patients seen in OMH is 0.5%; it is high among patients with scared uterus. This is similar to international incidence of 0.4%-0.8% as found in an over view meta-analysis conducted in 2003[5]. Usually rate of placenta praevia is dependent on the population and C/S rate background[6]. The increased frequency of C/S in the hospital 27.8% is due to the big number of complicated patients received from all over the country. However, rate of C/S may be increased due to increased rate of multiparity, multiple pregnancy, preterm labour referred for nursery in this hospital, increased previous scars, litigation; specially in breech presentation, wide use of cardiotocography-CTG in this hospital which is not supported by scalp vein PH or C/S on demand.

Most of patients with placenta praeviain this study were in the age group 31-40 years. This is proved by many other studies, where the patho-physiology of placenta praevia was found to be increased with age due to atherosclerotic changes in the uterus and infarction causing under- perfusion of the placenta. This pathology also explains increased incidence of placenta praevia with increased parity[7].Many studies conducted around the world confirm a 2 -5 fold increase risk of placenta praevia with previous history of C/S[7]. This study confirms the association of high frequency of placenta praevia with previous C/S and is consistent with the mentioned previous studies. The high frequency of placenta praevia with previous C/S can be explained by the fact that scars of C/S give a more feasible site for the placement of placenta. We have also found that risk of placenta praevia increases with increasing number of C/S. This is consistent with previous studies that showed the risk of placenta praevia, after 1, 2 and 3 C/S increase to 2.2, 4.1, and 24 times respectively[8]. This is due to the damage and scarring of the uterus during caesarean section which predisposes to low implantation of the placenta. However, the damage during lower segment caesarean section is not that much and may not be the only explanation. The other explanation is the attraction and adherence of the placenta to the caesarean section scar[9 - 12]. The scarring of the uterus may also retard the physiological development of the lower uterine segment and this interferes with the placental migration to the upper segment as the pregnancies advance. There is increasing risk of abnormal adherence of placenta in women with placenta praevia and previous C/S, where placenta accreta occurs for 1 out of 2500 births, or it may increase to 1 in 10 if associated with placenta praevia[13,14]. This study also showed an increased risk of abnormal adherence of placenta in women with placenta praevia.

History of evacuation or dilation and curettage of the uterus in this study is associated with increased risk of placenta praevia, 15.2%, where evacuation was associated with scarring of the uterus.This is similar to other studies[15, 16]. This leads to under perfusion of the uterus and predisposes to placenta praevia. Scarring of the uterus is also associated with placenta accreta[15].The history of evacuation of the uterus may act in the same way as previous scar on the uterus[9, 15]. Recently manual removal of placenta has been reported to be a risk factor for placenta praevia; acting through scarring of uterus[15].

This study showed that 62.3%% of women with placenta praevia had severe bleeding; all of them needed blood transfusionbut8.7% ended in hysterectomy.Interestingly; in this study; placenta praevia is more associated with male babies, which is in accordance with previous studies but no reason so far has been found yet[17, 18].

Conclusion:

To our best of knowledge this is the first report, from this national hospital, on the frequency and etiological factors of placenta praevia. There is a strong association between having a previous cesarean delivery, uterine evacuation, and the subsequent development of placenta praevia. The risk increases with number of previouscesarean deliveries and withall other factors that compromise the blood supply of uterus either by changes in uterine vasculature as seen in older women, or by uterine scarring as seen among women with previous cesarean delivery and abortions.

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