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REPEATED CESAREAN SECTIONS: A RISK FACTOR FOR RISING RATE OF PLACENTA PREVIA

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ABSTRACT

OBJECTIVE: *To assess the relationship between repeated cesarean sections and the subsequent development of placenta previa and morbidly adherent placenta previa.*
STUDY DESIGN: *Cross sectional observational study.*
STUDY PERIOD: *One year from January 2007 to December 2007.*
SETTING: *The study was conducted in the Department of Obstetrics & Gynaecology, Peoples Medical College & Hospital Nawabshah.*
PATIENTS & METHODS: *Clinical study of multipara patients with repeated cesarean sections. Data was collected on maternal characteristics like age, parity, number of repeated cesarean sections presenting with placenta previa, symptomatic with of history of APH or asymptomatic, grade and morbidly adherent placenta previa and morbidity associated with it.*
RESULTS: *The prevalence of placenta previa with repeated cesarean sections was found in 58(6.89%) patients. Majority of patients 30 (51.72 %) belonged to age 31-34 years, 20 (34.48%) patients were multipara, 34 (58.62%) patients with previous two cesarean sections, 50 (86.20%) patients were symptomatic having history of ante partum hemorrhage and presented at 31 to 36 weeks of gestation 32 (55.17%). Majority of patients had major degree of placenta previa 31 (53.44%) while morbidly adherent placenta previa were found in 7 (12.72%) patients amongst them 1 (14.28%) had placenta previa percreta. Postpartum hemorrhage developed in 13 (23.63%) patients amongst them 7 (53.84%) underwent cesarean hysterectomy.*
CONCLUSION: *The present study shows that repeated cesarean sections, advancing maternal age and high parity are risk factors for subsequent development of placenta previa.*

KEYWORD: Placenta previa - Cesarean Section - Antepartum Hemorrhage.

INTRODUCTION

The frequency of cesarean section is increasing worldwide with a parallel rise in maternal morbidity and mortality. The gradual rise in the cesarean section rate over the past four decades and the recent trend favoring repeat cesarean section is resulting in more women undergoing multiple cesarean sections.

The higher incidence of cesarean delivery today is strongly associated with the greater frequency of placenta previa, which has increased from 1/10000 pregnancies in 1950 to 1/1000 pregnancies in 1985 to 1/200 frequencies nowadays[1]. The incidence of morbidly adherent placenta has increased dramatically over the last three decades in concerned with the increase in cesarean delivery rate[2].

Placenta previa is a serious complication of pregnancy and is one of the leading causes of vaginal bleeding in the second and third trimester, postpartum hemorrhage, increased risk of maternal and neonatal morbidity and mortality[3,4] .The causes are unclear, the major theories focus on endometrial / myometrial damage in the corpus or defective genetics or placental mechanism[5]. Several risk factors for placenta previa exists along with previous cesarean sections including advanced maternal age, high parity, smoking, drug abuse (Cocaine), previous abortion, multiple gestation, previous placenta previa, and other operations resulting in uterine scarring[6,7].

The risk of morbidily adherent placenta, a life threatening condition increases with each

previous cesarean birth[5]. Nulliparous woman with a placenta previa have a 1 – 3 % risk , in contrast those with 2 or more previous deliveries who have a placenta previa or low lying anterior placenta, the risk increases to 30 – 51 %[7]. This markedly increases risk for massive hemorrhage at the time of attempted placental removal and it is the most common indication for emergency intra/ postpartum hysterectomy. The maternal mortality risk may reach 7 % and the extensive surgically related morbidities include massive transfusion, infection, urologic injuries and fistula formation[8].

This study was conducted to evaluate the relationship between repeated cesarean sections and the subsequent development of placenta previa and morbidly adherent placenta previa and to examine the effect of age, parity and other risk factors for placenta previa on this association.

PATIENTS & METHODS

This cross sectional, observational study was conducted in the Department of Obstetrics & Gynaecology at Peoples Medical College Hospital Nawabshah from 1st Jan 2007 to 31st Dec 2007.

This study includes all pregnant women with repeated cesarean sections while nullipara and patients with placenta previa without prior surgery were excluded.

The study group underwent thorough history, examination and baseline investigations. Data was collected regarding maternal age, parity, booking status, gestational age, history of ante partum hemorrhage, number of previous cesarean deliveries and other risk factors for placenta previa like smoking, abortion, multiple pregnancy, fetal anomalies and other uterine surgeries. All grades of placenta previa were included.

In symptomatic patients with ante partum hemorrhage diagnosis was made on clinical grounds and confirmed on ultrasound and at surgery. In some cases where ultrasound reports were not available or clinical findings were inconclusive, so examination under anesthesia was performed in those cases for ante partum diagnosis of placenta previa which were confirmed on surgery. Emergency cesarean sections were performed in patients with moderate to severe bleeding regardless of gestational age while patients with mild bleeding kept under observation and elective cesarean sections at completed thirty seven gestational weeks were performed in those and in asymptomatic patients. A clinical suspicion of morbidly adherent placenta was made in patients with anterior placenta previa while diagnosed at surgery when the placenta found to be adherent to the myometrium and difficult

TABLE-I:
CHARACTERISTICS OF PATIENTS

AGE DISTRIBUTION	No: of Pts (58)	Percentage
16-19 Years	03	5.17%
20 – 25 Years	06	10.34 %
26 – 30 Years	09	15.51 %
31 – 35 Years	10	17.25 %
> 35 Years	30	51.73%
PARITY DISTRIBUTION		
Primipara	08	13.79 %
2	12	20.69 %
3	12	20.69 %
4	06	10.34 %
5	20	34.49 %
OTHER RISK FACTORS		
Abortions	04	6.89 %
Dilatation and Curettage	02	3.45 %
Recurrent Placenta Previa	01	1.72 %
REPEATED CESAREAN SECTIONS		
1	16	27.59 %
2	34	58.62 %
3	08	13.79 %
Total	58	100 %

TABLE-II:
CLINICAL PRESENTATION OF PATIENTS

GESTATIONAL AGE	No: of Pts(58)	Percentage
24 – 30 Weeks	22	37.93 %
31 – 36 Weeks	26	44.82 %
³ 37 Weeks	10	17.25 %
SYMPTOMATOLOGY		
Symptomatic (APH)	50	86.20 %
Asymptomatic	08	13.80 %
GRADES OF PLACENTA PREVIA		
Minor	18	31.03 %
Major	40	68.97 %
Morbidly Adherent Placenta = 07 (12.07 %)		

TABLE-III:
MATERNAL MORBIDITY AND MORTALITY

Causes	No: of Pts	Percentage
Postpartum Hemorrhage	13	23.64 %
Cesarean Hysterectomy	07	12.07 %
Febrile Morbidity	08	13.79 %
Wound Infection	02	03.45 %
Paralytic illus	02	03.45 %
Bladder Trauma	01	01.72 %
Maternal Mortality	01	01.72 %

to remove or hemorrhage occurred after attempts at placental delivery while confirmed at histopathology in hysterectomies specimens. Cesarean hysterectomy was performed as the primary treatment for most women with morbidly adherent placenta previa. The outcome measures included were the postpartum hemorrhage, maternal morbidity and mortality.

RESULTS

Peoples Medical College and Hospital Nawabshah has a single unit of Obstetrics & Gynecology which is providing tertiary care to all pregnant patients of surrounding areas. During the study period, the total numbers of deliveries conducted were 3191; cesarean sections were performed in 1247 patients. 400 (30%) patients were admitted with a history of repeated cesarean sections, amongst them 58 patients had placenta previa giving a frequency of 6.89 %. Regarding baseline characteristics advanced maternal age 35 years and above (51.73 %), grand multiparity 20 (34.49 %), previous abortions 04 (6.89 %), dilatation & curretage 02 (3.45%) and recurrent placenta previa 01 (1.72 %) were found to be associated with progressively elevated risk of placenta previa. However a history of maternal smoking, multiple pregnancies could not be found. Prevalence of placenta previa was found higher in patients with the history of previous two cesarean sections 34 (58.62 %) while no patient in this study was found to have previous four cesarean sections (Table-I). Majority of the patients were symptomatic 50 (86.20 %) having history of ante partum hemorrhage between 31 – 36 weeks gestation 26 (44.82 %). The symptoms found were bleeding, pain and shock. Maternal mortality was controlled by performing immediate cesarean section in patients having moderate to severe bleeding while in asymptomatic patients emergency cesarean section was performed with an indication of fetal distress in 02 patients, scar tenderness in 02, while in 04 patients an elective cesarean section was performed at 37 completed weeks. Major degree of placenta previa was present in 40 (68.97 %) and morbidly adherent placenta previa in 07 (12.07%) patients, amongst them one patient had placenta previa percreta (Table-II). She was multipara patient of > 35years with previous three cesarean sections and had anteriorly placed major degree placenta previa. Considering the complications, 13 (23.64 %) patients developed postpartum hemorrhage, amongst them 02 patients responded to medical treatment, uterine packing was done in 04 patients and cesarean hysterectomy performed in 07 (53.84 %) patients. Out of these 07 patients, 06 (85.71 %) patients had placenta previa accreta and 01 (14.29 %) had placenta previa percreta. Majority of patients required blood transfusion. In operated patients febrile morbidity occurred in 13.79 %, wound infection in 3.44 %, paralytic ileus in 3.44 %, bladder trauma in 1.72 % and 01 (1.72 %) maternal death occurred due to DIC followed by massive PPH in patient with placenta previa percreta (Table-III).

DISCUSSION

Increased prevalence of cesarean section in our setup is an alarming sign and has been associated with increased healthcare cost and maternal morbidity and mortality. The increase in maternal morbidity caused by repeated cesarean delivery is not limited to immediate operative complications but extends throughout a women's reproductive life.

In the present study, 30% patients found to have repeated cesarean sections which were quiet high. According to CDC, 29% of births in USA are by cesarean section and repeat cesareans account for approximately one third of these. According to WHO, a rate 10-15 % may be more desirable[9].Many authors have commented on the relationship of placenta previa and previous cesarean delivery[6,10] which was also found in the present study. The prevalence of placenta previa in our study was 6.89 %, nearly consistent with the study by Nasreen F[11] i.e. 5.3 % with previous cesarean section. While study by To WWK and Leung WC[12]shows prevalence of 1.31 % compared to those with unscarred uterus 0.75 %.

In the present study not only the relationship between one cesarean delivery and subsequent occurrence of placenta previa were examined but also the contribution of each additional delivery to the development of placenta previa. In addition, independent nature of this relationship was determined by adjusting for multiple known risk factors for placenta previa including age, parity, abortion, smoking and other uterine surgeries. The large number of patients in this study with placenta previa had previous 02 cesarean sections (53.44 %) while (27.58 %) with previous 01 Cesarean section and (13.79 %) had history of previous 03 Cesarean sections. This was consistent with the study by Ashrof R, Bashir A and Noor R[13].

In this study, frequency of placenta previa was found high in women aged 35 years and above (51.72 %) consistent with a multivariant study by Zhang J and Savitz D[6] that showed that the woman aged 34 years or older had 2 – 3 times more placenta previa in relation to woman less than 20 years old. An other study by Lira J and Naye RL found that woman between 35 – 39 years were at greater risk, perhaps it was related to the progressive vascular endothelial damage that occurs with aging[1,14].

Our study found 03 times more multipara (34.49%) as compared with primipara (10.34%), which shows that the association with cesarean delivery and placenta previa grows stronger as parity increases even the number of cesarean sections stays the same which is consistent with the study done by Melissa Gillium et al[15], Mehboob R and Ahmed N[31]. But this was not found in the study by Clarck SL[17].

Majority of patients were symptomatic (86.96 %) having history of antepartum hemorrhage between 31 – 36 weeks of gestation (52 %) which is correlated with the study by Ashrof R[13], Naye ER[18], Sher Zaman B and Zubair A[19]. Present study shows that abortions (6.89 %), diltation & curettage(3.44 %) and recurrent placenta previa(1.72 %) are risk factors for subsequent development of placenta previa along with cesarean sections. This was also found in the studies by Naeye ER[18], NaeY RL [20], Kelly JV& Iffy I[21], Hibbard BM[22], Sher Zaman B and Zubair A[19]. No patient in the present study was found to have history of smoking, multiple pregnancy and fetal anomalies. The large number of patients were in this study had major degree of placenta previa (53.44 %) having history of painless vaginal bleeding in second and third trimester of pregnancy which were more common in neglected, unbooked pregnancies and increased parity with advancing maternal age. This was almost consistent with the study done by Mehboob R[16].

The incidence of placenta previa and morbidly adherent placenta correlates highly with the number of prior cesarean sections that a woman has had. The study by To WWK and Leung WC were also had the same findings[12]. Pathological changes in the myometrium and endometrium of the uterus have described in the presence of prior cesarean delivery scar. These include polyp formation, lymphocyte infiltration, capillary dilatation and infiltration of endometrial tissue that surrounds the scar by free RBCs. These pathological changes in the vicinity of cesarean delivery scar may create sub optimal implantation of placenta, increase vascular malformation and increased fragility of vessels[23].

Morbidly adherent placenta was also found in 07 (12.72 %) patients in the present study, amongst them, 01 (14.28 %) had placenta

percreta which had invaded and perforated the uterine wall. These were the patients having history of previous 02 and 03 cesarean sections with anterior or central placenta previa. The study by Miller DA, Chollett JA and Godwin TM[7] found risk of placenta accreta 10 % and almost 39 % in women with 02 or more cesarean deliveries and an anterior and central placenta. Placenta percreta are rare catastrophe associated with high maternal morbidity and mortality can be a very challenging situation for the obstetricians. Frequency of the lesion was found in 1 in 2058 deliveries in a study by Liaquat FN, Shuja S and Shoaib T[24].

Regarding maternal morbidity and mortality, 13 (23.63 %) patients developed PPH. From the maternal prospective, the complications are mostly related to the bleeding and its consequences. 06 out of 13 patients had morbidly adherent placenta previa which is growing cause of PPH and increasing cause of emergency obstetrical hysterectomy. In the present study, 07 (53.84 %) patients underwent cesarean hysterectomy which was performed in >50% for placenta previa alone in the study by Bider D, Dulitzky M, Goldenberg M et al[25] and in 68 % of patients by Perveen S[26] with morbidly adherent placenta previa. While study by Armstrong CA, Harding S found >90 % likelihood of undergoing hysterectomy with a notable increase in maternal morbidity and mortality[27].

During the study period, 46 maternal deaths occurred and placenta previa accounts for 01 (2.17 %) maternal death. Maternal mortality with placenta percreta may reach up to 10 % even with prenatal diagnosis and presumably with preoperative preparation for excessive bleeding[28]. Despite these risks, maternal mortality rate from placenta previa in industrialized world has fallen markedly around 0.03 % to 0.5 %[29]. From this study, it appears that implantation of placenta over the internal os is not just a chance happening, but related with progressive endometrial damage secondary to multiparity, advance maternal age and increased number of repeated cesarean sections.

CONCLUSION

High prevalence of illiteracy and poverty in our female population of reproductive age, early marriages, high parity and increased maternal ages along with flaws in healthcare system, poor referral chain and departmental policies regarding dealing with commonest indications of cesarean sections have been identified as major causes of ever increasing cesarean section rate. Cesarean section can be reduced by appropriate clinical assessment and judgment at the time of performing primary cesarean section, trial of vaginal delivery after previous cesarean section, limiting the family to three by age of 30 and later use of effective contraceptive methods may help to keep the subsequent incidence of placenta previa at a reasonably low rate.

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