

## Feto-Maternal Outcome in Placenta Previa in Scarred Uterus Vs Non Scarred Uterus

Dr.Purvi M Parikh<sup>1</sup>, Dr.Shailesh Makwana<sup>2</sup>, Dr. Sapana Shah<sup>3</sup>,  
Dr. Vivek Vithalani<sup>4</sup>

1 Assistant Professor

2 Third Year Resident

3 Professor and Head of unit

4 First Year Resident

Department of Obstetrics and Gynecology, V.S. Hospital, Ahmedabad

### Abstract:

**Objective(S):** To compare the incidence of placenta previa, associated factors, complications, placental position, mode of delivery and fetal and maternal outcome in non-scarred (Group A) and scarred uterus (Group B) over 24 months of a hospital based study.

**Materials and methods:** In a prospective study, 112 cases of pregnancies beyond 28 weeks of gestation, complicated by placenta previa were identified. These cases were divided into two groups, non-scarred (Group A, n=33) and scarred uterus (Group B, n=79). Out of total 13532 deliveries at the hospital over study period, 6898 women had history of previous 1 or more LSCS or 2 or more curettage and total of 6634 women had nonscarred uterus.

**Results:** Present study confirmed overall incidence of 0.82% while incidence in non scarred uterus (group A) was 0.49% and incidence in scarred uterus was 1.14%. Majority of Group B (scarred uterus) patients i.e. 60.7% had anterior placenta previa while majority (63.63%) of patients with non-scarred uterus had posterior placenta (p value 0.0183, HS), which supports the theory of abnormal vascularization, and out of this 10.1% had morbidly adherent placenta i.e. placenta accreta, increta and/or percreta. Maternal morbidity in terms of PPH was observed in 79.7% patients in Group B as compared with 57.5% patients in Group A. Fetal morbidity and mortality is also higher in Group B patients (Table 6). There is a significantly higher incidence of neonatal death in Group B in 17.7% patients as compared to 6.06% patients in Group A.

**Conclusion:** An increase in incidence of prior cesarean section and advanced maternal age probably contributes to a rise in the number of pregnancies complicated with placenta previa and its association with adverse maternal and perinatal outcome.

**Keywords:** Feto-maternal outcome, Placenta previa, Scarred uterus

### I. Introduction

Placenta, the life support system of foetus, when implants in lower uterine segment affects fetomaternal outcome adversely. Placenta previa when diagnosed in 2<sup>nd</sup> or 3<sup>rd</sup> trimester is associated with series of complications. Placenta previa is a major cause of vaginal bleeding in late 2<sup>nd</sup> and 3<sup>rd</sup> trimester. The incidence of placenta previa is 0.3%.<sup>26</sup>

Placenta previa is classified according to its relation with internal os<sup>26</sup>

1. Placenta previa : the internal os is covered partially or completely by placenta
2. Low lying placenta : implantation in the lower uterine segment is such that the placental edge does not reach the internal os and remains outside a 2 cm wide perimeter around the os.

The classification in some cases depend on cervical dilatation at the time of assessment.

Etiology of placenta previa is difficult to identify, but hypothesis suggest that abnormal vascularisation of damaged endometrium by previous trauma, infection or surgery or atrophy can lead to non migration of lower placenta which presents as placenta previa in late 2<sup>nd</sup> or 3<sup>rd</sup> trimester.

Diagnosis of placenta previa and abnormal penetration (placenta accreta, increta and percreta) was a very big challenge earlier. But now a days diagnosis can be achieved by transabdominal and transvaginal ultrasound (grey scale and color Doppler). MRI (Magnetic resonance imaging) can also aid in the diagnosis.<sup>27</sup>

Several predisposing factors are identified like multiparity, multifetal gestation, advancing maternal age, previous cesarean section (s), trauma, dilatation and curratege etc. Even history of placenta previa in previous pregnancy also falls in high risk category. Likelihood of placenta previa with placenta accreta syndrome is closely linked to prior uterine surgery. The risk of adherent placenta increases to 11%, 40%, and 61% with previous one, two or three cesarean section.<sup>1</sup>

Management of placenta previa requires a team approach with highly competent obstetrician, senior anaesthetist, neonatologist and good OT set up and post op care unit. Availability of blood and components are crucial for excellent outcome.

Women with placenta previa are at increased risk of spontaneous abortion, premature delivery, cesarean delivery, multiple transfusions and related complications, and obstetric hysterectomy. Overall morbidity is high in late presentation and unidentified cases. Even the fetus(es) is at increased risk of prematurity, low birth weight and fetal growth restriction because of antepartum hemorrhage and early termination in such cases. Antepartum diagnosis and assessment of degree of invasion into myometrium may help us in planning of management in form of conservative management or obstetric hysterectomy avoiding placental separation in case of extensive myometrial or parametrial invasion.<sup>25</sup> The incidence of this situation is on rise so we need to identify women with high risk factors during antepartum period for early diagnosis and prompt management to reduce maternal and fetal morbidity and mortality.

## **II. Materials And Methods**

This is a prospective study conducted by Dept of Obstetrics and Gynecology at our institute from January 2013 to December 2014.

A total of 112 patients were identified with diagnosis of placenta previa beyond 28 weeks of pregnancy. The diagnosis was confirmed by Transabdominal and transvaginal Ultrasound (grey scale and color Doppler) as and when required. Ultrasound was required to confirm the placental position, fetal lie, fetal well being and other parameters. The diagnosis of morbidly adherent placenta was confirmed in 6 cases but in 2 cases it was identified per operatively. These cases are also confirmed by histopathological examination where cesarean hysterectomies were done. The patients were divided in two groups : Group A included patients with no previous history of any uterine surgery or history of 1 curettage, while Group B included patients with placenta previa who had history of 1 or more previous LSCS, 2 or more early or mid trimester abortion followed by check curettage, previous history of myomectomy or uterine rupture repair done. Both groups were compared for parameters like maternal age, parity, frequency of placenta previa and their types, fetal outcome, operative procedures, maternal morbidity and mortality.

Chi-square test was used to compare the data and their significance.

## **III. Results**

Total 13532 deliveries were done at our institute during the study period, out of which total of 112 cases of placenta previa were identified and studied for further parameters.

Out of total 13532 deliveries 6898 women had history of previous 1 or more LSCS or 2 or more curettage and total of 6634 women had non scarred uterus. Present study confirmed overall incidence of 0.82% while incidence in non scarred uterus(group A) was 0.49% and incidence in scarred uterus was 1.14%.

Majority of patients in Group A(non scarred uterus) were between 18-25 years while in Group B were in age group of 26-30 years which also comply that in Group B the parity of patients were also higher.(Table1)

In group A 42.4% and in Group B 56.96% women were booked antenatally while rest of the patients were appeared to hospital in emergency (Table 2). Diagnosis of placenta previa was confirmed in 72.72% women in group A and 78.48% women in Group B during antenatal period before onset of labour. While rest of the women present with hemorrhage and USG was done to rule out the cause and diagnosis was done after the episode of antepartum hemorrhage(Table 2).

Majority of Group B (scarred uterus) patients i.e. 60.7% had anterior placenta previa which supports the theory of abnormal vascularization, and out of this 10.1% had morbidly adherent placenta i.e. placenta accreta, increta and/or percreta(Table3).

Maternal morbidity in terms of PPH, and requirement of skilled surgical procedures like bilateral hypogastric artery ligation, compression suture technique cesarean hysterectomy, and bladder injury repair were significantly higher ( p value ) in Group B patients compared to Group A patients (Table 4).

No of blood and component transfusions required are also higher in placenta previa with scarred uterus(Table 5). Fetal morbidity and mortality is also higher in Group B patients (Table 6).

## **IV. Discussion**

Incidence of placenta previa and morbidly adherent placenta is on rise.<sup>10</sup> Decidual formation may be defective over a previous CS scar and this can affect any trauma of myometrium such as curettage<sup>3</sup>. Present study concluded the overall incidence of placenta previa at our institute is 0.82%, while the incidence in scarred uterus is 1.14% and in non scarred patients it is 0.49%. Silver and associates reported incidence 1.3% with 1 previous LSCS.<sup>21</sup> Mathuriya et al study also concluded similar results.<sup>20</sup>

Incidence of placenta previa increases with increasing age and parity.<sup>4</sup> Getahun D et al study concluded that there is a dose response pattern in the risk of previa with increasing no of prior cesarean section and a short pregnancy interval is also associated with increased risk.<sup>12</sup>

Various literature concluded that increasing parity increases the risk of placenta previa.<sup>20,22</sup> Present study shows that majority of patients (Group A 42% and Group B 64%) of patients were multiparous. Taylor et al study concluded that previous 1 or more spontaneous or induced abortion are 30% more likely to have placenta previa in subsequent pregnancies.<sup>24</sup> Present study also support the findings. Eniola AO et al also found such results.<sup>9</sup>

Anterior placenta poses more risk for complications like PPH and its surgical treatment like bilateral uterine artery ligation, bilateral hypogastric artery ligation, compression sutures, cesarean hysterectomy and bladder repair.<sup>2,4,6,11,18</sup> These complications are significantly higher in patients with prior history of scar over uterus. In present study there was 10% incidence of morbidly adherent placenta previa(i.e. accreta, increta, percreta) among Group B patients, which was significant compared to non scarred(Group A) patients, which was consistent with Clark et al study.<sup>7</sup> According to ACOG, incidence of morbidly adherent placenta is 1:2500 per delivery<sup>1</sup> Adherent placenta in association with placenta previa and previous cesarean section has clinical significance because of rising caesarean section rates all over world. Its prevalence is between 1:2500 and 1:110 according to recent reports<sup>1,21</sup>. Management of morbidly adherent placenta previa is challenging and requires a team approach and there are very high chances of cesarean hysterectomy in cases of morbidly adherent placenta previa with history of previous 1 or more LSCS.<sup>10,11,14</sup> Wong et al at Parkland hospital also found that placenta previa with morbidly adherent placenta is the most frequent indication for peripartum hysterectomy.<sup>28</sup> Studies also suggest that women with accreta syndromes have an increased risk of recurrent uterine rupture, previa and hysterectomy.<sup>14</sup>

<sup>16</sup> Requirement of blood and component transfusions is also significantly higher in patients with morbidly adherent placenta previa.<sup>19</sup> Fetal complications in terms of prematurity, stillbirth and neonatal death are also higher in anterior placenta previa with scarred group. This is because of complications arising at early gestational age and associated higher maternal morbidity.<sup>8,15</sup>

## V. Conclusion

Present study concludes that placenta previa when combines with history of uterine injury or scar surely affects the outcome for both mother and fetus.

Whenever anterior placenta previa is identified especially in cases of previously scarred uterus,USG with colour Doppler helps to diagnose morbidly adherent placenta and be ready to prevent and manage its complications. Cases of previous 1 or more LSCS with placenta previa and morbidly adherent placenta should be managed at tertiary care centre with availability of expert high risk obstetrician, obstetric intensive care unit, anesthetists, well equipped NICU, and availability of blood and components.

Finally efforts should be made to reduce the caesarean section rate as it poses more risk of placenta previa, morbidly adherent placenta and its related complications in subsequent gestations.

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Table 1 Maternal age and parity in both groups

	Group A Non-Scarred uterus	Group B Scarred Uterus	P Value
	No(%)	No(%)	
<b>Age in years</b>			
18-25	18(54.54)	27(34.17)	0.0456(significant)
26-30	11(33.33)	46(58.22)	
31- 40	4(12.12)	5(6.32)	
<b>Parity</b>			
0	11(33.33)	0(0)	<.0001(highly significant)
1	08(24.24)	28(35.44)	
>=2	14(42.42)	51(64.55)	

Table 2 Status of booking and confirmed diagnosis

	Group A Non Scarred Uterus	Group B Scarred Uterus	P Value
	No(%)	No (%)	
<b>Booking status</b>			
<b>Emergency</b>	19 (57.57)	34 (43.03)	0.16(not significant)
<b>Booked</b>	14 (42.42)	45 (56.96)	
<b>Confirmed diagnosis by USG</b>			
<b>Yes</b>	24 (72.72)	62 (78.48)	0.51(not significant)
<b>No</b>	09 (27.27)	17 (21.51)	

Table 3 Type and grading of placenta

	Group A Non Scarred Uterus	Group B Scarred Uterus	P Value
	No(%)	No(%)	
<b>Type</b>			
Anterior	12(36.36)	48(60.7)	0.0183( strong association)
Posterior	21(63.63)	31(39.24)	
<b>Grading</b>			
Placenta previa	09(27.2)	32(40.5)	0.185(not significant)
Low lying placenta	24(72.7)	47(59.5)	
<b>Invasive Placenta</b> Accreta,Increta,percreta	0	8(10.1)	

Table 4 Maternal complications and treatment required

	Group A Non Scarred Uterus	Group B Scarred Uterus	Z Value
	No(%)	No(%)	
Post partum hemorrhage	19(57.5)	63(79.7)	2.337(significant)
Cesarean section with bilateral uterine artery ligation	12(36.3)	51(64.55)	2.82(significant)

Uterine compression sutures reqd	2(6.06)	4(5.06)	0.181(not significant)
Intra uterine packing	4(12.12)	9(11.39)	0.127(not significant)
Ceaserean hysterectomy	1(3.03)	11(13.9)	1.98(significant)
With Hypogastric artery ligation	1(3.03)	5(6.32)	0.73(not significant)
Bladder injury and repair	0	04(5.06)	
Maternal mortality	0	00	

Table 5 No. of blood transfusions required

No of transfusions PCV and other components	Group A Non Scarred Uterus No(%)	Group B Scarred Uterus No(%)	P Value
1-4 units	24(72.7)	58(73.4)	0.1156(not significant)
>5 units	3(9.09)	20(25.31%)	

Table 6 Fetal outcome

	Group A Non Scarred Uterus No(%)	Group B Scarred Uterus No(%)	Z Value
Fetal malpresentation	08(24.2)	21(26.6)	0.27(NS)
Prematurity	07(21.2)	26(32.9)	1.31(NS)
Alive	29(87.8)	68(86.07)	0.285(NS)
Still birth	04(12.1)	11(13.9)	0.286(NS)
Neonatal death	02(6.06)	14(17.7)	1.857(S)

Fig 1 Moidly adherent placenta with previa (H/O previous two cesarean sections)

