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Study on Association of Placenta Previa with Previous Cesarean Section Pregnancy

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Abstract:
Background*: Placenta previa is an obstetric complication in which the placenta is extending into lower uterine segment up to or covering the cervical os. Caesarean section is one of the important risk factor for placenta previa. It is a leading cause of APH and it affects approximately 0.5% of all labours.With the recent rise in the caesarean delivery rate, it is of great value to study the placental location among prior caesarean delivery patients. This study would serve as a hospital based study in assessing the magnitude of placental location abnormalities in previous caesarean patients.*
Methodology: *400 subjects with history of previouscaesarean Section were selected for study purpose. 400 subjects withno previous history of caesarean section were selected for control purpose. Clinical examination and USG was done at term and subjects are followed till delivery. Study was conducted in Government Maternity Hospital, Tirupati.*
Results*: 24 cases of placenta previa were found in the study group and incidence is 6%compared to incidence of only 1.75% (7cases) in control group (p< 0.05). Adherent placenta is also increased in study group (4cases) compared to control group (1 case).*
Keywords**:** *Placenta Previa, Adherent Placenta, Caesarean section.*

I. Introduction

Ante partum haemorrhage is one of the most challenging obstetric complications encountered in pregnant women. The major causes of ante partum haemorrhage are placenta previa and abruptioplacenta. Placenta previa complicates approximately1 in 200 deliveries [1, 2] and is one of the leading causes of vaginal bleeding in the second and third trimesters. The overall incidence of placenta previa is 0.2-0.5% inwestern studies.[3, 4] It is associated with increased risks of maternal and infant morbidity and mortality.[5] Placental location abnormalities may be associated with maternal and foetal complications, if left undiagnosed during pregnancy. It may be more in Indian population. There is an increase in the frequency of placental location abnormalities among women with prior caesarean deliveries.[6]

Thus, given the increased incidence of placenta previa per se following prior caesarean delivery, must be acknowledged as a real concern by obstetricians, given the rising caesarean section delivery rates that we have been experiencing over the last few decades, especially as the incidence of hysterectomy in such cases is very high and that there is a notable increase in maternal morbidity and mortality.[7]

This markedly increases risk for massive haemorrhage at the time of attempted placental removal and it is the most common indication for emergency hysterectomy. The maternal mortality risk may reach 7% and surgically morbidities include massive transfusion, infection, urologic injuries and fistula formation.[8]

The primary objective of this study is to know about the association of placenta previawith previous caesarean section pregnancy so that early recognition of placental location abnormalities and timely intervention can have a significant impact on the maternal and perinatal outcome.

II. Materials And Methods

The present study was conducted in Department of obstetrics and gynaecology, Government Maternity Hospital, Tirupatiand included 800 subjects between September 2014 to September 2015. Ethical approval for this study was obtained from Medical Ethics Committee at Sri Venkateswara Medical College, Tirupati. Subjects excluded from the study were those who had previous classical caesarean section, who had history of any other previous surgery of uterus, patients having history of abortion or Medical Termination of Pregnancy (MTP) done, patients with any associated medical disorder and all primigravida patients. Written and informed consent was obtained from the patients prior to the study. 400 patients with history of previous Lower Segment Caesarean Section (LCS) were selected for study purpose. 400 subjects with no previous history of caesarean section were selected for control purpose. Clinical examination and Ultrasonography (USG) was done at term to detect abnormal placentation and they are followed till delivery.

Abnormal placentation would be defined as placenta praevia, low lying placenta or any placental implantation in which there is abnormally firm adherence of placenta to the uterine wall characterized by loss of

normal hypoechoicretroplacentalmyometrial zone. It would be associated with difficult manual, piecemeal removal of placenta despite active management of third stage of labour. Placenta praevia would be defined as a placenta that on ultrasound was located over or very near the internal os, < or =2 cm from the internal os. Low lying placenta would be defined as placenta in the lower uterine segment i.e>2cm and <6cm from the internal os. After data collection appropriate statistical analysis was done using SPSS software.

III. Results

Total 800 subjects (400 cases and 400 controls) were recruited in the study. Most of the patients ranged between 26-30 years of age. Median age was 27 years.

TABLE 1: Age distribution among previous vaginal delivery and previous caesarean delivery

Age	Group	
	Previous vaginal delivery (n=400)	Previous caesarean section (n=400)
<20	12 (3%)	8 (2%)
20-25	124 (31%)	106 (26.5%)
26-30	173 (43.25%)	182 (44.5%)
>30	91 (22.75%)	104 (26%)

Chi square = 3.30; df = 3; p=0.347; NS

Twenty four cases of placenta previa were found in the study group and incidence of placenta previa was calculated to be 6% in this group compared to incidence of only 1.75% i.e. 7 cases in control group (p< 0.05) as seen in table 2.

TABLE 2: Incidence of Placenta Previa in patients with and without previous cesarean section

Previous cesarean section	No. of patients	No. of placenta previa	Incidence
Yes	400	7	1.75%
No	400	24	6%

Chi square= 9.52; df =1; p=0.002; S

Study shows that most common type of placenta previa seen in the study group was type I with 13 cases, 1 patient had type III placenta previa and 5 patients each of type II and IV while in control group there were 7 cases, one each of type II and III, 3 cases of type I and 2 cases of type IV placenta previa are seen.

TABLE3: Types of Placenta Previa in Patients with and withoutprevious caesarean section

Type ofPlacentaPrevia	No. of Patients with	
	Normal VaginalDelivery	Previous caesarean section
Type I	3	13
Type II	1	5
Type III	1	1
Type IV	2	5
Total	7	24

Our study also shows that patients with one caesarean section in past has increased risk of placenta previa as compared to those without a previous caesarean section and the patients with 2 caesarean sections had further increased risk when compared to patients with only one caesarean section in past indicating that chances of placenta previa increases with successive increase in number of caesarean section in past [Table 4].

TABLE 4: Incidence of placenta previa with respect to number of previous Caesarean sections

No. Of Previous Caesarean Deliveries	No. Of Patients	No. Of Placenta Previa	Incidence
Nil	400	7	1.75%
One	304	8	2.63%
Two	96	16	16.6%

In our study, there is also an increased risk of adherent placenta in study group when compared to that of control group. 4 cases of adherent placenta are seen in study group whereas in control group only one case is seen.

TABLE5: Adherent Placenta among study and control group

Group(N=400)	Adherent Placenta	Percentage
Previous Vaginal Delivery	1	0.25%
Previous Caesarean Section	4	1%

IV. 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. The overall incidence of placenta previa in large scalestudies done abroad was found to be 0.2-0.5%[3, 4]. However itmay be more in Indian population, so a prospective casecontrol study was designed in order to assess the incidenceof placenta previa in patients who had a history of previouscaesarean section, in Indian subcontinent. In our study 3.87%patients (24 cases in study group and 7 cases in controlgroup) had placenta previa.

Various researchers compared incidence of placentaprevia in second birth whose first birth delivered by caesarean section or vaginally. Lydon et al found incidence ofplacenta previa at second birth who had caesarean first birth to be 2.5%, while it was 1.22% in Nielsen et al study. The incidence of placenta previa in same group (previous one caesarean section) turned out be 6% in our study.

Study	Previous Vaginal Delivery	Previous Caesarea Delivery
Mona Lydon Et Al[9]	0.25%	2.5%
Nielsen Et Al[10]	0.25%	1.22%
Our Study	1.75%	6%

Our study also suggests similar results with a statistically significant association between previous caesarean delivery and placenta praevia. The uterine scarring associated with cesarean delivery has resulted in endometrial and myometrial damage, defective implantation mechanisms, and failure of differential growth of the scarred lower uterine segment, all of which predispose to low implantation of the placenta.

Our study shows that chance of finding placenta being morbidlyadherent also increases in women with previous caesarean section. Similar results were obtained by Kennare et al[11], who showed that cesarean delivery cohort had increased chances of placenta increta Odds Ratio (OR) 18.79, 95% Confidence Interval (CI) 2.28-864.6).

The rate of placenta previa increases with increase in number of previous caesarean sections. In our study percentage of placenta previa with 1 prior caesarean section is 2.63% and with 2 prior caesarean sections is 16.6% which is similar to other studies.Ayesha Shaukat et al(2008) conducted study in 153 previous caesarean section cases. There was an increase in risk of placenta previa with increasing number of caesarean section that is 3.5% with previous I, 22.5% with previous II, 28% with previous III, and 50% with previous IV c-sections.

Ihab M. Usta et al (2005) conducted study in 347 placenta previa cases. One of the factors highly associated with Placenta previa 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

Study	**% Of Placenta Previa With 1 Prior Cesarean**	**% Of Placenta Previa With 2 Prior Caesarean**
Ayesha Shaukath Et Al[12]	3.5%	22.5%
Ihab M. Usta Et Al[13]	1.9%	15.6%
Our Study	2.63%	16.6%

Thus there is increase in rate of placenta previa with increase in number of previous caesarean sections.

V. Conclusions

1. Incidence of placenta previa is high in patients with previous history of caesarean section.
2. The chance of placenta previa also increases with the successive increase in the number of caesarean sections.
3. Also incidence of adherent placenta increases as number of previous caesarean section increases.

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