

## ORIGINAL ARTICLE

## Exploration of Placenta Accreta Spectrum with Placenta Previa and Previous Cesarean Section

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## ABSTRACT

**Objective:** To determine the frequency and association of placenta accreta spectrum with placenta previa and previous cesarean sections.

**Study Design:** Retrospective observational study

**Place and Duration of Study:** Obstetrics and Gynaecology Unit-2, Bolan Medical Complex Hospital, Quetta, from 1st January 2023 to 31st December, 2023.

**Materials and Methods:** The clinical records of all pregnant women who had cesarean section for placenta previa and were diagnosed as a case of placenta accreta spectrum were reviewed. Results were calculated and analyzed using Microsoft Excel 13. Data was presented in number and percentages and mean  $\pm$  SD for qualitative and quantitative variables respectively.

**Results:** Out of 812 cesarean sections performed during the study period, 4.4% were due to placenta previa. The incidence of Placenta Accreta Spectrum (PAS) was 1.4 per 1000 deliveries and 1.6% of total cesarean sections. Most of the cases of placenta previa were type IV (58%). In patients having placenta accrete spectrum, majority of cases were previous three LSCS (38%) and previous four LSCS or more (31%). In all PAS cases, 38.5 % were accrete, 46% were increta and 15.5 % were percreta. Uterine sparing management to achieve haemostasis and preserve fertility was done in 77% of cases.

**Conclusion:** Placenta accreta spectrum is becoming more common due to rise in cesarean sections rates. The risk of PAS and placenta previa can be reduced by decreasing the rate of primary cesarean sections. A multidisciplinary team approach will help to reduce the morbidity and mortality associated with PAS.

**Key Words:** Cesarean Section (CS), Morbidity, Placenta Accreta Spectrum, Placenta Previa.

## Introduction

Morbidly adherent placenta is abnormal adherence of the placenta to the nearby uterine wall. It is the result of abnormal decidualization due to a defect in the endometrial-myometrial junction, which typically occurs in the vicinity of a uterine scar.<sup>1</sup> Placenta accrete occurs when the villi are only superficially attached to the myometrium; in placenta increta, the villi invade the myometrium deeply; and in placenta percreta, the villi pass through the myometrium, crosses the serosa, and then enter the surrounding viscera and tissues. These are the three types of morbidly adherent placenta. The more recent term for these conditions,

placenta accrete spectrum (PAS), refers to all three types together.<sup>2</sup>

1927 Irving et al first reported PAS with an incidence of only 0.12 in 1000 women.<sup>1</sup> Its occurrence has increased roughly 13-fold in the US in recent years as a result of the sharply rising rate of cesarean deliveries, which has increased from 5.8% to 32.9%.<sup>3</sup> The prevalence of placenta accreta spectrum is rising globally; it was 1 in 25,10 women in the 1970s, 1 in 533 in 2002, 4 in 1000 women in 2003, and 1 in 272 women in 2016.<sup>4,5</sup>

Placenta previa following a prior cesarean section is the most important risk factor for development of PAS. In pregnant women, the chance of developing placenta previa rises with repeated cesarean sections, 1% in previous one LSCS rising to 1.7%, 2.8%, and 10% in previous, two, three and four cesarean sections respectively.<sup>6</sup> In patients with placenta previa who have had prior cesarean sections, the risk of PAS is 3%, 11%, 40%, 61%, and 67% for the first, second, third, fourth, and fifth or more repeat cesarean deliveries, respectively.<sup>7</sup>

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Uterine surgeries like prior curettage, removal of intrauterine adhesions, myomectomy and cornual resection of ectopic pregnancy also contribute to placental invasion.<sup>8</sup>

PAS is a potentially fatal condition because it causes life-threatening intrapartum and postpartum haemorrhage. The complications associated with PAS include massive blood transfusions, peripartum hysterectomy, prolong surgery time, urological injuries, admission to the intensive care unit, and potentially fatal placental haemorrhage.<sup>9</sup> The use of MRI and ultrasonography has improved both the diagnosis and treatment of these cases. PAS identified prenatally and planned treatment by multidisciplinary team comprising a neonatologist, obstetrician, urologist, and anesthesiologist in a tertiary care center, improves the prognosis.<sup>10</sup>

In majority of PAS cases, the c-section is recommended at 34-36 weeks to improve maternal and fetal outcomes. Cesarean hysterectomy without removal of the placenta from uterus, is the safest and most appropriate method for preventing massive blood loss.<sup>11</sup> In recent years, new surgical methods have been explored to improve pregnancy outcomes during cesarean section and to preserve the uterus. These methods include intrauterine balloon placement, ligation or embolization of both uterine arteries, iliac arteries balloon embolization, manual removal of placenta with uterine packing, uterine compression sutures and placental bed suturing.<sup>12</sup>

Due to the rising rate of c-sections, an increased number of PAS cases are reported in our hospital. Majority of them present with antepartum hemorrhage in emergency labor ward in very serious condition. The objective of the study is to find association and retrieve prevalence of PAS with previa and cesarean section. It will help us to formulate a protocol, emphasizing the antenatal diagnosis and best management approach.

## Materials and Methods

This descriptive study of one year was carried out in gynae unit-2 of Bolan Medical Complex Hospital Quetta from 1<sup>st</sup> Jan 2023 to 31<sup>st</sup> Dec 2023. The study was approved by the local ethical review committee (OBG/HOD/2024-249-250 dated 2<sup>nd</sup> July 2024). All pregnant women who had cesarean section for placenta previa and the cases of PAS which were diagnosed either intra-operatively or on ultrasound

preoperatively were included in the study. The clinical record of all patients was retrieved from their medical files, and operation theatre registers. The demographic profile which includes parity, age, history of previous cesarean sections and gestational age was recorded and analyzed. Additional haemostatic procedures to control blood loss i.e. uterine artery ligation, internal iliac ligation, uterine packing, peripartum hysterectomy were recorded. Results were calculated and analyzed using Microsoft Excel 13. The frequency and percentages were calculated for qualitative variables while mean and standard deviation were calculated for quantitative variables.

## Results

During the study period, the total number of deliveries were 9306 and total number of cesarean sections were 812. Out of which 36(4.4%) cesarean sections were performed due to placenta previa. Out of 36 cases of placenta previa, PAS was diagnosed in 13 patients. So, the prevalence was 1.4 per 1000 deliveries and 1.6% of total cesarean sections. The frequency of PAS in placenta previa was 36.1%. Most of the cases of placenta previa were type IV (58%), followed by type III (25%) and type II (17%). The mean age of patients was 32.25±5.23, mean gestational age 34.52±2.26 weeks and mean parity was 6.4 ±3.23. table I. In patients having placenta accreta spectrum, 1(7.7%) had a history of previous 1 LSCS, 3 (23%) had previous 2 LSCS, 5(38%) had previous 3 LSCS and 4(31%) were previous 4 LSCS or more. Out of all 13 PAS cases, 38.5 % were accreta, 46% were increta and 15.5 % were percreta. (Table-II). With regard to management, additional hemostatic procedures like uterine packing was done in 31% of cases, internal iliac ligation along with uterine packing done in 46%, and peripartum hysterectomy in 23% cases. (Table-III).

**Table I: Demographic Characteristics of Patients with Previous Cesarean Section and Placenta Previa n=36**

Variables	Statistics (mean +SD)
Age	32.25±5.23
Parity	6.4±3.23
Gestational age (weeks)	34.52±2.26
Degree of placenta previa	Frequency and %
Type II	7 (17%)
Type III	9 (25%)
Type IV	21 (58%)

**Table II: Frequency of Placenta Accreta Spectrum with previous Uterine Scar. n=13**

Previous Scar	Accreta	Increta	Percreta	Total PAS no%
1 LSCS	0	1	0	1(7.7%)
2 LSCS	1	1	1	3(23%)
3 LSCS	2	2	1	5(38.5%)
≥ 4 LSCS	2	2	0	4(30.8%)
Total	5 (38.5%)	6(46%)	2(15.5%)	13(100%)

**Table III: Hemostatic Procedures in PAS n= 13**

Hemostatic procedures	No (%)
Uterine packing	4(31%)
Internal iliac ligation+ uterine packing	6(46%)
Peripartum hysterectomy	3(23%)

## Discussion

The prevalence of placenta accreta spectrum is rising over the past four decades and it is linked to the increased rates of cesarean sections.<sup>2</sup> In our study, the prevalence of PAS was 1.4 per 1000 deliveries which is comparable with the studies of Akhtar T et al<sup>13</sup>, 1.83 per 1000 deliveries and Jaiswal N et al<sup>14</sup>, 1.2 per 1000 deliveries. Other studies in Pakistan showed slightly higher frequencies of placenta accreta spectrum, 3 per 1000 in study of Rehman S<sup>15</sup>, and 4.74/1000 deliveries in the study of Tahir N. et.al<sup>16</sup>. While Akhtar O et al<sup>17</sup>, reported a very high incidence of 9.3/1000 deliveries. This rise is very alarming as PAS is associated with high maternal morbidity and mortality and it is often a nightmare for obstetricians.

A direct association has been observed between PAS and prior cesarean sections. In our study, history of past Cesarean scar was found in 100% of cases of PAS. In which 7.7% of patients with a history of previous one uterine scar, 23% in patients with previous two scars, 38% in patients with previous three scars, 31% in previous four or more scars. According to a study done at the tertiary care hospital in Lahore<sup>18</sup>, out of all the patients with PAS, 47.3% had one previous CS, 29.9% had previous two CS, and 22.9% had previous three or more CS. Similar study by Rehman S<sup>15</sup> described 0.6% in patients with absence of previous scar and 80% in previous 4 scars. These results demonstrate that the incidence of PAS rises with previous scars. So, the number of primary scars should be reduced.

The management of PAS is quite challenging. Obstetricians prefer conservative management, when fertility must be conserved. In our study

uterine sparing management to achieve haemostasis was done in 77% of cases which is comparable with other studies in which expectant or conservative management done in 78 to 80% cases<sup>19</sup>. While peripartum hysterectomy was done in only 23% of patients in our study. In a study conducted in Bahawal Victoria Hospital, 58% of patients had peripartum hysterectomy whereas uterine sparing surgery was done in 42% of cases.<sup>13</sup> Rehman S<sup>15</sup> did peripartum hysterectomy in 48.5% of patients in his study. Varlas VN et al, showed high rates of peripartum hysterectomies (83.4%)<sup>20</sup>.

In our study, the frequency of PAS in cases of placenta previa was 36.1%. In which 58% were placenta previa type IV, 25% were placenta previa type III and 17% were type II. Other studies reported a 40.49%<sup>21</sup> and 30.6%<sup>22</sup> incidence of placenta accreta among women who were diagnosed placenta previa antenatally. Kayem et al<sup>23</sup> found in his study PAS rate of 21% in anterior low-lying placenta (type I) and 33% when placenta previa (type III, IV). The rate of PAS ranged from 5% for previous one cesarean section to 63% for three or more previous cesarean with placenta previa in his study.

## Conclusion:

Placenta accreta spectrum (PAS) is becoming more common in present-day obstetrics due to increased rates of cesarean sections. The risk of PAS and placenta previa can be reduced by decreasing the rate of primary cesarean sections. A multidisciplinary team approach in the surgical management for placenta previa with repeat cesarean will help to reduce the associated morbidity and mortality with PAS. Conservative management, when fertility has to be preserved, has high success rates.

## Limitations of Study

The study is retrospective and carried out only in one unit of tertiary care hospital.

## Recommendations

The risk of PAS and placenta previa can be reduced by decreasing the rate of primary cesarean sections. Preservation of future fertility through conservative management of placenta accreta spectrum carries a high risk of complications for the mother and should only be performed in hospitals with sufficient expertise. Further research on this subject should be done to establish clear guidelines.

**Conflict of interest:** None

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**CONFLICT OF INTEREST**

Authors declared no conflicts of Interest.

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**DATA SHARING STATMENT**

The data that support the findings of this study are available from the corresponding author upon request.

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