

ORIGINAL RESEARCH**A Retrospective study of association of risk factors, incidence and foeto-maternal outcome of Placenta Accreta Spectrum (accrete, increta, percreta) in a Tertiary Care Institute****¹Dr. Ayushi Jain, ²Dr. Karina Sangwal, ³Dr. Shaveta**^{1,2}PG 3rd yr, ³Senior Resident, Department of Gynecology and Obstetrics, SMGS Hospital, GMC, Jammu, Jammu and Kashmir, India**Corresponding Author**

Dr. Shaveta

Senior Resident, Department of Gynecology and Obstetrics, SMGS Hospital, GMC, Jammu, Jammu and Kashmir, India

Received: 16 October, 2023

Accepted: 19 November, 2023

Abstract

Introduction – Placenta Accreta Spectrum is a complex obstetrical condition of abnormal placental invasion associated with severe maternal morbidity. The aim of current research is to study the association of various risk factors with the placenta accrete spectrum and to study the incidence and foeto-maternal outcome in placenta accrete spectrum.

Material and methods- The present retrospective study was conducted at department of obstetrics and gynaecology of a tertiary care centre for a period of two years among patients of placenta accreta spectrum. Through convenience sampling out of 400 cases of placenta previa, total 40 cases of placenta accreta spectrum cases were identified. The software used for statistical analysis was SPSS package 22 (SPSS, Chicago, IL).

Results – Out of 40 cases of placenta accreta spectrum 44.11% were of placenta accreta, 42.64% were of placenta percreta and 13.23% were of placenta increta. The most common complaint was bleeding from vagina (95%). Patients living in urban area (75%) were more affected as compare to those living in rural area (25%). Out of all the patients 60% had gestational age of 16 to 30 weeks, 30% had 30 to 34 weeks and 10% had 34 to 38 weeks. The maternal outcome shows more complicated situation in urgent cases as compared to elective cases. The birth weight of babies of GA 32 to 38 weeks was around 2.5 kgs, GA 28 to 32 had birth weight of around 1.2+0.5 kgs and GA 14 to 28 weeks had birth weight of 600-1000g. APGAR score was 10, 8 and 4 respectively in three groups.

Conclusion – Due to surgical difficulty, conservative management should only be used for extensive disease and the desire for fertility. Strategic management and early risk factor identification may enhance the outcomes for both mothers and fetuses.

Keywords- Accreta, Increta, Maternal And Fetal Outcome, Placenta Accreta Spectrum, Placenta Previa, Percreta

Introduction

When placental implantation is aberrant—that is, when the decidua basalis, which normally divides the myometrium and the anchoring placental villi, is absent—placenta accreta results.[1] The uterine serosa is penetrated by the chorionic villi in placenta percreta, which is separated from the myometrium by the chorionic villi in placenta accreta, which is where

they are in contact with the myometrium, and the placenta increta, which is where they invade the myometrium.[2]

It results from a faulty decidualization identified by placental implantation at a site where the endometrial-myometrial interface has already been damaged [3]. The most common association between PAS and prior uterine surgery includes cesarean sections, hysteroscopic excision of intrauterine adhesions, and cornual resection of ectopic pregnancy. In addition, uterine abnormalities, submucous fibroids, and prior curettage may contribute to the development of PAS [4].

The most significant risk factor following a previous cesarean delivery or surgery is placenta previa. The difference in placenta accreta prevalence between 1 in 300 and 1 in 2000 pregnancies can be explained by the challenging detection of this illness [5]. Placenta previa is linked to a 3% risk of postpartum alkylosis (PAS) among women who have had a single cesarean delivery in the past, while its absence is linked to a 0.03% risk. According to a recent meta-analysis, the prevalence of PAS is between 0.01% and 1%, according to Jauniaux et al [6]. For women who have had several cesarean procedures in the past, this risk differential is considerably more pronounced. Compared to control groups, women over 35 or who have a personal history of endometritis, pelvic irradiation, manual placenta removal, or infertility are more likely to develop PAS. [7]

The morbidities and deaths of mothers and fetuses are reduced when PAS is diagnosed during pregnancy. With a sensitivity of 77%–87%, specificity of 96%–98%, positive predictive value of 65%–93%, and negative predictive value of 98%, sonographic diagnosis of PAS is achieved [8,9]. Both the identification and management of these instances have advanced. The majority of PAS patients are detectable in utero, allowing for planned adequate management.

Hence the present study was conducted to study the association of various risk factors with the placenta accrete spectrum and to study the incidence and feto-maternal outcome in placenta accrete spectrum.

Material & methods

The present retrospective study was conducted at department of obstetrics and gynaecology of a tertiary care centre for a period of two years among patients of placenta accreta spectrum.

Through convenience sampling out of 400 cases of placenta previa , total 40 cases of placenta accreta spectrum cases were identified . Patients with placenta accreta spectrum were divided into two groups

Group A- urgent cases Haemodynamically unstable patients- maximum cases belong to this group where decision for surgery has to be taken prior to the decided time mostly due to repeated episodes of bleeding and here the decision and incision time was less than 24 hrs.

Group B -elective cases Haemodynamically stable patients- These patients were antenatally diagnosed with placenta accreta spectrum and were taken for surgery on decided time.

Sonographic diagnosis of PAS was made. Sonographic features associated with PAS include irregularly shaped vascular spaces with turbulent interval flow, loss of the retroplacental hypoechoic clear zone, thinning of the myometrium over the placenta, absence of a decidual interface with normal placental echogenicity interruption, increased vascularity of the uterus serosa-posterior bladder wall interface, and the placenta appearing to protrude and bulge into the bladder[10]. Clinically, PAS was described as firm placental adherence to the uterus. The pathology report took precedence over the entire set of results. The last menstrual cycle was used to calculate gestational week, and an early ultrasound measurement was used to confirm it. Every diagnosed woman had her risk factors examined and assessed. Clinical factors that were assessed included gestational age, parity, maternal age, gravida, and obstetric risk

factors such as prior cesarean deliveries, hypertensive disorders, and abortion. The assessment encompassed supplementary measures to manage bleeding, neonatal admission to an intensive care unit, neonatal birth weight, and Apgar scores at the one- and five-minute mark.

The software used for statistical analysis was SPSS package 22 (SPSS, Chicago, IL). The t test was used to determine statistical significance for differences in continuous variables and the χ^2 test for differences in qualitative variables. Using backward elimination, a multivariable logistic regression model was built to identify independent risk factors and complications linked to placenta accreta. Evaluations were also conducted on the clinical traits, obstetrical complications, and perinatal outcomes of subsequent pregnancies that followed placenta accreta. It was deemed statistically significant when $P < .05$.

Results

Out of 40 cases of placenta accreta spectrum 44.11% were of placenta accreta, 42.64% were of placenta percreta and 13.23% were of placenta increta. (figure 1)

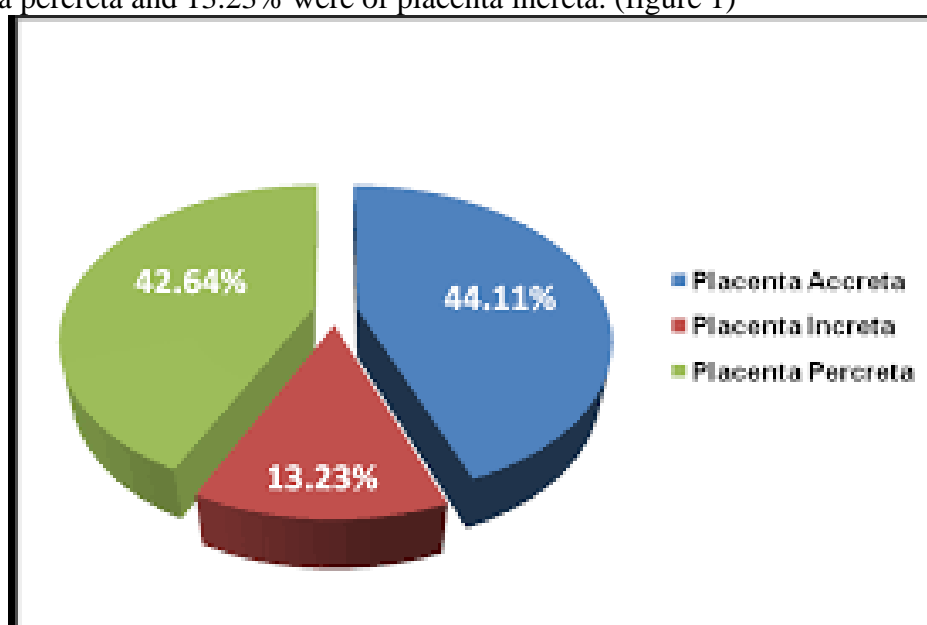


Figure 1- distribution of cases of placenta accrete spectrum

Mostly cases admitted were already booked cases (60%) and rest were OPD admission (40%).

The most common complaint was bleeding from vagina (95%). Patients living in urban area (75%) were more affected as compare to those living in rural area (25%). Out of all the patients 60% had gestational age of 16 to 28 weeks, 30% had 28 to 32 weeks and 10% had 32 to 38 weeks as shown in table 1.

Table 1 baseline characteristics of patients admitted

Variable	Percentage	
Admission criteria	OPD admission	40%
	Booked cases	60%
Presenting complaints	Bleeding per vaginum	95%
	Pain in lower abdomen with urinary complaints	4%
Incidence of PAS	Urban	75%
	Rural	25%
Gestational age of patients	16 to 28 weeks	60%

	28 to 32 weeks	30%
	32 to 38 weeks	10%

The maternal outcome shows more PCV transfusion in urgent cases (5-6 packed red cells) as compared to elective cases (3-4 packed red cells). Expected blood loss was more in urgent cases i.e. 3.5 to 4.5 litre and in elective cases it was 2.5 to 3.5 litre. Bladder injury and complications were more in urgent cases as compared to elective cases. Two cases of mortality were there among urgent cases as shown in table 2.

Table 2 distribution of patients according to maternal outcome

Outcome	Urgent cases	Elective cases
PCV transfusion	5-6packed red cells	3-4 packed red cells
Expected blood loss	3.5l-4.5 l	2.5l-3.5l
Bladder injury	More cases	Less compared to urgent
Intraoperative complications	More cases	Less as compared to urgent cases
Maternal mortality	2 cases	0 case

The birth weight of babies of GA 32 to 38 weeks was around 2.5 kgs, GA 28 to 32 had birth weight of around 1.2+0.5 kgs and GA 14 to 28 weeks had birth weight of 600-1000g. APGAR score was 10, 8 and 4 respectively in three groups. Intubation was done in 80% of cases of 14 to 30 weeks GA, 10 % in 28-32 weeks GA and none was done in 32 to 38 weeks GA. In about 50 to 60% of cases respiratory distress syndrome was found in 14 to 28 weeks GA, only 5 to 10% cases were found in 28 to 32 weeks and only one case of RDS was present in 32 to 38 weeks. In 14 to 28 weeks of GA almost 80 to 100% cases died after the birth, in 28 to 32 weeks of GA only 2% cases died and in 32 to 38 weeks GA all cases survived as shown in table 3.

Table 3 distribution of patients according to fetal outcomes

Period Of Gestation	14-28 Weeks (50-60%) Cases	28-32 weeks (20-30% Cases	32-38 weeks 10%) Cases
Birth weight	600G-1000g	1.2+0.5 KG	2+0.5KG
APGAR score	4/10	8/10	10/10
Intubation	DONE IN 80% Of THESE CASES	ONLY IN 10% OF THESE CASES	IN NONE
Respiratory distress syndrome	In 50-60% of cases	In only 5-10% cases	In only one case
Neonatal mortality	80-100%	2%	-

The most common surgical incision given was midline vertical (60%), transverse (25%) and transverse converted (15%). Intraoperative complications were Hemorrhage (15%), bladder injury (13%) and cardiac arrest (1%). Duration of surgery was less than one hour in 3% cases, 1 to 3 hours in 80% cases and greater than 4 hours in 17% cases as shown in table 4.

Table 4 showing intra-operative findings

Intra-operative findings	Percentage	
Surgical incision	Midline vertical	60%
	Transverse	25%
	Transverse converted	15%
Complications	Hemorrhage	15%
	Bladder injury	13%
	Cardiac arrest	1%
Duration of surgery	Less than 1 hour	3%

	1 to 3 hours	80%
	Greater than 4 hours	17%

Ultrasound findings- the findings from the ultrasound shows placenta position as anterior (55%), posterior (25%) , low lying (15%) and completely covering OS (5%) as shown in figure 2.

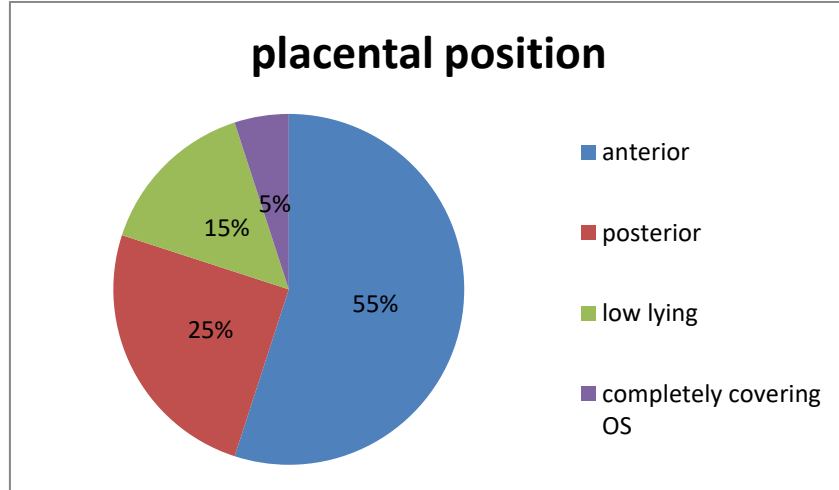


Figure 2- Placenta position

The most common complication after PAS were DIC (20%) , atonic PPH (17%), ICU admission (13%), surgical site infection (13%), bladder injury (10%), uterine rent (7%) , post partum depression (3%) and death (3%) as shown in figure 3

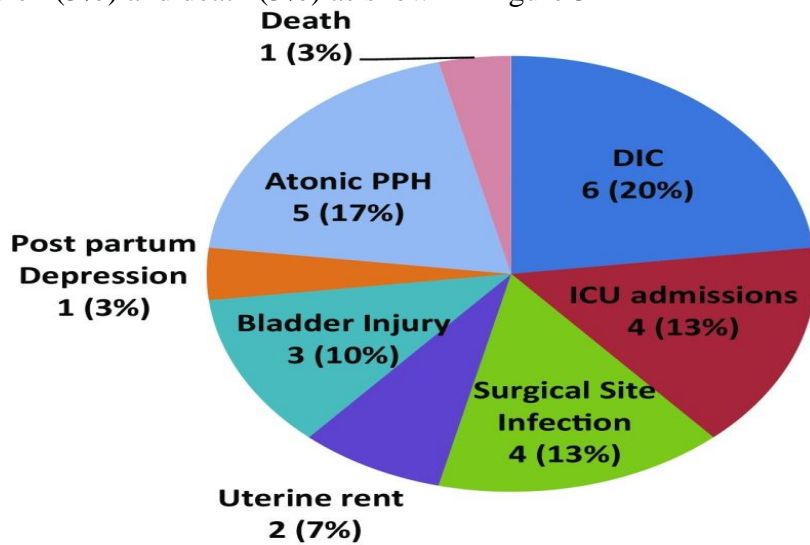


Figure3 Complications after PAS

Discussion

The present study was conducted among 40 cases of PAS at department of obstetrics and gynaecology of a tertiary care centre for a period of two years. Out of 40 cases of placenta accreta spectrum 44.11% were of placenta accreta, 42.64% were of placenta percreta and 13.23% were of placenta increta. This finding was reported previously with an incidence of 0.17 per 1000 pregnancies for placenta accreta [11]. In the study of Palova et al [12] placenta accreta was verified 3% among the women with PP. Miller et al [13] showed that placenta accreta occurred in 9.3% women with PP.

The prevalence of PAS increased as a result of rising cesarean rates in the majority of middle-class and high-income nations. A placenta previa procedure increases the risk of the condition by 50%. Research indicates that compared to urgent cesarean deliveries, elective cesarean deliveries can carry a higher risk of postpartum syndrome [14]. Contrary to our study also elective patients received 3–4 packed red cells while urgent cases received 5–6 packed red cells. In urgent cases, 3.5 to 4.5 litre blood loss was anticipated, whereas in elective cases, 2.5 to 3.5 litre blood loss was anticipated. When comparing urgent cases to elective ones, there were more bladder injuries and consequences. Among the urgent cases, there were two deaths.

The gestational age at delivery is primarily responsible for the significantly reduced birth weight of newborns born during a complicated pregnancy including placenta accreta.[15] The birth weight of babies of GA 32 to 38 weeks was around 2.5 kgs, GA 28 to 32 had birth weight of around 1.2+0.5 kgs and GA 14 to 28 weeks had birth weight of 600-1000g in our study.

The architecture of the placental invasion, the level of vascularization in the lower uterine segment, the depth of the aberrant adhesion, and the invasion of other structures that determine maternal morbidity can all be evaluated using ultrasound [16]. In the present study placental topography shows the placenta position as anterior (55%), posterior (25%) , low lying (15%) and completely covering OS (5%).

Treatment recommendations for PAS are very diverse and mostly derived from case reports and series, individual patient experiences, professional opinion, and clinical judgment.[17] The most drastic method of treating a placenta with aberrant adhesion is peripartum hysterectomy. Recent research has led to the identification of conservative techniques, including intentional placental abruption, partial myometrial excision, and the "Triple P procedure," in light of the rising incidence of this condition brought on by an increase in cesarean sections. [18] Planned premature cesarean hysterectomy with the placenta left in situ is the advised course of treatment for placenta accreta [19]. Hemorrhagic shock is a serious complication linked with placenta removal. When the newborn is extracted without the placenta being separated, the placenta must remain in situ.

Conclusion

The highest incidence of PAS cases reported is in the post-cesarean patients, involving the cervix in cases of coexisting placenta previa. The increase in cesarean rates in most middle and high-income countries led to an increase in the prevalence of PAS. Following a single cesarean, the risk of placenta previa is 50% higher.

References

1. Esh-Broder E, Ariel I, Abas-Bashir N, Bdolah Y, Celnikier DH. Placenta accreta is associated with IVF pregnancies: a retrospective chart review. *BJOG*. 2011;118:1084-9.
2. Tan CH, Tay KH, Sheah K, et al. Perioperative endovascular internal iliac artery occlusion balloon placement in management of placenta accreta. *Am J Roentgenol*. 2007;189:1158-63 .
3. Jauniaux E, Grønbeck L, Bunce C, et al. Epidemiology of placenta previa accreta: a systematic review and meta-analysis. *BMJ Open*.2019; 9:e031193.
4. Collins SL, Alemdar B, van Beekhuizen HJ, et al. Evidence-based guidelines for the management of abnormally invasive placenta: recommendations from the International Society for Abnormally Invasive Placenta. *Am J Obstet Gynecol*.2019; 220:511–526.
5. Jauniaux E, Alfirevic Z, Bhide AG, et al. Placenta Praevia and Placenta Accreta: Diagnosis and Management: Green-top Guideline No. 27a. *BJOG Int J Obstet Gynaecol* .2019;126:e1–e48.

6. Jauniaux E, Bunce C, Grønbeck L, Langhoff-Roos J. Prevalence and main outcomes of placenta accreta spectrum: a systematic review and meta-analysis. *Am J Obstet Gynecol.*2019; 221:208–218.
7. Jauniaux E, Bhide A, Kennedy A, et al. FIGO consensus guidelines on placenta accreta spectrum disorders: Prenatal diagnosis and screening,. *Int J Gynecol Obstet.*2018; 140:274–280.
8. Warshak CR, Eskander R, Hull AD, Scioscia AL, Mattrey RF, Benirschke K et al. Accuracy of ultrasonography and magnetic resonance imaging in the diagnosis of placenta accreta. *Obstet Gynecol.* 2006;108(3 Pt 1):573-81.
9. Comstock CH, Love JJ Jr, Bronsteen RA, Lee W, Vettraino IM, Huang RR et al. Sonographic detection of placenta accreta in the second and third trimesters of pregnancy. *Am J Obstet Gynecol.* 2004;190(4):1135-40.
10. Asıcıoğlu O, Şahbaz A, Güngördük K, Yildirim G, Asıcıoğlu BB, Ülker V. Maternal and perinatal outcomes in women with placenta praevia and accreta in teaching hospitals in Western Turkey. *J Obstet Gynaecol.* 2014;34(6):462-6.
11. Fitzpatrick KE, Sellers S, Spark P, Kurinczuk JJ, Brocklehurst P, Knight M. Incidence and risk factors for placenta accreta/increta/percreta in the UK: a national casecontrol study. *PLoS ONE.* 2012;7(12):52893.
12. Palova E, Redecha M, Malova A, Hammerova L, Kosibova Z. Placenta accreta as a cause of peripartum hysterectomy. *Bratisl Lek Listy.* 2016;117(4):212-6.
13. Jauniaux E, Jurkovic D. Placenta accreta: pathogenesis of a 20th century iatrogenic uterine disease. *Placenta* 2012;33(4): 244-51.
14. Previous Cesarean Delivery and Risks of Placenta Previa and Placental Abruption. *Obstet Anesth Dig.*2006; 26:138–139.
15. Benirschke K, Kaufmann P. *Pathology of the human placenta*, 4th ed. New York, NY: Springer; 2000.
16. Yu FNY, Leung KY. Antenatal diagnosis of placenta accreta spectrum (PAS) disorders. *Best Pract Res Clin Obstet Gynaecol.*2021; 72:13–24
17. *Obstetric Care Consensus No. 7 Summary: Placenta Accreta Spectrum.* *Obstet Gynecol.*2018;132:1519–1521.
18. Chandraran E, Rao S, Belli A-M, Arulkumaran S. The Triple-P procedure as a conservative surgical alternative to peripartum hysterectomy for placenta percreta. *Int J Gynaecol Obstet Off Organ Int Fed Gynaecol Obstet.*2012; 117:191–194.
19. Society of Gynecologic Oncology, American College of Obstetricians and Gynecologists and the Society for Maternal–Fetal Medicine, Cahill AG, et al. Placenta Accreta Spectrum. *Am J Obstet Gynecol.*2018; 219:B2–B16.