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RESEARCH ARTICLE

Clinical Profiles and Outcomes of Patients with Placenta Accreta Spectrum at Dr.M Djamil Hospital, Padang During 2019-2022

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Abstract

Objective: *Placenta accreta spectrum (PAS) is one of the severe obstetric complications which can cause serious morbidity and mortality to both maternal and neonatal. The incidence of PAS increases globally because of the increasing rate of cesarean deliveries (CS). The aim of this study was to describe the clinical profiles and outcomes of patients with PAS during 2019-2022 at Dr. M. Djamil Hospital, Padang.*

Method: *This study was a retrospective descriptive study that had women with PAS who gave birth and referred to Dr. M. Djamil Hospital Padang, from January 2019-December 2022 as study participants. This study described clinical profiles, PAI score and USG findings and maternal neonatal outcomes of patients with PAS.*

Result: *One hundred eighty-seven cases were involved in this study. Most women with PAS aged ≥ 35 years (45%), parity 2 (47%), previous CS (96%), ≥ 2 times CS history (59%). A PAI score ≥ 5 has the higher proportion (66%) than a PAI score <5. There were still 53 patients (28%) who were admitted in intrapartum and postpartum. Most of the participants underwent hysterectomy (74%).*

Conclusion: *Advanced maternal age, multiparity, previous CS, and placenta previa were risk factors for PAS. PAI score, which combines previous CH hostory and USG findings in antenatal care, can assist in determining whether pregnant women have a high risk of PAS. Antenatal diagnosis and proper perioperative management in PAS are needed to optimize maternal and neonatal outcomes.*

Keywords: *Placenta accreta spectrum, clinical profiles, Outcomes*

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INTRODUCTION

Placenta accreta is known as an abnormal trophoblast invasion of some or all of the placenta into the myometrium. Placenta accreta spectrum (PAS), refers to variable degrees of invasion and adherence of placenta to the uterus and surrounding organs i.e placenta accreta, increta and percreta.[1,2] PAS describes a condition when the placenta does not separate spontaneously after delivery and cannot be removed by force, so it can cause massive and potentially life-threatening bleeding.[3]

Incidence of PAS increased during the 1970s and 2000s, from 0.12 to 0.31% with mortality rate of approximately 7 %.[4] There are several risk factors leading to development of PAS. Previous cesarean section (CS) is the most common. The rate of PAS rose from 0.3% in women who had one prior cesarean section to 6.74% in those who had undergone five or more cesarean sections. Moreover, studies have indicated that maternal age (≥ 35 years) and placenta previa were notably linked to the onset of PAS disorders. Another risk factors include multiparity, prior curettage or uterine surgeries, and Asherman syndrome.[1,2]

PAS is one of the severe obstetric complications. As a result, it is common cause of maternal neonatal morbidity and commonest indication for peripartum hysterectomy.[5,6] Maternal morbidity in PAS has risen to 60%, encompassing significant blood transfusion, urinary tract injury, hysterectomy, admission to the intensive care unit (ICU), sepsis, and extended hospital stays. Additionally, PAS contributes to a higher incidence of perinatal complications, such as low birth weight, small gestational age, and preterm birth.[2,5]

Antenatal detection of placenta accreta spectrum (PAS) is crucial as it enables the optimization of care and outcomes.[1] This approach allows for appropriate timing of delivery and the referral to a specialized center, ultimately leading to a decrease in maternal and neonatal morbidity and mortality. The primary imaging modality for diagnostic of placental invasion is Ultrasonography (USG) with colour Doppler. Placenta accreta index (PAI) score combines various USG finding and clinical features of women at increased risk of invasive placenta. The greater the PAI score, the greater the likelihood of placenta accrete.[7–9]

Considering that the significance of association PAS with maternal morbidity and mortality and timing referral to referral hospital is important, we are interested to do this study which aimed to describe the pregnancy characteristics and outcomes of patients with PAS during the period from 2019-2022 at Dr. M Djamil Hospital, Padang , as a referral hospital in West Sumatera, Indonesia.

METHODS

This study is a retrospective descriptive study, which aims to describe the pregnancy characteristics and outcomes of patients with PAS at Dr M Djamil Hospital Padang, Indonesia during the periode from January 2019 to December 2022. The study participants were pregnant woman with PAS who gave birth and referred to Dr M Djamil Hospital Padang, Indonesia. They were diagnosed preoperatively by imaging and also postoperatively. All the secondary data were collected from medical records.[30]

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This study involved patients's medical records and all medical matters relating to this research are confidential. The ethical implications of this study followed the provisions of Declaration of Helsinki and were approved by the ethical committee of Dr. M. Djamil Padang Hospital (approval number: DP.04.03/D.XVI.XI/301/2024), this study is also grouped so that ethical committee used have similarities with other studies. The participants approved and signed the informed consents.

RESULT AND DISCUSSION

Total patients that enrolled in this study is 187 patients during periode January 2019-December 2022. Characteristics of study *participants* can be seen in (Table 1). Based on the data in (Table 1), the highest proportion of pregnant women with PAS aged ≥ 35 years (45%), BMI <25kg/m2 (73%), parity 2 (47%), previous cesarean section (96%), ≥ 2 times cesarean section history (59%), and singleton gestation (99%).

Table 1. Pregnancy Characteristic of Study Participants

Variabel			Frequency	%
Age	<25 years		3	2%
	25-29 years		27	14%
	30-34 years		72	39%
	≥ 35 years		85	45%
BMI	<25 kg/m2		136	73%
	25-29.9 kg/m2		44	24%
	≥30 kg/m2		7	4%
Parity	P0		2	1%
	P1		41	22%
	P2		88	47%
	P≥3		56	30%
Previous Obstetric and Uterine Procedures	Yes	Cesarean Section	182	97%
		Curretage	45	24%
		Myomectomy	1	1%
	No		2	1%
Previous Cesarean Section History	0		5	3%
	1		72	39%
	≥2		110	59%
Gestation	Multiple		2	1%
	Singleton		185	99%

USG findings and PAI score as a first diagnostic tool for PAS are shown in (Table 2). Plasenta previa (95%), anterior placental location (92%), lacuna grade 2 and 3 (38% respectively), myometrial thickness 1-3 mm (53%), no loss of clear zone (52%), no bladder wall interruption (88%), no placental

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buldge (80%), positive bridging vessel (73%) were common found in USG results in these study participants. PAI score ≥ 5 has the higher proportion (66%) than PAI score <5.

Table 2. USG findings and PAI Scores

	Variabel		**Frequency**	**%**
USG Findings	Plasenta Previa	Yes	177	95%
		No	10	5%
	Placental location	Anterior	172	92%
		Posterior	15	8%
	Placental Lacunae	Grade 1	45	24%
		Grade 2	71	38%
		Grade 3	71	38%
	Myometrial Thickness	< 1 mm	65	35%
		1-3mm	101	54%
		>3-5 mm	21	11%
	Loss Of Clear Zone	Yes	90	48%
		No	97	52%
	Bladder Wall Interuption	Yes	23	12%
		No	164	88%
	Placental Bulge	Yes	33	18%
		No	149	80%
	Bridging Vessel	Yes	136	73%
		No	51	27%
Cesaria Section History	<2		77	41%
	≥2		110	59%
PAI Score	<5		63	34%
	≥5		124	66%

In (Table 3), we can see that most of patients (72%) were referred and diagnosed in antenatal care, but there were still 53 patients (28%) who were admitted in intrapartum and postpartum. 74% of the them underwent non conservative procedures or hysterectomy. Elective surgery was done in 76% patients. There are 27% of cases that had complication of rupture bladder. All the patients had hemorrhage and most of them (86%) had volume of blood loss <1500 cc. Because of these complications, 76% of patients needed blood transfusion and 38% of them were admitted to ICU.

There are 14 cases of fetal death in this study, 44% of cases were born preterm (<37 weeks), 36 % cases had low birth weight, and 13% had 5 min-apgar score < 7 in (Table 4).

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Table 3. Type of Refferal and Maternal Outcomes

Variable			Frequency	%
Type of Refferal	Antenatal		134	72%
	Intrapartum		51	27%
	Postpartum		2	1%
Maternal Outcomes	Type of procedures	Conservative	49	26%
		Non conservative	138	74%
	Type of surgery	Elective	142	76%
		Emergency	45	24%
	Bladder Rupture	Yes	50	27%
		No	137	73%
	Blood loss	<1500 cc	160	86%
		1500-2000cc	21	11%
		>2000 cc	6	3%
	Blood tranfusion	Yes	142	76%
		No	45	24%
	ICU Admission	Yes	71	38%
		No	116	62%
	Maternal mortality	Yes	2	1%
		No	185	99%

Table 4. Neonatal Outcomes

Variable		Frequency	%
Fetal death	Yes	14	7%
	No	173	93%
Gestational age	< 37 weeks	82	44%
	≥ 37 weeks	105	56%
BBL	<2500 gram	67	36%
	≥2500 -4000 gram	119	64%
	>4000 gram	2	1%
Apgar Score	<7	25	13%
	≥7	162	87%

The term "Placenta Accreta Spectrum" (PAS) describes abnormal penetration of trophoblastic tissue into the uterine myometrium beneath the decidua basalis, uterine serosa, or beyond to pelvic organs. While the specific pathophysiology remains unknown, injury to the decidua basalis and hypoxic environment from scar tissue may catalyze trophoblastic invasion[6,10].

PAS prevalence continues rising globally due to increasing cesarean deliveries[11,12]. Risk factors include multiparity, advanced maternal age, previous uterine surgery, and cesarean sections. Our finding of most women with PAS aged ≥ 35 years aligns with research showing 14% increased incidence per year after age 20[13,14]. The high rates of multiparity (77%) and previous cesarean section (97%) in our study correspond with Kharisma et al.'s findings[5].

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Ultrasound imaging serves as the initial diagnostic tool with high sensitivity and specificity[15]. We found 95% of participants had placenta previa, increasing PAS risk 3.2-fold in women with cesarean history[16,17]. Anterior placental location (89%) aligned with Jaya Kusuma et al.'s findings[8], carrying 3.13 times higher risk of invasive accreta[18,19].

Common USG findings included lacuna grades 2-3, thin myometrium, and bridging vessels. Lacunae presence strongly correlates with complications[17,20]. Myometrial thickness <1mm combined with lacunae shows nearly 100% sensitivity and 72-79% specificity[21]. The high rate of bridging vessels (73%) matches previous studies[8].

PAI score and USG assessment can be done during antenatal care. Antenatal diagnosis and proper perioperative management in PAS are needed because optimizing outcomes is achievable by ensuring delivery takes place at a comprehensive maternal care facility before the onset of hemorrhage and by avoiding placental disruption[1,22]. In this study, there were still 28% of women with PAS who were referred or delivered in intrapartum and postpartum. Features of accreta may be visible by USG in the first trimester, however, most women are diagnosed in the second and third trimester. Women who have risk factors for PAS should undergo evaluation and screening by obstetrician-gynecologists or other experienced health care providers with expertise in early diagnosis of PAS. Early identification of PAS is essential to manage optimal delivery circumstances for these women[1,23,24].

Seventy-four percent of these study participants underwent non-conservative procedures or hysterectomy. Elective surgery was done in 76% patients. Hysterectomy stands as a primary surgical approach for placenta accreta spectrum (PAS), particularly in cases of percreta. This procedure effectively minimizes intraoperative bleeding and lowers the risk of complications[22]. The risk of hemorrhage in PAS increase after 36 weeks of gestational age, so it's suggested to do caesarian hysterectomy at 34-35 weeks to decrease the risk[24].

A systematic review and meta-analysis study found that planned deliveries decreased risks for need blood transfusion, prolong hospital stay, maternal ICU admission and severe maternal morbidity[25]. In the present study 71 cases (38%) needed ICU admission and most of PAS cases (73%) needed transfusion of blood. This was supported by Gelany et al, a recent study in 2019 reported that majority cases with PAS disorders received blood transfusion, and also Zakherah et al in 2018 reported that about 94.7% of PAS cases needed blood transfusion[2,26]. PAS can lead to life-threatening hemorrhage, with reported median blood loss ranging from 2000 to 7800 mL. The extent of placental invasion, the specific surgical procedure, the availability of interventional radiology, and the expertise of the surgical team all play crucial roles in determining the volume of blood loss and the necessity for blood transfusion[22,27].

PAS is not only associated with maternal outcomes, but also with neonatal morbidity and mortality[28]. Premature births, low birth weights, resuscitations, NICU admissions, and a higher risk of death were all common neonatal outcomes for women with PAS because these women typically gave birth earlier[12]. In this study, fetal death occurred in 7% of women with PAS. 36% of neonates whom were born by mothers with PAS had low birth weight, 44% preterm, 13% had 5-min Apgar

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score <7. Several studied reported that preterm birth, low birth weight, and poor 5-min Apgar scores were the most frequent outcomes for neonates in mother with PAS[11,29].

CONCLUSION

The study has shown that advanced maternal age, multiparity, and previous cesarean sections are significant risk factors. Ultrasound imaging emerges as the primary diagnostic tool, with key findings including placental lacunae, myometrial thinning, and bridging vessels. Anterior placental location and placenta previa are common in PAS cases, increasing risk and severity. Early diagnosis is crucial, with most cases requiring hysterectomy. PAS is associated with significant maternal morbidity, including high rates of blood transfusion and ICU admission, as well as adverse neonatal outcomes such as preterm birth and low birth weight. The study underscores the importance of early identification, proper antenatal care, and specialized management in well-equipped facilities to improve outcomes for both mother and child. Given the rising incidence of PAS, linked to increasing cesarean section rates, there is a clear need for continued research and improved management strategies in obstetric care.

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REFERENCES

1. Beigi R, Heine RP, Silver RM, Wax JR. Placenta Accreta Spectrum. Obstet Gynecol. 2018;132(6):1519-1521.
2. El-Gelany S, Mosbeh MH, Ibrahim EM, Mohammed M, Khalifa EM, Abdelhakium AK, et al. Placenta Accreta Spectrum (PAS) disorders: incidence, risk factors and outcomes of different management strategies in a tertiary referral hospital in Minia, Egypt: a prospective study. BMC Pregnancy Childbirth. 2019;19(1):313.
3. Morlando M, Collins S. Placenta Accreta Spectrum Disorders: Challenges, Risks, and Management Strategies. Int J Womens Health. 2020;12:1033-1045.
4. Zhang D, Yang S, Hou Y, Su Y, Shi H, Gu W. Risk factors, outcome and management survey of placenta accreta in 153 cases: a five-year experience from a hospital of Shanghai, China. Int J Clin Exp Med. 2017;10(8):12509-12516.
5. Kharisma Y, Agustina H, Suryanti S, Dewayani BM, Hernowo BS. Maternal Characteristics and Histopathological Features of Placenta Accreta Spectrum in Dr. Hasan Sadikin General Hospital Bandung, Period 2015-2020. Althea Med J. 2022;9(1):55-60.
6. Berhan Y, Urgie T. A Literature Review of Placenta Accreta Spectrum Disorder: The Place of Expectant Management in Ethiopian Setup. Ethiop J Health Sci. 2020;30(2):277-292.
7. Agarwal S, Agarwal A, Chandak S. Role of Placenta Accreta Index in prediction of morbidly adherent placenta: A reliability study. Ultrasound. 2021;29(2):92-99.
8. Kusuma AANJ, Putra IWA, Winata IGS, Permadi IGNW, Setiawan WA. Pregnancy characteristics of patients with placenta acreta spectrum at Prof. Dr. I.G.N.G. Ngoerah Hospital Denpasar, Bali-Indonesia during January 2020-January 2022. Bali Med J. 2023;12(1):164-170.
9. Fonseca A, Ayres-de-Campos D. Maternal morbidity and mortality due to placenta accreta spectrum disorders. Best Pract Res Clin Obstet Gynaecol. 2021;72:74-86.
10. Carrillo AP, Chandraharan E. Placenta Accreta Spectrum: Risk Factors, Diagnosis and Management with Special Reference to the Triple P Procedure. Womens Health (Lond). 2019;15:1745506519878081.
11. Birendra R, Jigyasa S. A Retrospective Study of Maternal and Neonatal Outcome in Placenta Accreta Spectrum After Planned or Emergency Delivery From a Tertiary Care Centre in North India. Cureus. 2023;15(9):e44148.
12. Farquhar CM, Li Z, Lensen S, McLintock C, Pollock W, Peek MJ, et al. Incidence, risk factors and perinatal outcomes for placenta accreta in Australia and New Zealand: a case-control study. BMJ Open. 2017;7(10):e017713.
13. Tadayon M, Javadifar N, Dastoorpoor M, Shahbazian N. Frequency, Risk Factors, and Pregnancy Outcomes in Cases with Placenta Accreta Spectrum Disorder: A Case-Control Study. J Reprod Infertil. 2022;23(4):279-287.
14. Wu S, Kocherginsky M, Hibbard JU. Abnormal placentation: twenty-year analysis. Am J Obstet Gynecol. 2005;192(5):1458-1461.
15. Nelson T. The Morbidly Adherent Placenta. In: Simposio Emergencias Y Complicaciones Severas Obstétricas. Peru; 2016. p. 411-20.

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Published by Faculty of Medicine Andalas University.

16. Jauniaux E, Bhide A. Prenatal ultrasound diagnosis and outcome of placenta previa accreta after cesarean delivery: a systematic review and meta-analysis. Am J Obstet Gynecol. 2017;217(1):27-36.
17. Adu-Bredu TK, Rijken MJ, Nieto-Calvache AJ, Stefanovic V, Aryananda RA, Fox KA, et al. A simple guide to ultrasound screening for placenta accreta spectrum for improving detection and optimizing management in resource limited settings. Int J Gynaecol Obstet. 2023;160(3):732-741.
18. Liu H, Zhang B, Wang W, Li H, Huang X, Wang J, et al. Effect of placenta location detected by ultrasound on the severity of placenta accreta spectrum in patients with placenta previa and placenta accreta spectrum. BMC Pregnancy Childbirth. 2023;23(1):113.
19. Adora H, Yusrawati. Retrospective Analysis of 277 Cases of Placenta Accreta Spectrum Diagnosed With Ultrasound At A Single Tertiary Care Center. Andalas Obstet Gynecol J. 2023;7(2):422-430.
20. Cheung CS, Chan BC. The sonographic appearance and obstetric management of placenta accreta. Int J Womens Health. 2012;4:587-594.
21. Rac MWF, Dashe JS, Wells CE, Moschos E, McIntire DD, Twickler DM. Ultrasound predictors of placental invasion: the Placenta Accreta Index. Am J Obstet Gynecol. 2015;212(3):343.e1-7.
22. Wang Y, Zhou Y, Zeng L, Chen L, Zhao Y. Analysis of risk factors for massive intraoperative bleeding in patients with placenta accreta spectrum. BMC Pregnancy Childbirth. 2022;22(1):159.
23. National Women and Infants Health Programme (NWIHP) and the Institute of Obstetricians and Gynaecologists (IOG) Clinical Advisory Group (CAG) 2022. Ireland: National Women & Infants Health Programme; 2022.
24. Sentilhes L, Goffinet F, Kayem G. Management of placenta accreta. Acta Obstet Gynecol Scand. 2013;92(10):1125-1134.
25. Zhong W, Zhu F, Li S, Chen J, He F, Xin J, et al. Maternal and Neonatal Outcomes After Planned or Emergency Delivery for Placenta Accreta Spectrum: A Systematic Review and Meta-Analysis. Front Med (Lausanne). 2021;8:683811.
26. Zakherah MS, Abdel-Aziz M, Othman ER, Abbas AM. Maternal and neonatal outcomes of placenta previa and accreta at Assiut Women's Health Hospital, Egypt. Int J Reprod Contracept Obstet Gynecol. 2018;7(8):3024-3028.
27. Tikkanen M, Paavonen J, Loukovaara M, Stefanovic V. Antenatal diagnosis of placenta accreta leads to reduced blood loss. Acta Obstet Gynecol Scand. 2011;90(10):1140-1146.
28. Morlando M, Schwickert A, Stefanovic V, Gziri MM, Pateisky P, Chalubinski KM, et al. Maternal and neonatal outcomes in planned versus emergency cesarean delivery for placenta accreta spectrum: A multinational database study. Acta Obstet Gynecol Scand. 2021;100(S1):41-49.
29. Balayla J, Bondarenko HD. Placenta accreta and the risk of adverse maternal and neonatal outcomes. J Perinat Med. 2013;41(2):141-149.
30. Widayat W, Friadi A, Bacthiar H. Diagnostic Test On Modified Score Of Cesarean Section History In Placenta Accreta Index In Predicting Placenta Accreta Diagnosis In Rsup Dr M Djamil. *Andalas Obstet Gynecol J*. 2021;5(2):215-230. doi:10.25077/aoj.5.2.215-230.2021

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