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RETROSPECTIVE EVALUATION OF PLACENTA PREVIA CASES: A SECONDARY-CENTER EXPERIENCE

Plasenta Previa Olgularının Retrospektif Değerlendirilmesi: İkinci Basamak Hastane Deneyimi

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The local ethics committee of Diyarbakır Gazi Yaşargil Training and Research Hospital approved the study (Number: 08.11.2019/371).

Abstract

Aim: This study aimed to evaluate the maternal and neonatal outcomes of placenta previa cases managed in our hospital.

Materials and Methods: The records of 107 placenta previa cases delivered between 2011 and 2016 were retrospectively reviewed. Age, gravida, parity, red blood cell (RBC)-fresh frozen plasma (FFP) transfusion necessity, the gestational week at birth, birth weight, 1st and 5th minute Apgar score, the number of previous cesarean sections, requiring additional surgical intervention (internal iliac artery ligation [IIAL], peripartum hysterectomy) and maternal complications were examined.

Results: RBC-FFP transfusion and IIAL rates were significantly higher in complete placenta previa cases than the partial placenta previa cases. RBC-TDP transfusion, IIAL and peripartum hysterectomy rates were significantly higher in placenta accreata spectrum (PAS) cases compared to those cases with normal placental invasion. Prematurity risk increased in all placenta previa subgroups.

Conclusion: Pregnancy complicated by placenta previa increases the risk of adverse maternal and neonatal outcomes, especially if there is concurrent placental invasion anomaly.

Keywords: Placenta praevia, placenta accreata, postpartum hemorrhage.

Öz

Amaç: Bu çalışmanın amacı, hastanemizde tedavi edilen plasenta previa olgularının maternal ve neonatal sonuçlarını incelemektir.

Materyal ve Metot: 2011-2016 yılları arasında doğumu gerçekleştirilen 107 plasenta previa vakasının kayıtları retrospektif olarak incelendi. Yaş, gravida, parite, eritrosit (RBC)-taze donmuş plazma (TDP) transfüzyonu gereksinimi, doğumdaki gebelik haftası, yenidoğanın doğum ağırlığı, 1. ve 5. dakika Apgar skoru, ek cerrahi girişim gereksinimi (internal iliak arter ligasyonu [İİAL], peripartum histerektomi) ve maternal komplikasyonlar değerlendirildi.

Bulgular: RBC-TDP transfüzyonu ve İİAL oranları komplet plasenta previa olgularında parsiyel plasenta previa olgularına göre anlamlı olarak daha yüksekti. RBC-TDP transfüzyonu, İİAL ve peripartum histerektomi oranları plasenta akreata spektrumu (PAS) olgularında normal plasental invazyonu olan olgulara göre anlamlı olarak daha yüksekti. Tüm plasenta previa alt gruplarında prematürite riski artmıştı.

Sonuç: Plasenta previa ile komplike olan gebeliklerin, özellikle eşlik eden plasenta invazyon anomalisi mevcutsa, olumsuz maternal ve neonatal sonuçlara neden olma riski artmaktadır.

Anahtar Kelimeler: Plasenta previa, plasenta akreta, postpartum kanama.

INTRODUCTION

Placenta previa is described as the implantation of the placenta to the lower uterine segment outside the regular site and thus closes the internal os of the cervix uteri partially or completely[1]. It occurs in 0.3-0.5% of all pregnancies[2]. Recently the increase in placenta previa prevalence is correlated with the rise in cesarean delivery rates[3]. The other risk factors are smoking, advanced maternal age, multiparity, use of assisted reproductive technology, the history of the conditions that may cause to injury of the decidua basalis such as habitual abortion and curettages[4,5]. Placenta previa is usually

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reflected at the end of the second trimester with painless, recurrent vaginal bleeding[6]. Placenta previa may be accompanied by placenta accreata spectrum (PAS: placenta accreata-increata-percreata) defined by the invasion of placental villi beyond the decidua basalis[2]. Transvaginal ultrasound is both safe and has a high diagnostic rate in the diagnosis of placenta previa[7]. However, population studies have shown that one-half to two-thirds of cases of PAS has not been diagnosed before delivery[8]. A pregnancy complicated by placenta previa and/or PAS has a high risk of maternal-fetal morbidity and mortality. Maternal risks include severe third trimester vaginal bleeding, postpartum hemorrhage, postpartum hysterectomy, bladder injuries, infections, hypovolemic shock, and related complications and death[8]. Neonatal risks include prematurity, low Apgar scores, hospitalization in the neonatal intensive care unit, and associated complications and mortality[8].

This study aimed to evaluate the maternal and neonatal outcomes of placenta previa cases managed in our hospital.

MATERIALS AND METHODS

The records of 107 placenta previa cases delivered in Diyarbakır Gazi Yaşargil Training and Research Hospital Department of Obstetrics and Gynecology between 2011 and 2016 were retrospectively reviewed. The local ethics committee of Diyarbakır Gazi Yaşargil Training and Research Hospital approved the study (Number: 08.11.2019/371).

Age, gravida, parity, red blood cell (RBC)-fresh frozen plasma (FFP) transfusion necessity, gestational age at birth (weeks), birth weight, 1st and 5th minute Apgar score, the number of previous cesarean sections were examined. Presence of PAS detected by ultrasonography during the antenatal follow-up and/or diagnosed during the operation, recorded. The lower uterine incision was sutured in patients who did not require additional surgery. Bilateral internal iliac artery ligation (IIAL) and/or hysterectomy was performed in cases requiring additional surgery according to the severity of bleeding and in the presence of uterine atony. The primary outcome of the study was the number and rate of patients requiring additional surgical intervention. Maternal complication defined as at least of one of the following: Postpartum fever (dehydration, atelectasis), postpartum infection (urinary tract, wound site), bladder injury and ureter injury.

Statistical analysis: SPSS 16.0 for Windows (SPSS Inc., Chicago, IL, USA) was used for statistical analysis. Numerical data were expressed as mean and standard deviation, and categorical data were expressed as frequency and percentage. The comparison of categorical data in the groups was made with Chi-square and Fisher exact tests, and the results were given as n (%). Skewness and Kurtosis tests were used to determine whether the numerical data matched the normality distribution. Student's t-test was used to compare the normally distributed data, while the Mann-Whitney U test was used to compare the non-normally distributed data. In all comparisons, $p<0.05$ was considered statistically significant.

RESULTS

The mean maternal age was 30.7±6.82 years, the mean gestational age at delivery was 34.31±4.23 weeks of gestation, and the mean birth weight of the newborns was 2461.68±868.22 g. Seven (6.5%)

of these patients did not have fetus heartbeats when they applied to the clinic. Demographic and clinical characteristics of the patients are shown in Table 1.

Table 1. Demographic and clinical characteristics

		Mean±SD* (n=107)
Age		30.7±6.82
Gravida		3.64±2.48
Parity		2.25±2.12
Gestational week at delivery		34.31±4.23
Birthweight		2461.68±868.22
Apgar 1		6.64±2.4
Apgar 5		7.92±2.48
ES**		0.56±1.4
FFP***		0.49±1.38
		n (%)
Previous cesarean delivery		
	0	94 (87.9)
	1	4 (3.7)
	2	6 (5.6)
	3	3 (2.8)
Type of delivery		
	Cesarean	104 (97.2)
	Vaginal	3 (2.8)
Placenta previa		
	Complete	37 (34.6)
	Partial	70 (65.4)
Abnormal placental invasion		
	No	99 (92.5)
	Yes	8 (7.5)
Hysterectomy		
	No	99 (92.5)
	Yes	8 (7.5)
Internal iliac artery ligation		
	No	92 (86)
	Yes	15 (14)
Hysterectomy + Internal iliac artery ligation		
	No	102 (95.3)
	Yes	5 (4.7)
Complication		
	No	92 (86)
	Yes	15 (14)

*Standart deviation; **Erythrocyte suspension; ***Fresh frozen plasma

Twenty-eight patients (26.1%) underwent additional surgical intervention during the operation due to excessive bleeding. Bilateral IIAL (18.7%) was performed in 20 patients and hysterectomy was performed in 8 (7.4%) patients as the first choice who required additional surgery. Hysterectomy was performed in 5 (4.6%) out of 20 patients who had bilateral IIAL because the bleeding did not reduce.

Maternal complications were seen in 15 patients (14%) after cesarean delivery. 8 (7.4%) of them were postpartum fever, 3 (2.8%) were postpartum infection, 3 (2.8%) were bladder injuries, and one (1%) was ureter injury. All of the bladder injuries occurred in patients who underwent IIAL with hysterectomy. The ureteral injury occurred in a patient who underwent a hysterectomy. Management of any patient did not result in mortality.

When complete and partial placenta previa cases were compared, it was seen that complete placenta previa cases had higher erythrocyte (RBC) and fresh frozen plasma (FFP) needs and higher bilateral IIAL rate (Table 2). There was no statistically significant difference in terms of other characteristics and results.

Table 2. Comparison of complete and partial previa cases

		Complete (Mean±SD*)	Partial (Mean±SD)	p
Age		30.16±6.91	30.99±6.80	0.55
Gravida		3.54±2.37	3.69±2.56	0.56
Parity		2.35±2.2	2.2±2.1	0.60
Gestational week at delivery		33.68±5.07	34.64±3.71	0.96
Birthweight		2296.35±1004.03	2549.07±780.80	0.15
Apgar 1		6.24±2.97	6.86±2.02	0.80
Apgar 5		7.30±3.17	8.24±1.97	0.24
ES**		1.11±2.06	0.27±0.76	**<0.001**
FFP***		0.97±2.07	0.23±0.70	**<0.001**
		Complete n (%)	**Partial n (%)**	**P**
Type of delivery				
	Cesarean	37 (34.6)	67 (62.6)	0.55
	Vaginal	0 (0)	3 (2.8)	
Previous cesarean delivery				
	No	32 (29.9)	62 (57.9)	0.75
	Yes	5 (4.7)	8 (7.5)	
Abnormal placental invasion				
	No	32 (29.9)	67 (62.6)	0.12
	Yes	5 (4.7)	3 (2.8)	
Hysterectomy				
	No	32 (29.9)	67 (62.6)	0.12
	Yes	5 (4.7)	3 (2.8)	
Internal iliac artery ligation				
	No	25 (23.4)	67 (62.6)	**<0.001**
	Yes	12 (11.2)	3 (2.8)	
Hysterectomy + Internal iliac artery ligation				
	No	35 (32.7)	67 (62.6)	1.00
	Yes	2 (1.9)	3 (2.8)	
Complication				
	No	31 (29)	61 (57)	0.63
	Yes	6 (5.6)	9 (8.4)	
Total		37 (34,5)	70 (65,4)	

*Standart deviation; **Erythrocyte suspension; ***Fresh frozen plasma

Table 3. Comparison of cases normal and abnormal placental invasion

		Abnormal invasion (n=8) Mean±SD*	Normal invasion (n=99) Mean±SD	P
Age		31±3.54	30.68±7.03	0.89
Gravida		4.12±2.47	3.6±2.49	0.42
Parity		2.62±1,68	2.22±2.16	0.37
Gestational week at delivery		34.38±5.87	34.3±4.11	0.57
Birthweight		2531.25±979.04	2456.06±863.97	0.81
Apgar 1		6.72±2.39	5.75±2.43	0.08
Apgar 5		6.88±2.9	8±2.44	0.06
ES**		4±2.97	0.28±0.68	**<0.001**
FFP***		4±2.97	0.2±0.58	**<0.001**
		Abnormal invasion n (%)	**Normal invasion n (%)**	**P**
Type of delivery				
	Cesarean	8 (7.5)	96 (89.7)	0.617
	Vaginal	0 (0)	3 (2.8)	
Previous cesarean delivery				
	No	4 (3.7)	90 (84.1)	**0.007**
	Yes	4 (3.7)	9 (8.4)	
Placenta Previa				
	Complete	5 (4.7)	32 (29.9)	0.12
	Partial	3 (2.8)	67 (62.6)	
Hysterectomy				
	No	0 (0)	99 (92.5)	**<0.001**
	Yes	8 (7.5)	0 (0)	
Internal iliac artery ligation				
	No	3 (2.8)	89 (83.2)	**0.001**
	Yes	5 (4.7)	10 (9.3)	
Hysterectomy + Internal iliac artery ligation				
	No	3 (2.8)	99 (92.5)	**<0.001**
	Yes	5 (4.7)	0 (0)	
Complication				
	No	1 (0.9)	91 (85)	**<0.001**
	Yes	7 (6.5)	8 (7.5)	
Total		8 (7.4)	99 (92.6)	

*Standart deviation; **Erythrocyte suspension; ***Fresh frozen plasma

When placenta previa cases were compared normal and abnormal placental invasion, those with abnormal placental invasion needed more RBC and FFP (Table 3). All patients with abnormal placental invasion underwent a peripartum hysterectomy. Also, bilateral IIAL rates were found to be higher in patients with abnormal placental invasion. During and after surgery, complication rates were higher in patients with abnormal placental invasion.

DISCUSSION

Pregnancy complicated by placenta previa is a condition affecting both maternal and fetal outcomes. Therefore, the management of these cases and the problems encountered are essential.

Roustaei et al. reported that advanced maternal age is related to abnormal placentation[9]. They stated that the uterine arterial blood flow reduces in older ages. Thus, a larger surface area is required to provide adequate blood flow. Also, as the number of pregnancies and curettages increase, scarring and adhesion occur in the uterus and the risk of endometrial tissue damage increases. In our study, the mean age was found to be 30.7±6.82 years, and this can be considered as advanced age in terms of parity number in our region.

A history of previous cesarean delivery is a risk factor for PAS in patients with placenta previa[8]. Ultrasonographic examination of these patients becomes more critical as the risk of PAS increases further as the number of previous cesarean deliveries increased. The low rate of prior cesarean delivery in our placenta previa cases can be explained by the fact that our hospital was the secondary step center during the study period and referring patients who had a previous cesarean delivery and/or suspected PAS to the tertiary center except for emergencies.

In cases of placenta previa, vaginal bleeding usually begins at the end of the second trimester, and this bleeding may be recurrent until delivery. This causes anemia even if patients receive iron treatment. Placenta previa cases are also at risk of excessive bleeding at cesarean delivery. Excessive blood loss at cesarean delivery of patients who are already anemia increases the need for blood and blood products. Complete placenta previa cases have more bleeding risk than partial placenta previa cases, and PAS cases have more bleeding risk than without abnormal invasion[7]. The results of our study were consistent with these findings. Blood and FFP transfusions were performed more in both complete placenta previa cases and PAS cases.

Bilateral IIAL is the mainstay of uterine preservation surgery in severe bleeding, but its efficacy remains controversial[10]. In a study by Yildiz et al., it was shown to effectively reduced bleeding in patients with postpartum hemorrhage, including PAS cases[11]. In a recent study, bilateral IIAL decreased postpartum bleeding and decreased hysterectomy rates in PAS cases[12]. In our study, considering the amount of bleeding, vital signs of the patient and the condition of the uterus, bilateral IIAL was preferred in 20 of the patients who needed additional surgery. In 5 of these patients, hysterectomy was added to the operation due to the inability to reduce bleeding. Hysterectomy was preferred in 8 patients without performing bilateral IIAL. The high rate is that most of the patients were operated under emergency conditions. The rate of bilateral IIAL was higher in both complete placenta previa and PAS cases. Peripartum hysterectomy was performed only in PAS cases. The absence of

peripartum hysterectomy in any patient without PAS indicates that IIAL is an effective method in such patients. The reason for the high peripartum hysterectomy rates in patients with PAS is thought to be due to the weak hemodynamic findings of these patients who underwent emergency surgery in our clinic. Patients with PAS and stable hemodynamic findings without bleeding were referred to the tertiary center.

Placenta previa can cause adverse neonatal outcomes including prematurity, low Apgar score and mortality[13]. In our study, the mean gestational age at delivery of the patients was 34.31±4.23 weeks of gestation, and there was no statistical difference between the groups as both complete-partial placenta previa and normal-abnormal placental invasion. This result shows that placenta praevia is a risk factor for prematurity in itself, independent of the subgroups. In 7 of the patients, fetuses died prenatally due to the excessive bleeding, and this is one of the risks of placenta previa.

Intra-operative and post-operative complications may occur in placenta previa cases[14-16]. Among the causes of these problems are intraabdominal adhesions due to previous surgery, the risk of emergency surgery to the patient with hemodynamically unstable, insufficient sterilization in emergency surgery and adjacent organ invasion due to abnormal placental invasion. Tahaoğlu et al. stated that bilateral IIAL procedure requires surgical ability. If the patient is hemodynamically unstable, and the surgeon does not have enough experience, iatrogenic complications can be occurred, such as adjacent vascular injuries, and ligation of the wrong structure[17]. In our study, the maternal complication rate was 14%, and these were significantly higher in PAS cases.

The strengths of the study are that a large number of patients and that the patients with both complete-partial and PAS-nonPAS are included in the study group, and patients were managed in similar clinical approaches in one center. Limitations of this study include being a retrospective study and the inability to generalize our results to tertiary centers.

CONCLUSION

When the placenta previa cases managed in our clinic were evaluated, RBC-FFP transfusion and HAL rates were significantly higher in complete placenta previa cases than the partial placenta previa cases. RBC-TDP transfusion, HAL and peripartum hysterectomy rates were significantly higher in PAS cases compared to those cases with normal placental invasion. Prematurity risk increased in all placenta previa subgroups.

References

1. Durukan H, Durukan ÖB, Yazıcı FG. Planned versus urgent deliveries in placenta previa: maternal, surgical and neonatal results. Arch Gynecol Obstet. 2019;
2. Kollmann M, Gaulhofer J, Lang U, Klaritsch P. Placenta previa: incidence, risk factors and outcome. J Matern Fetal Neonatal Med. 2016;29(9):1395-8.
3. Solheim KN, Esakoff TF, Little SE, Cheng YW, Sparks TN, Caughey AB. The effect of cesarean delivery rates on the future incidence of placenta previa, placenta accreata, and maternal mortality. J Matern Fetal Neonatal Med. 2011;24(11):1341-6.
4. Matalliotakis M, Velegrakis A, Goulielmos GN, Niraki E, Patelarou AE, Matalliotakis I. Association of Placenta Previa with a History of Previous Cesarean Deliveries and Indications for a Possible Role of a Genetic Component. Balkan J Med Genet. 2017;20(2):5-10.
5. Karami M, Jenabi E, Fereidooni B. The association of placenta previa and assisted reproductive techniques: a meta-analysis. J Matern Fetal Neonatal Med. 2018;31(14):1940-47.
6. Rosenberg T, Pariente G, Sergienko R, Wiznitzer A, Sheiner E. Critical analysis of risk factors and outcome of placenta previa. Arch Gynecol Obstet. 2011;284(1):47-51.
7. Jauniaux E, Alfirevic Z, Bhide AG, Belfort MA, Burton GJ, Collins SL, et al. Placenta previa and Placenta Accreata: Diagnosis and Management: Green-top Guideline No. 27a. BJOG. 2019;126(1):e1-e48.

8. Jauniaux E, Bhide A, Kennedy A, et al. FIGO consensus guidelines on placenta accreata spectrum disorders: Prenatal diagnosis and screening. Int J Gynaecol Obstet. 2018;140(3):274-80.
9. Roustaei Z, Vehviläinen-Julkunen K, Tuomainen TP, Lamminpää R, Heinonen S. The effect of advanced maternal age on maternal and neonatal outcomes of placenta previa: A register-based cohort study. Eur J Obstet Gynecol Reprod Biol. 2018;227:1-7.
10. Porreco RP, Stettler RW. Surgical remedies for postpartum hemorrhage. Clin Obstet Gynecol. 2010;53(1):182-95.
11. Yildiz C, Akkar OB, Karakuş S, Çetin A, Yanik A. Hypogastric artery ligation for obstetrical hemorrhage: clinical experience in a tertiary care center. Turk J Med Sci. 2015;45(6):1312-6.
12. Rauf M, Ebru C, Sevil E, Selim B. Conservative management of post-partum hemorrhage secondary to placenta previa-accreata with hypogastric artery ligation and endo-uterine hemostatic suture. J Obstet Gynaecol Res. 2017;43(2):265-71.
13. Lal AK, Hibbard JU. Placenta previa: an outcome-based cohort study in a contemporary obstetric population. Arch Gynecol Obstet. 2015;292(2):299-305.
14. Sparić R, Mirković L, Ravilić U, Janjić T. Obstetric complications of placenta previa percreata. Vojnosanit Pregl. 2014;71(12):1163-6.
15. Ahmed SR, Aitallah A, Abdelghafar HM, Alsammani MA. Major Placenta Previa: Rate, Maternal and Neonatal Outcomes Experience at a Tertiary Maternity Hospital, Sohag, Egypt: A Prospective Study. J Clin Diagn Res. 2015;9(11):QC17-9.
16. Su HW, Yi YC, Tseng JJ, Chen WC, Chen YF, Kung HF, et al. Maternal outcome after conservative management of abnormally invasive placenta. Taiwan J Obstet Gynecol. 2017;56(3):353-357.
17. Tahaoglu AE, Balsak D, Togrul C, Obut M, Tosun O, Cavus Y, et al. Emergency peripartum hysterectomy: our experience. Ir J Med Sci. 2016;185(4):833-838.

The local ethics committee of Diyarbakır Gazi Yaşargil Training and Research Hospital approved the study (Number: 08.11.2019/371).