

Undiagnosed placenta previa percreta presenting as an obstetric emergency to the district hospital with inexperienced surgeons: Case report and review of the literature

İlçe hastanesine obstetrik acil olarak başvuran tanı konulmamış plasenta previa perkreat: Vaka sunumu ve literatürün gözden geçirilmesi

Erhan Okuyan ¹, Zeynep Bayramoğlu ², Fethi Karakaya ¹

¹ Department of Obstetrics and Gynecology,
Batman Maternity and Child's Health
Hospital, Batman, Turkey

² Department of Pathology, Konya Education
and Research Hospital, Konya, Turkey

ORCID ID of the author(s)

EO: 0000-0001-9636-9539

ZB: 0000-0001-7075-8819

FK: 0000-0001-5620-6794

Abstract

Placenta previa, a placental implantation anomaly where the placenta is located close to the internal os, has an incidence of 0.5%. One of the most important complications of placenta previa is the presence of placenta percreta. Nowadays, the incidence of placenta percreta has increased due to the increase in the number of cesarean sections. Maternal morbidity in such cases comprise massive transfusion, development of disseminated intravascular coagulation, uterine rupture, cystostomy, fistula formation, ureteral stricture, intensive care unit admission, infection, prolonged hospitalization, adult respiratory distress syndrome, renal failure, septicemia and even death. The aim of this research is to report how the inexperienced surgeons who were caught unprepared reacted in the case of undiagnosed placenta previa percreta. We aimed to make this case report a guide to saving the life of mother with placental previa percreta and baby under inadequate hospital conditions. Similar cases may be encountered by every young surgeon at any time.

Keywords: Cesarean Hysterectomy, Undiagnosed placenta previa percreta, Inadequate Hospital Conditions

Öz

Plasenta previa, plasentanın servikal internal os'a yakın olduğu ve insidansının %0,5 olarak bildirildiği plasenta implantasyonu anomalisidir. Plasenta previa'nın en önemli komplikasyonlarından biri plasenta perkreat'a'nın eşlik etmesidir. Dünyada yapılmaya devam eden primer sezaryen nedeniyle plasenta previa perkreat insidansı artmaktadır. Plasenta previa perkreat tanısı konulan olgularda; maternal ve fetal morbidite ve mortalite çok yüksektir ve çoklu organ yetmezliğine ilerleyebilecek yıkıcı olaylara neden olabilir. Bu araştırmaya tanı konmamış plasenta previa perkreat durumunda; hazırlıksız ve deneyimsiz yakalanan cerrahların nasıl tepki verdiğini rapor etmeyi amaçlamaktadır. Bu olgu sunumunu; yetersiz hastane koşullarında her genç cerrahın her an karşılaşabileceği tanı konmamış plasenta previa perkreat vakalarında anne ve bebeğin hayatını kurtarmak için bir rehber haline getirmeyi amaçladık.

Anahtar kelimeler: Sezaryen Histerektomi, Tanı konulmamış plasenta previa perkreat, Yetersiz hastane koşulları

Introduction

Placenta previa, a placental implantation anomaly where the placenta is located close to the internal os, has an incidence of 0.5%. One of the most important complications of placenta previa is the presence of placental percreta. Nowadays, the incidence of placenta percreta has increased due to the increase in the number of cesarean sections. Accurate prenatal diagnosis and implementation of preplanned management strategies of abnormally invasive placentation is fundamental because it has been shown to reduce maternal and fetal morbidity associated with this condition, such as severe hemorrhage, need for blood transfusion, peripartum hysterectomy, intraoperative and postoperative complications [1,2]. Intra- and postsurgical outcomes of women affected by abnormally invasive placentation are directly related to the depth and topography of placental invasion in placenta percreta. Those showing parametrial invasion are at the highest risk of morbidity [3,4]. The placenta begins to form 13-15 days after ovulation. With the onset of the fetal period, the villi covering the decidua capsularis degenerate to form the chorion leave, while the villi above the decidua basalis proliferate to form the placenta. Normal implantation of the placenta is necessary for successful pregnancy and is regulated very strictly by cytokines, steroid hormones, immunological factors, prostaglandins, and some other mediators. Placental adhesion anomalies are characterized histopathologically by defects in the decidua or fibrous Nitabuch layer and penetration of trophoblasts into the myometrium and adjacent organs. There are three different subtypes of trophoblasts depending on the depth of invasion. In placenta accreta vera, the placenta invades the decidual layer of the myometrium [5].

Corresponding author / Sorumlu yazar:
Zeynep Bayramoğlu
Address / Adres: Konya Eğitim ve Araştırma
Hastanesi, Patoloji Anabilim Dalı, Konya,
Türkiye
e-Mail: drzeynepbayramoglu@hotmail.com

Informed Consent: The authors stated that the written consent was obtained from the patient presented with images in the study.

Hasta Onamı: Yazar çalışmada görüntüleri sunulan hastadan yazılı onam alındığını ifade etmiştir.

Conflict of Interest: No conflict of interest was declared by the authors.

Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Financial Disclosure: The authors declared that this study has received no financial support.

Finansal Destek: Yazarlar bu çalışma için finansal destek almadıklarını beyan etmişlerdir.

Published: 12/28/2019
Yayın Tarihi: 28.12.2019

Copyright © 2019 The Author(s)
Published by JOSAM

This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial-NoDerivatives License 4.0 (CC BY-NC-ND 4.0) where it is permissible to download, share, remix, transform, and build upon the work provided it is properly cited. The work cannot be used commercially without permission from the journal.



In placenta increta, placental villi invade more deeply within the myometrium [6]. Placenta percreta is diagnosed when the placenta invades the serosa and even beyond, in some cases. Placenta accreta is diagnosed in about 1:533 pregnancies among which placenta accreta vera constitutes about 75%-80%, placenta increta, 17%, and placenta percreta, the remaining 5%. Overall, the incidence of placenta percreta is extremely low but the diagnosis of this rare disorder is increasing due to the increased number of cesarean deliveries performed in the past few years globally [6]. In cases where placenta percreta is complicated by bladder invasion, mortality rates can be as high as 9.5% and 24% among mothers and newborns, respectively. Both ultrasonography and MRI have good sensitivity and specificity for prenatal diagnosis of placenta accreta. According to American College of Obstetricians and Gynecologists, cesarean hysterectomy is the widely acknowledged method to manage placenta accreta spectrum, during which the placenta is left in situ after delivery of the fetus because any attempts to remove the placenta is associated with a substantial danger of hemorrhage. Another way to manage placenta percreta includes the conservative approach, where the uterus and the placenta are left in-situ at time of cesarean delivery, which was shown to decrease blood loss, the need for transfusion, and the incidence of disseminated intravascular coagulation through uterus involution [7,8]. We wanted to shed light on the rare case of placenta previa percreta, which was overlooked in the population with low health literacy despite having regular pregnancy controls. The presented case is highly interesting in our opinion, since the patient is referred to the hospital from 70 kilometers far with the diagnosis of placental detachment and the surgeons who accept the case urgently began the operation without preparation for this fatal case. It also includes the surgeons who were caught unprepared for the case and who made the right decision of cesarean hysterectomy and the events that followed until discharge.

Case presentation

A 31-year-old patient who had previously delivered by cesarean section twice was referred to Batman Maternity and Children's Diseases Hospital by ambulance from the district hospital approximately 70 kilometers away with a preliminary diagnosis of detached placenta. On admission, the patient was semi-conscious, had excessive vaginal bleeding with an arterial blood pressure of 70/40 mmHg. The ultrasonographic examination performed on arrival revealed a live breech-like fetus with a fetal heart rate of 90 beats/minute whose measurements were consistent with approximately 36-37 weeks of gestation. The placenta had completely blocked the cervical internal os and the anterior bladder uterine line was not clearly visualized. In doppler ultrasonography, there were many lacunae in the placenta along with hypervascularized areas, and the sonolucent area between the placenta and myometrium was undistinguishable. Placenta previa percreta was considered for preliminary diagnosis. The second surgeon was called for immediate assistance, blood and blood products were urgently prepared before surgery. Cystostomy could not be performed due to lack of time and equipment. The abdomen was entered through an umbilical median incision, and the placenta was

observed to have invaded the uterus with full thickness at the uterine cervical line and bladder border. Uterus was vertically incised, and a single live 3000-gram-weighting female baby was delivered, after which placenta and its attachments were left in. After placental cord ligation, we decided on performing hysterectomy, however, on the second look, we observed that the placenta invaded the bladder and uterine serosa, former incision scars could not be visualized and intestinal adhesions were present at the level of bilateral uterine arteries (Figure 1). The bladder was separated from the uterus by sharp dissections after bleeding control. Upon the arrival of the desired blood and blood products at the 40th minute of the operation, blood transfusion was initiated. The bladder was filled with approximately 200 ml of methylene blue and checked for bladder injury. After making sure there was no bladder damage, intestinal adhesions were divided by sharp dissection at the level of uterine arteries. Bilateral ureters were visualized by retroperitoneal dissection, and finally hysterectomy was started at the 80th minute of operation. Two hours into the surgery, hysterectomy was performed (Figure 2). After bleeding control and checking for bladder damage, parietal peritoneum, fascia, and skin were closed anatomically and the patient was hospitalized at the gynecology service. The operation took 2.5 hours and 4 units of erythrocyte suspension and 1 unit of fresh frozen plasma were transfused. The patient's hemoglobin value was 6.7 mg/dL at the first postoperative hour, and vital signs were stable. Macroscopic examination of serial uterine sections revealed a placenta-like irregular hemorrhagic tissue with a size of 9x8x4.5 cm fully invading the uterine wall. Upon microscopic examination, the placental villi were observed to interdigitate directly with the uterine myometrium, without an intervening decidual plate. On the first postoperative day, 5 units of erythrocyte suspension and 1-unit fresh frozen plasma were transfused, and the patient was mobilized at 8th postoperative hour. On the 2nd postoperative day, the hemodynamically stable patient had passed gas and stool, and her bladder catheter was removed after bladder exercise. The patient was discharged on the third postoperative day after hemodynamic stability was observed for 48 hours with no complications.



Figure 1: Placenta previa percreta with bladder invasion



Figure 2: Hysterectomy material

Discussion

Medline, PubMed and Cochrane databases were scanned for randomized controlled trials in undiagnosed placenta previa percreta. Written informed consent was obtained from the patient.

Based on the literature, the risk factors for abnormal invasive placentation (AIP) include obesity, age >35 years, smoking before or during pregnancy, prior uterine surgery, abortion and uterine curettage, in vitro fertilization (IVF) pregnancy, little time interval between a previous cesarean section (CS) and a subsequent pregnancy, placenta previa and prior CS, the latter two being the strongest risk factors for the occurrence of AIP according to the meta-analysis of Iacovelli et al. [9] in 2018. Placenta percreta is the most uncommon and dangerous form of abnormal placentation and most common cause of hysterectomies associated with childbirth. The diagnosis of this condition can be made during pregnancy by ultrasound and/or magnetic resonance imaging (MRI). MRI is not the first-choice examination due to high cost, lesser accessibility, and inconvenience. It is mostly used when the diagnosis of placenta percreta cannot be confirmed or denied by ultrasound examination, as well as before planned surgical treatment. MRI is now described as an examination that better predicts topography and placental tissue invasion [10]. A meta-analysis including 876 articles with large case series published by D'Antonio et al. in 2018 identified that the most common ultrasonographic features of placenta accreta in the first trimester of pregnancy were low implantation of the gestational sac close to a previous uterine scar, which was observed in 82.4% (95% CI, 46.6–99.8%) of cases, and anechoic spaces within the placental mass (lacunae), which was observed in 46.0% (95% CI, 10.9–83.7%) [11]. The presence of lacunar spaces (irregular vascular areas similar to “Swiss cheese” in the placental implantation area) within the placenta and an increase in their number during 15–20th weeks of pregnancy are highly significant predictive signs of placenta accreta (79% sensitivity and 92% positive predictive value). The more lacunar spaces are present, the more likely the placental invasion into the nearby tissue [12]. The criteria of placental invasion as seen in Doppler ultrasonography include abnormal hypervascularization of the tissue (myometrium and the bladder gap), enlarged diffusion lacunar spaces throughout the whole placenta reaching the myometrium and the cervix, low resistance of arterial blood flow, increased venous flow to blood vessels, and the locally extinct vascular tone in the hypoechoic sub-placental gap. It is incredibly important to identify pathological blood flow between the uterus and the bladder wall. This is one of the best indicators for the invasive placental abnormalities. The sensitivity and specificity of color Doppler imaging in the diagnosis of placenta previa accreta are reportedly 82.4% and 96.8%, respectively, with an 87.5% positive and a 95.3% negative predictive value [13]. A novel pathological feature of abnormal fetal vasculature in placenta accreta spectrum disorders (PASD) was described by Konstantinidou et al. [14] in 2019. The histopathological examination of eleven PASD- hysterectomy specimens and subsequent review of the corresponding MRIs revealed the presence of large fetal vascular trunks extending deep towards the placental periphery, demonstrating deficient

branching along their course ('stripped-fetal-vessel' sign). To their knowledge, this was the first report to describe the pattern of abnormal fetal vasculature in correlation with MRI in PASD. The management is usually an elective cesarean delivery with hysterectomy, but this approach often causes massive hemorrhage and may cause injury to the adjacent organs due to the morbidly adherent placenta, thus should be performed under multidisciplinary conditions with experienced surgical teams. Conservative management is usually followed by uterine and pelvic devascularization to reduce risk of bleeding. Placental tissue is either allowed to undergo spontaneous autolysis or its expulsion is aided with methotrexate. These patients are at elevated risk of emergency peripartum hysterectomy due to uncontrolled secondary postpartum hemorrhage, severe sepsis due to uterine infection and placental necrosis. Most publications in the literature include surgical procedures performed under elective conditions.

Our literature search revealed no large case series on the emergency management and resulting complications of placenta percreta by inexperienced surgeons. In 2019, Stanleigh et al. [15] compared elective management using the ProActive peripartum multidisciplinary approach (PAMA) with urgent management of their PASD series of 72 cases. PAMA protocol eliminated urgent deliveries and reduced the associated significant hemorrhage-related maternal morbidity, with no increase in the rate of hysterectomy or adverse neonatal outcome. Maternal mortality rate in the literature was %7-10, except for one article from India by Aggarwal et al. [16], in which it was noted as %30. The author attributed this high rate to the population of patients with low socioeconomic status, as there were no previous scans and no regular follow-up. As long as primary cesarean rates continue to increase, we will likely encounter more difficult cases, such as isthmoceles and placental adhesion abnormalities, more frequently [17]. In our case, we confirmed the diagnosis of the patient with a preliminary diagnosis of placental detachment at the district hospital during the operation. Although there was no urology specialist, vascular surgeon or intensive care unit in our hospital, we managed to save the mother and the baby by performing emergency surgery under our current conditions. We aimed to make this case report a guide to saving the life of mother with placenta previa percreta and the baby under inadequate hospital conditions. Similar cases can be confronted by every young surgeon at any time.

Conclusion

Undiagnosed placenta previa percreta is a serious, life-threatening condition. Early preoperative diagnosis is the key to saving the patient's life. A tertiary-level hospital has greater antenatal diagnostic and management tools. Increasing health literacy in patients primarily in developing countries will play a life-saving role in such mortal cases. Previous cesarean section is an important risk factor of placental invasion abnormalities thus there is a need to keep the primary cesarean section rates down. Placenta previa percreta should be managed in tertiary centers and operated under elective conditions with multidisciplinary experienced teams.

References

- Sumigama S, Itakura A, Ota T, Okada M, Kotani T, Hayakawa H, et al. Placenta previa increta/percreta in Japan: a retrospective study of ultrasound findings, management, and clinical course. *J Obstet Gynaecol Res.* 2007;33:606–11.
- Tikkanen M, Paavonen J, Loukovaara M, Stefanovic V. Antenatal diagnosis of placenta accreta leads to reduced blood loss. *Acta Obstet Gynecol Scand.* 2011;90:1140–6.
- Oyelese Y, Smulian JC. Placenta previa, placenta accreta, and vasa previa. *Obstet Gynecol.* 2006;107:927–41.
- Belfort MA. Placenta accreta. *Am J Obstet Gynecol.* 2010;203:430–9.
- Ibrahim MA, Liu A, Dalpiaz A, Schwamb R, Warren K, Khan SA. Urological Manifestations of Placenta Percreta. *Curr Urol.* 2015;8(2):57–65.
- Hudon L, Belfort MA, Broome DR. Diagnosis and management of placenta percreta: a review. *Obstet Gynecol Surv.* 1998;53:509–17.
- Wright JD, Pri-Paz S, Herzog TJ. Predictors of massive blood loss in women with placenta accreta. *Am. J. Obstet. Gynecol.* 2011;205(38):1–6.
- Sentilhes. Maternal outcome after conservative treatment of placenta accreta. *Obstet. Gynecol.* 2010;115(3):526–34.
- Iacovelli A, Liberati M, Khalil A, Timor-Trisch I, Leombroni M, Buca D, et al. Risk factors for abnormally invasive placenta: a systematic review and meta-analysis. *J Matern Fetal Neonatal Med.* 2018 Jul;22:1–11. DOI:10.1080/14767058.2018.1493453.
- Berkley EM, Abuhamad AZ. Prenatal Diagnosis of Placenta Accreta Is Sonography All We Need? *Ultrasound Med.* 2013;32:1345–50.
- D'Antonio F, Timor-Trisch IE, Palacios-Jaraquemada J, Monteagudo A, Buca D, Forlani F, et al. First-trimester detection of abnormally invasive placenta in high-risk women: systematic review and meta-analysis. *Ultrasound Obstet Gynecol.* 2018Feb;51(2):176–83. DOI: 10.1002/uog.18840. Review.
- Rac MW, Dashe JS, Wells CE, Moschos E, McIn-tire DD, Twickler DM. Ultrasound predictors of placental invasion: the Placenta Accreta Index. *Am J Obstet Gynecol.* 2015 Mar;212(3):343:e1–7.
- Chou MM, Ho ESC, Lee YH. Prenatal diagnosis of placenta previa accreta by transabdominal color Doppler ultrasound. *Ultrasound Obstet Gynecol.* 2000;15:28–35.
- Konstantinidou AE, Bourgioti C, Fotopoulos S, Souka E, Nikolaidou ME, Zafeiropoulou K, et al. Stripped fetal vessel sign: a novel pathological feature of abnormal fetal vasculature in placenta accreta spectrum disorders with MRI correlates. *Placenta.* 2019 Jul 9. pii: S0143-4004(19)30515-6. DOI: 10.1016/j.placenta.2019.07.005.
- Stanleigh J, Michaeli J, Armon S, Khatib F, Zuckerman B, Shaya M, et al. Maternal and neonatal outcomes following a proactive peripartum multidisciplinary management protocol for placenta accreta spectrum as compared to the urgent delivery. *Eur J Obstet Gynecol Reprod Biol.* 2019 Jun;237:139–44. doi: 10.1016/j.ejogrb.2019.04.032. Epub 2019 Apr 19.
- Aggarwal R, Suneja A, Vaid NB, Yadav P, Sharma A, Mishra K. Morbidly adherent placenta: a critical review. *J Obstet Gynaecol India.* 2012 Feb;62(1):57–61. DOI: 10.1007/s13224-012-0149-5. Epub 2012 Apr 20.
- Karlı P, Şahin B, Kara F. The incidence of isthmocoele may be higher than reported. *J Surg Med.* 2018;2(3):283–7.

This paper has been checked for language accuracy by JOSAM editors.

The National Library of Medicine (NLM) citation style guide has been used in this paper.

Suggested citation: Patrias K. Citing medicine: the NLM style guide for authors, editors, and publishers [Internet]. 2nd ed. Wendling DL, technical editor. Bethesda (MD): National Library of Medicine (US); 2007-[updated 2015 Oct 2; cited Year Month Day]. Available from: <http://www.nlm.nih.gov/citingmedicine>