

Approach to cases with postpartum haemorrhage: Retrospective analysis of 41 cases

Postpartum hemoraji vakalarına yaklaşım: 41 olgunun retrospektif analizi

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ABSTRACT

Objective: To assess treatment approaches and outcomes in 41 cases with postpartum haemorrhage (PPH).

Methods: Screening the electronic database of the hospital identified 41 cases admitted to the obstetrics clinic with a diagnosis of PPH (ICD codes: O72, O72.1, O72.2) between January 1, 2010, and June 30, 2013. The clinical findings and the results of the surgical and medical treatments used were noted in all the patients.

Results: Forty-one cases with PPH were detected who had been managed at the clinic during a 3-year period. Normal spontaneous vaginal delivery (26 patients; 63.4%) was the most common type of delivery. Uterine atony was the most common cause of PPH in 30 patients (73.2%). Medical therapy was the most common therapeutic approach in PPH caused by uterine atony (16 patients; 53.3%), followed by total abdominal hysterectomy (TAH) plus bilateral hypogastric artery ligation (9 patients; 30.0%), uterine packing sutures plus bilateral hypogastric artery ligation (BHAL) (4 patients; 13.3%) and intrauterine balloon tamponade (IUBT) (one patient; 2.4%). Only one of 3 patients with uterine rupture underwent a hysterectomy. Three patients in whom placental adhesion anomalies were detected were treated by a combination of manual removal of the placenta, uterine curettage and IUBT.

Conclusion: The results suggest that care should be taken regarding PPH in pregnant women, even in those without any risk factors. In particular, the third phase of labour should be carefully monitored. Medical treatment and organ-sparing surgery are generally associated with positive outcomes in patients with stable haemodynamic status. *J Clin Exp Invest* 2014; 5 (1): 18-23

Key words: Surgical treatment, medical treatment, postpartum haemorrhage

ÖZET

Amaç: Kliniğimizde tedavi edilen 41 postpartum hemoraji (PPH) olgusunun tedavi yöntemleri ve sonuçlarını değerlendirmek

Yöntemler: Hastanemiz elektronik kayıt sisteminden 1 Ocak 2010 ile 30 Haziran 2013 tarihleri arasında "International Classification of Diseases" hastalık kodlarına göre Postpartum kanama (O72, O72.1, O72.2) tanısı ile obstetri servisine yatırılıp yapılan hastalar taranarak 41 hasta kaydına ulaşıldı. Tüm hastaların tedavi sırasındaki klinik durumları ve uygulanan cerrahi ve medikal tedavi sonuçları not edildi.

Bulgular: Üç yıllık dönem içerisinde PPH nedeniyle hastanemizde tedavi altına alınan 41 olgu saptandı. Doğum şekli olarak en çok 26 hasta (%63,4) ile normal doğum saptanırken, 12 hastada (%29,3) sezaryen, 3 hastada (%7,3) ise vakum yardımıyla vajinal doğum yaptırıldığı görüldü. PPH neden olma bakımından en sık rastlanılan klinik durum 30 hastada (%73,2) görülen uterin atoni olarak tespit edildi. Atoni nedeniyle gelişen PPH'de en sık uygulanan tedavi şekli 16 hastada (%53,33) görülen medikal tedavi iken ardından 9 hasta (%30,00) total abdominal histerektomi + bilateral hipogastrik arter ligasyonu (BHAL), 4 hasta (%13,33) uterin paketleme sütürü + BHAL ve 1 hastada ise (%2,44) intrauterin balon tamponat (İUBT) uygulamasının yapıldığı tespit edildi. Uterin rüptür saptanan 3 olgudan sadece birinde histerektomi yapıldı. Plasental yapışma anomalisi saptanan 3 hasta elle halas, uterin küretaj ve İUBT uygulaması ile tedavi edildi.

Sonuç: Sonuç olarak risk faktörü bulunmayan gebelerde bile PPH açısından dikkatli olunmalı ve özellikle doğum 3. evresi dikkatle izlenmelidir. Hemodinamik açıdan durumu stabil olan hastalarda medikal tedavi ve organ koruyucu cerrahi genelde olumlu sonuçlar vermektedir.

Anahtar kelimeler: Cerrahi tedavi, medikal tedavi, postpartum hemoraji

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INTRODUCTION

Postpartum haemorrhage (PPH) is traditionally defined as bleeding over 500 ml within 24 hours after normal delivery and bleeding over 1000 ml after caesarean section [1,2]. Although PPH is generally observed in developing countries, its incidence is increasing in developing countries due to increases in the number of pregnancies at advanced age, induction of labour, caesarean section rates and multiple pregnancies in recent years [3,4]. PPH accounts for 30% of maternal mortality worldwide [5]. There is no consensus regarding the true incidence of PPH because there is no available method able to measure the amount of bleeding in PPH in an objective manner. However, in various series, its incidence has been reported as 5–12% [1,6,7]. The most frequent etiology is uterine atony; other etiological factors include injuries of the lower genital tract, uterine rupture, uterine inversion, retention of products of conception and coagulopathy [2,6,8].

Early diagnosis and management can prevent complications, such as hypovolemic shock, renal failure, disseminated intravascular coagulation, hepatic dysfunction and acute respiratory distress syndrome [3,9]. Thus, careful monitoring is important during the third phase of labour.

The management in PPH may vary depending on the type of delivery, amount of bleeding, source of bleeding, haemodynamic status of the patient, desire for children and skills of the obstetrician [1]. Management options comprise a wide spectrum from fundal massage to hysterectomy [1,10].

In this manuscript, we review the clinical findings of 41 patients with PPH at our clinic and the diagnostic and therapeutic approaches.

METHODS

This retrospective study was carried out at the Department of Gynecology and Obstetrics at our university, was planned in accordance with the Second Declaration of Helsinki (revised in 2008) and was approved by the local ethics committee.

Screening the electronic database of our hospital identified records of 41 cases admitted to the clinic with a diagnosis of PPH (ICD codes: O72, O72, O72.2) between January 1, 2010, and June 30, 2013. In all patients, we reviewed data regarding age at management, number of pregnancies, gestational week, type of delivery, birth weight, aetiology of PPH, haemoglobin level, transfusion status and treatment methods used.

The treatment methods employed were classified into 2 groups: surgical and medical. Surgical treatment was further subclassified as follows: total abdominal hysterectomy (TAH) or organ-sparing surgery. The organ-sparing surgeries were uterine packing sutures (B-Lynch) plus bilateral hypogastric artery ligation (BHAL), repair of lacerations in the lower genital tract and intrauterine balloon tamponade (IUBT). The medical therapies were fundal massage and the use of uterotonic agents, such as oxytocin, ergometrine and misoprostol.

RESULTS

Forty-one cases with PPH were detected who had been managed in the clinic during a 3-year period. Thirty-four (82.93%) of the 41 cases were referred to the clinic with uncontrolled PPH. Table 1 presents the demographic characteristics at admission, and Table 2 summarizes the laboratory results, number of transfusions and length of hospital stay of all the patients. The most common type of delivery was normal spontaneous vaginal delivery (26 patients; 63.4%), followed by caesarean section (12 patients; 29.3%) and vacuum-assisted vaginal delivery (3 patients; 7.3%).

The most common clinic entity causing PPH was uterine atony, which was detected in 30 patients (73.2%). Reasons other than uterine atony included injuries of the genital tract, such as vaginal or cervical tears (5 patients; 12.2%), placental adhesion anomalies (3 patients, 7.3%) and uterine rupture (3 patients; 7.3%). Table 3 presents the treatment methods used in PPH in this case series.

In the PPH caused by atony, medical therapy (16 patients; 53.3%) was the most commonly used treatment method, followed by TAH plus BHAL (9 patients; 30.0%), B-Lynch brace sutures plus BHAL (4 patients; 13.3%) and IUBT (one patient; 2.4%).

Of the 3 patients with uterine rupture, rupture repair was performed in 2 patients, and TAH plus BHAL was performed in one patient as repair was not possible. Genital tract injuries observed in 5 patients (deep vaginal lacerations with episiotomy in 3 patients and vaginal lacerations plus an irregular cervical tear in 2 patients) were treated by repair under general anaesthesia, as well as by applying vaginal compresses for 24 hours.

In 3 patients with postpartum placental retention, the placental tissue was manually removed, and uterine curettage was performed under general anaesthesia. An IUBT was subsequently placed because the above-mentioned interventions failed to stop the bleeding. If no bleeding was observed

during the 24-hour follow up, the balloon catheter was removed by gradually decreasing the volume of the balloon. Histopathological of placental specimens taken from the 3 patients identified placenta accreta.

Nineteen patients (46.3%) with haemodynamic instability were managed in the intensive care unit.

Nine of these underwent TAH plus BHAL, 2 underwent B-Lynch+ BHAL, 2 had genital tract injury, 2 underwent IUBT, and 4 received medical therapy. Blood and blood products were transfused in 35 patients (85.4%) (Table 2). No maternal mortality occurred.

Table 1. The demographic data of patients being treated for postpartum haemorrhage

	Mean±SD or n	Interquartile range or %
Age, years	28.24±6.36	22.50-34
Gravidity (n)	3.71±2.43	2-6
Gestational age of delivery (weeks)	39±1.50	38-40
Birth weight (gr)	3423.17±413.38	3050-3800
Spontaneous vaginal delivery (n)	26	63.4
Cesarean section (n)	12	29.3
Vacuum assisted vaginal delivery (n)	3	7.3

Table 2. The laboratory results, number blood transfusion and duration of hospital stay of patients treated for postpartum haemorrhage

	Mean±SD or n	Interquartile range or %
Preoperative hemoglobin (g/dl)	7.02±1.41	6.20-8.10
Postoperative hemoglobin (g/dl)	9.05±0.47	8.70-9.40
Preoperative thrombocyte (x1000/mm ³)	285.56±67.52	248.50-332.00
Postoperative thrombocyte (x1000/mm ³)	250.68±62.13	199.50-297.50
Erythrocyte suspension (unit)	2.61±2.34	1-3
Fresh frozen plasma (unit)	1.54±2.00	0-2
Platelet Suspension (unit)	0.44±1.05	0
Admission to intensive care unit	19	46.34
Days in intensive care unit	0.83±1.11	0-1
Length of post-operative stay (day)	4.36±2.03	3-6

Table 3. Causes of postpartum hemorrhage and methods of treatment

	Uterine atony	Uterine rupture	GTI	Placenta accreta	Total
Medical treatment	16	–	–	–	16
B-Lynch + BHAL	4	–	–	–	4
TAH + BHAL	9	1	–	–	10
Repair of laceration	–	–	5	–	5
IUBT + Uterine curettage	1	–	–	3	4
Repair of Uterine rupture	–	2	–	–	2
Total	30	3	5	3	41

Abbreviations: BHAL; Bilateral hypogastric artery ligation, GTI: Genital tract injury, IUBT; Intrauterine balloon tamponade; TAH; Total abdominal hysterectomy

DISCUSSION

PPH, one of the most important causes of maternal death in the puerperal period, is a serious obstetric emergency, causing 140,000 maternal deaths per year worldwide [1,3]. There is no predictable risk in 66% of the cases developing PPH [2]. Thus, being prepared for PPH and performing appropriate management options as soon as possible are important to prevent complications related to PPH [3].

Treatment options should be discussed under 3 main topics in PPH. The first-line treatment is medical therapy, which includes bimanual uterine massage, in combination with uterotonic agents, such as oxytocin, ergometrine and prostaglandins. In the case of failure of medical therapy, the second-line treatment includes organ-sparing surgical interventions, such as B-Lynch brace sutures, uterine artery ligation, uterine artery embolization, bilateral hypogastric artery ligation and IUBT. If the above-mentioned treatment options fail, hysterectomy should be performed to prevent further blood loss and to reduce maternal morbidity and mortality [11,12].

Uterine atony, which results from the failure of uterine contractions after expulsion of the placenta, accounts for approximately 75–90% of all primary PPHs [13,14]. Risk factors for uterine atony include multiple pregnancies, polyhydramnios, macrosomia, rapid labour, high dose or prolonged use of oxytocin for induction and multiparity [13]. The traditional therapy in uterine atony is uterine massage, use of uterotonic agents and IUBT. Surgical methods, such as B-Lynch brace sutures, hypogastric artery ligation, uterine artery ligation and hysterectomy, are employed when traditional approaches are unsuccessful [1,3,14]. In agreement with the literature, uterine atony was detected as the most common cause of PPH (73.2%) in the current study. Sixteen of the patients received medical therapy, and 9 with hemodynamic instability underwent TAH (Table 3).

Worldwide, there is no consensus regarding the time to wait for expulsion of the placenta in the third phase of labour. The National Institute of Health and Clinical Excellence recommends intervention if placental expulsion does not occur 30 minutes after birth, whereas the World Health Organization recommends waiting 60 minutes after birth [15,16]. In patients with placental retention, uterine fundal massage, parenteral oxytocin administration, oxytocin or prostaglandin injection via the umbilical cord can be employed to induce uterine contractions and expel the placenta. If these methods fail, an attempt can be made to manually remove the placenta after

uterine relaxation via nitroglycerin administration or general anaesthesia [16]. If the above-mentioned methods fail, placental adhesion anomalies should be considered. Placental adhesion anomalies can be classified as follows: those with adhesion to the uterine wall and those with invasion of the uterine wall. Placental adhesion anomalies involving uterine wall adhesion can generally be treated by manual removal, uterine curettage and IUBT, whereas hysterectomy is indicated in the case of invasion [16-19]. In the current case series, manual removal, uterine curettage and IUBT were employed in 3 cases in which placental expulsion did not occur 30 minutes after birth after the use of uterotonic agents. Histopathological evaluation revealed placenta accreta in these 3 cases.

In recent years, IUBT has gained increasing popularity in PPH. It has the advantage of being a minimal invasive technique that can be readily applied [19]. It has been suggested that IUBT is as effective as other conservative methods, such as arterial embolization, iliac artery ligation, uterine devascularisation and uterine decompression sutures, and that it is also a safe method that has no negative effects on later fertility and pregnancy outcomes [1]. Although the mechanism in stopping bleeding is unclear, proposed theories include the provision of intrauterine pressure higher than systemic arterial pressure, the compression effect of the balloon at the bleeding area and induction of uterine contractions [2,19]. In IUBT, the catheter should be removed after confirmation of haemostasis and in the absence of active bleeding. A literature review reported that IUBT was applied for a period ranging from 2 to 82 hours [20]. In the current case series, IUBT was applied to 3 patients with uterine adhesion anomalies and to one case with uterine atony for the treatment of PPH. As no bleeding was observed during the 24-hour follow up, the balloon catheter was removed by gradually decreasing the volume of the balloon.

B-Lynch brace sutures and BHAL can be used as emergent conservative surgery for PPH. This method can effectively control bleeding secondary to birth. It has been reported that the success rate reaches up to 80% in the treatment of cases with PPH [21]. The complications related to B-Lynch brace suturing include uterine wall erosion due to suture materials, with delayed absorption, partial ischaemic necrosis and the formation of adhesions [12]. B-Lynch sutures and the BHAL method were successfully used in 4 patients who had uterine atony that did not respond to medical therapy, and

no complication was observed in relation to the intervention.

Emergent postpartum hysterectomy is defined as surgical intervention performed to stop life-threatening bleeding if conservative and organ-sparing surgeries fail in PPH that develops within 24 hours of giving birth [11,22]. The incidence of emergent postpartum hysterectomy has been reported as 0.2–2.7% worldwide, and the incidence of emergent postpartum hysterectomy was reported to be 0.29–5.9 per 1000 live births [22,24,25]. In the current case series, 9 patients underwent hysterectomy due to haemodynamic instability, and one patient with rupture underwent hysterectomy as repair was impossible.

Blood products, such as erythrocyte suspension, platelet suspension, fresh frozen plasma and cryoprecipitate, should be given to patients with excessive blood loss due to PPH [3]. The need for blood transfusion is higher in cases with PPH after operative vaginal delivery or the induction of labour [6]. In the present case series, 35 (85.4%) of the 41 patients received erythrocyte suspension, fresh frozen plasma and platelet suspension due to excessive bleeding.

This study has some limitations, including its retrospective design, inability to detect the amount of bleeding in an objective manner and small sample size. However, it is ethically impossible to conduct a prospective, case-controlled study in PPH because it is a life-threatening condition.

In conclusion, care should be taken regarding PPH in all pregnant women, even in those without any risk factors. In particular, the third phase of labour should be carefully monitored. Medical treatment and organ-sparing surgery are generally associated with positive outcomes in patients with stable haemodynamic status. However, hysterectomy is indicated in patients who do not respond to conservative therapy and blood and blood products should be readily available to avoid increased mortality and morbidity.

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