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Clinical management and therapy of secondary postpartum hemorrhage

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ABSTRACT

Secondary postpartum hemorrhage, defined as excessive bleeding that occurs more than 24 hours after delivery and up to 12 weeks postpartum, occurs in approximately 1% of pregnancies. In the event of secondary hemorrhage, several specific etiologies should be considered. Uterine atony (perhaps secondary to retained products of conception) with or without infection contributes to secondary hemorrhage. Ultrasound evaluation can help identify intrauterine tissue. Endometritis should be strongly suspected in the presence of uterine tenderness and a low-grade fever. Secondary postpartum hemorrhage also may be the first indication of bleeding disorders such as von Willebrand disease. Treatment should be focused on the etiology of the hemorrhage and may include uterotonic agents and antibiotics, but if these fail to resolve the problem or if retained products of conception are suspected, uterine curettage may be necessary. If treating endometritis, broad antibiotic coverage with clindamycin and gentamicin is a common choice, although other combinations also are used. Often the volume of tissue removed by curettage is relatively small yet bleeding usually subsides promptly. Concurrent ultrasound assessment at the time of curettage can help prevent uterine perforation. Patients should be counseled about the possibility of hysterectomy before initiating any operative procedure

Keywords: Severe morbidity; hemorrhage; maternal outcomes; maternal safety; obstetric readmissions.

Introduction

Secondary postpartum hemorrhage is defined as bleeding occurring 24 hours to 12 weeks after delivery. Clinically it complicates approximately 1% to 3% of deliveries, and the bleeding most often results from abnormal placental site involution (1). In contrast to primary postpartum hemorrhage, there is no single definition to define it, and there is limited published work on its management (2). However, because of increasing maternal morbidity in many countries around the world, there is growing interest and Vaginal discharge of varying amounts occurs early in the puerperium: these losses are called lochiae and contain erythrocytes, decidua flaps, epithelial cells, and bacteria. Lochiae vary in duration and quantity. For the first few days after delivery, the discharge is bright-red blood

(lochiazione rubra) and then, after a few days, they take on a light color (lochiazione serosa). Around day 10, due to the predominant leukocyte component and reduced fluid content, the lochia take on a yellowish-white color (alba lochiazione).

The average duration of lochiae varies between 24 and 36 days. About 25% of women experience vaginal bleeding that lasts beyond six weeks, especially if they are breastfeeding (3,4).

Symptomatology of secondary postpartum hemorrhage

Symptomatology is varied and depends on the amount of blood lost in the puerperium. Most patients present hemodynamically stable. It is important to know the patient's medical history, including information on parity, labor labor, mode of delivery, presence of complications in the third stage or puerperium, and information on the patient's family and proximate pathological history. Clinical symptoms may include malodorous lochia, cramping abdominal pain, fever, and increased uterus volume.

The main goals of the management of secondary postpartum hemorrhage are:

- Establish hemodynamically the patient if blood loss is profuse.
- Establish the cause of the bleeding
- Medical and/or surgical treatment to treat the cause of bleeding

Management and risk factors of secondary postpartum hemorrhage

The main risk factors for secondary postpartum hemorrhage are summarized in the following table (Table No. 1) (5).

Table 1

Pre-existing Risk Factors	Antepartum risk factors	Intrapartum Risk Factors	Postpartum Risk Factors
Maternal smoking Previous secondary postpartum hemorrhage Multiparity	Premature rupture of membranes at term (PROM) Threat of abortion Multiple pregnancy Antepartum hemorrhage Hospitalization in the third trimester	Delivery by performing cesarean section Precipitous delivery (duration <2 hours) Prolonged third stage Partial secondment of placenta and/or membranes	Primary postpartum hemorrhage Absence of Lactation Postnatal sepsis

Table No. 1 Risk Factors of Secondary Postpartum Hemorrhage (5).

Etiology of secondary postpartum hemorrhage.

The causes of secondary postpartum hemorrhage are as follows.

Uterine sub involution

Placental site involution is a simple flaking process largely induced by the proliferation of new endometrial tissue that occurs physiologically a few weeks after delivery. In some, uterine involution may be delayed by the presence of infection, retention of placental debris, or other causes. Such sub-involution is often accompanied by protracted or variable blood lochiae, as well as irregular or excessive uterine bleeding. On bimanual examination, the uterus is increased in volume and soft (atonic) in consistency (1). The mechanism is unclear. Risk factors are nulliparity, maternal age, induction of labor labor, previous uterine surgery, and placental accretism (6,7).

Uterine fibroids can also cause secondary postpartum hemorrhage and increased uterine size; in

fact, a voluminous fibromatous uterus can interfere with uterine involution and sometimes cause excessive bleeding from the placental bed. Usually fibroids are known as early as the antenatal period.

Puerperal hematomas

Misrecognized vaginal tears and/or hematomas may be present in secondary postpartum hemorrhage. Such perineal injuries are most often associated with a laceration, episiotomy, or operative delivery. However, they may occur following rupture of a blood vessel without associated lacerations. They may be associated with congenital coagulation disorders (as in the case of von Willebrand Disease or Hemophilia A) or acquired, as in the case of consummatory coagulopathy due to placental abruption or liver failure.

Based on the site, they are distinguished into vulvar, vulvovaginal, para-vaginal, and retroperitoneal hematomas. The management of vulvovaginal hematomas differs according to size and their expansion during delivery; if size increases progressively and pain is severe, surgical exploration is indicated (1) (see the chapter on "Genital Hematoma").

Placental abnormalities

Placental accretism can cause secondary postpartum hemorrhage. The risk is low in primiparas (0.3 per thousand births) (8) but can increase to 5% if associated with placenta previa (9), up to 67% if the patient has had four previous cesarean sections (10).

An increase in 2nd trimester alpha-fetoprotein and Beta HCG are also risk factors for placental accreta (11). The diagnosis of placental accreta is usually made during stage III labor after failed manual secondment. In women at high risk for placental accretism, ultrasonography may help to make the diagnosis in the antenatal period.

Vascular abnormalities

Pseudoaneurysm of the uterine artery is a rare cause of life-threatening hemorrhage that can occur following cesarean section or hysterectomy. It results from an incomplete tear of the arterial wall with the passage of blood within the perivascular tissues that under the influence of arterial pressure result in the formation of a communication pocket with the vascular lumen. Diagnostic framing uses the performance of ultrasonography with color Doppler or CT scan. Ultrasound visualizes a hypoechogenic mass connected with the artery from which a narrow "neck" of passage arises. With color Doppler inside, the flows are at high velocity with decreased resistance indices.

Treatment makes use of embolization: through a unilateral femoral access contralateral to the lesion, retrograde catheterization is performed up to the aortic bifurcation and then catheterization in each hypogastric axis to have a pelvic arterial map. Once the artery of origin of the pathology has been identified, selective catheterization of the artery and embolization is performed, which, in the case of pseudoaneurysm, is performed with the use of memory metal coils that expand in place resulting in a mechanical block by adhesion to the vessel (12,13).

Surgical suture dehiscence of a cesarean section or iatrogenic surgical damage

Symptomatology may be early with onset of symptoms within 24 hours of performing hysterotomy or late, as in the case of bleeding due to dehiscence or failure to seal surgical suture performed during ce-

sarean section.

Uterine suture dehiscence after cesarean section can be suspected if it shows signs of infection and should be investigated by pelvic ultrasound and can be confirmed by hysteroscopy (14). In case of minor secondary hemorrhage, pharmacological treatment can be attempted; in case in patient is hemodynamically unstable, resuscitative therapy should be used in conjunction with surgery.

Choriocarcinoma

A rarer cause of secondary postpartum hemorrhage or irregular vaginal bleeding is choriocarcinoma arising after nonmolar pregnancy. Choriocarcinoma is rare (incidence is estimated to be around 1/50000 births) but the prognosis is worse when it arises after delivery, especially if there is a delay in diagnosis (15).

Suggestive signs are persistent metrorrhagia from an unknown cause and/or nonnormalization within 6 months of serum levels of total chorionic gonadotropins (hCG). Most patients have metastatic pathology and elevated serum bHCG levels. In this case, mortality is high (21%) despite polychemotherapy regimens. Diagnosis of certainty is obtained by histologic examination, but serum beta HCG pattern and instrumental images are very suggestive of the diagnosis of choriocarcinoma.

Coagulation disorders

Rare cause of obstetric hemorrhage may be a congenital coagulation defect, as in the case of von Willebrand disease, Hemophilia A, and Hemophilia B.

Hemophilia A is a recessive disease with X-linked transmission characterized by lack of coagulation factor VIII. In contrast, hemophilia B is caused by severe factor IX deficiency and has similar features to hemophilia A. These are rare conditions in women, where only homozygous status allows the disease to develop. In addition, pregnancy presents a protective factor, because both of these factors increase significantly during pregnancy. Unfortunately, there is an autoimmune form of hemophilia A in the literature, with autoantibodies directed against factor VIII, which can have onset weeks or months after delivery, up to a year later (16).

VWD is due to the absence, deficiency, or altered activity of von Willebrand factor, which is required for platelet adhesion at the site of vascular injury and to hinder circulating proteolysis of coagulation factor VIII. VWD manifests with muco-cutaneous bleeding, including uterine bleeding. The prevalence of the disease in the general population ranges from 0.6 percent to 1.3 percent, depending on the number of individuals with bleeding manifestations, family history, or laboratory test abnormalities (17).

As with factors VIII and IX, maternal levels of vWF antigen also increase substantially. Pregnancy outcomes in women with von Willebrand disease are generally good, but postpartum hemorrhage can be seen in up to 50% of cases (18).

Role of pelvic ultrasonography in the diagnosis of secondary postpartum hemorrhage

Pelvic ultrasonography has an adjuvant role in finding one of the possible causes of secondary postpartum hemorrhage, the presence of retained placental material in utero. If visualized sonographically, the use of ColorDoppler can increase its specificity. Retention of placental materi-

al often has a positive Doppler vasculature, which is negative in the case of persistence of blood clots (20). At present, there is no real standardized ultrasound system.

Some authors suggest using the following system (21):

1. Normal endometrial cavity
2. Endometrial cavity containing only fluid
3. Increased anteroposterior diameter of the endometrial cavity
4. Endometrial cavity containing echogenic foci with evaluation of foci size and their vascularity).

Emergency treatment

A minority of patients require emergency intervention. In case it does occur, it is necessary to involve experienced personnel in the management of the clinical case (4,5). In these cases, resuscitation should be performed using a structured ABC (Air, Breath, Circulation) approach. It is essential to obtain good intravenous accesses with two large-diameter cannula needles and to administer intravenous fluids appropriately (crystalloids, such as lactated Ringer's, are the first choice). The woman should be kept warm by taking appropriate measures to prevent hypothermia.

It is preferable to administer oxygen at high flows (10-15 l/min). If immediate transfusion is needed, however, pending the results of laboratory tests, administer blood products as soon as possible (16).

Vital parameters such as respiratory rate, heart rate, blood pressure, oxygen saturation and diuresis should be carefully monitored. It is diriment to treat the underlying cause of persistent bleeding and shock, avoiding hypothermia and acidosis, and to establish adequate hemodynamic support to prevent disseminated intravascular coagulation (DIC). The simultaneous search for the causes of bleeding, which may require transferring the patient to the operating room to perform an examination under narcosis, helps in defining the therapeutic approach, which includes medical treatment and the application of an intrauterine balloon in case of uterine atony and/or the use of surgical procedures or interventions in case of unresponsiveness or different origin of bleeding. The choice of surgical approach should be made considering the patient's care setting, clinical picture, and hemodynamic stability.

Types of treatment.

Therapies for secondary postpartum hemorrhage generally see the same strategies as the management of primary postpartum hemorrhage.

Medical treatment

In the case of medical treatment in the presence of uterine atony, the drug of first choice is oxytocin.

Oxytocin has a vasodilator effect and induces a transient decrease in blood pressure that, under normal circumstances, is offset by reflex tachycardia and an increase in cardiac output. In some cases oxytocic injection may be followed by severe hypotension with impaired cardiac function.

Other drugs include ergot alkaloids such as ergonovine and methylergonovine and prostaglandins.

Medical treatment is also recommended in case of infection or congenital coagulation disorders. In addition, if the vaginal bleeding is not excessive,

empiric antibiotic therapy is reasonable since in most cases an infection is the cause of prolonged blood loss (1).

Patient with inherited coagulation disorders, such as von Willebrand disease and hemophilia A should be treated with tranexamic acid, a fibrinolysis inhibitor, whose mechanism of action is based on a blockade of plasmin formation through inhibition of the proteolytic activity of plasminogen activators, ultimately resulting in inhibition of blood clot lysis (16,22). Cases of massive hemorrhage, unsuccessfully treated with surgical techniques, can also be treated with tranexamic acid (23-26), recombinant factor VIIa (27) and vasopressin (28).

Another good treatment option is combined oral contraceptives, which can be started 21 days after delivery. They are contraindicated in nursing women or those who have had a history of cholestasis gravidarum during pregnancy (29).

Surgical treatment

Uterine Cavity Revision

If there is suspicion of retention of placental tissue, bleeding is excessive, medical treatment has failed it appears indicated to perform a revision of the uterine cavity.

Various methods can be used to achieve proper cleansing of the uterus: manual secondment, cannula hysterosuction, and curettage, but there is no one method that is safer than another (2).

During surgery, it is good practice to administer antibiotics to prevent secondary infections and there uterotonic drugs to facilitate the onset of optimal uterine muscle contraction and control of bleeding.

In case the bleeding is from a site of abnormal placentation, as in placenta accreta, revision of uterine cavity is not the recommended intervention.

Endouterine tamponade

In cases of secondary postpartum hemorrhage due to uterine sub involution/atony, endouterine balloon tamponade may be considered once the presence of retained placental tissue has been excluded and drug therapy has failed (30). Sangstaken-Blakemore esophagogastric probe, Rush urologic catheter, Foley catheters, condom and Bakri balloon can be used. The mechanism of action of the Bakri balloon is to bring about vascular compression and hemostatic action through pressure exerted on the uterine walls.

In cases where drug treatment and/or uterine tamponade fail, surgical treatment remains the only option. Surgical techniques are divided into conservative and demolitive. The former include compression sutures, uterine vessel ligation, and hypogastric artery ligation Should these techniques fail, hysterectomy must be used (31) (see dedicated chapter). Hysterectomy, in the case of secondary postpartum hemorrhage, should be performed in the presence of stable hemodynamic conditions because it carries an increased risk of maternal mortality, and the decision to proceed or not to proceed with demolitive surgery should be thoughtful but with proper timing.

Bilateral uterine artery embolization and selective embolization

Uterine artery embolization represents a therapeutic option for the treatment of EPP. The indication of the technique in cases of EPP from uterine atony represents a choice after failure of drug therapy and

endouterine tamponade. The procedure involves distal occlusion of the vessels, avoiding the formation of collateral circles that can be a source of bleeding, as is the case in proximal occlusions achieved through surgical ligations. The complexity of the uterine circulation, which provides a different supply for the body of the viscera (supplied by the uterine, ovarian, and upper bladder arteries) than for the lower uterine segment (supplied by the cervical, lower bladder, and upper, middle, and lower vaginal arteries), diversifies the effectiveness of devascularization/embolization procedures according to the source of bleeding.

The procedures are effective in cases of uterine atony and in cases of persistent bleeding after hysterectomy; in contrast, their effectiveness is greatly reduced when bleeding originates from the lower uterine segment (e.g., in cases of placenta previa) with the uterus left in situ. (32,33).

Other therapeutic measures

In cases of choriocarcinoma, the main treatment is chemotherapy; depending on the high- or low-risk histology, there is either methotrexate monotherapy or polypharmacotherapy, using etoposide, methotrexate, actinomycin, vincristine, cyclophosphamide and 6-mercaptopurine (34).

REFERENCES

1. Cunningham FG, Leveno KJ, Bloom SL, et al. Williams Obstetrics, 24th ed. McGraw-Hill, 2014 The puerperium pp 670, Obstetrical Haemorrhage pp 783
2. King PA, Duthie SJ, Dong ZG, Ma HK. Secondary postpartum hemorrhage. Aust N Z J Obstet Gynaecol 1989;29: 394–8
3. Floyd L. (1999) Survey of women's experiences of vaginal loss after childbirth. Practising Midwife, 2, 43
4. Neill A, Thornton S. Secondary postpartum hemorrhage. J Obstet Gynaecol 2002; 22:119–22
5. Alexander J, Thomas PW, Sanghera J. Treatments for secondary postpartum hemorrhage. Cochrane Database Syst Rev 200
6. Legro R.S., Price F.V., Hill L.M. and Caritis S.N. (1994) Nonsurgical management of placenta percreta: a case report. Obstetrics and Gynecology, 83, 847–849.
7. Weissbach T, Haikin-Herzberger E, Bacci-Hugger K et al. Immediate postpartum ultrasound evaluation for suspected retained placental tissue in patients undergoing manual removal of placenta. Eur J Obstet Gynecol Reprod Biol. 2015;192: 37-40. doi:10.1016/j.ejogrb.2015.06.004
8. Guarino A, Di Benedetto L, Assorgi C et al. Conservative and timely treatment in retained products of conception: a case report of placenta accreta retention. Int J Clin Exp Pathol. 2015; 8:13625-9.
9. Rose G.L. and Chapman M.G. (1986) Aetiological factors in placenta praevia—a case control study. British Journal of Obstetrics and Gynaecology, 93, 586–588.
10. Clark S.L., Koonings P.P. and Phelan J.P. (1985) Placenta praevia/accreta and prior cesarean section. Obstetrics and Gynecology, 66, 89–92.
11. Hung T.H., Shau W.Y., Hsieh C.C., Chiu T.H., Hsu J.J. and Hsieh T.T. (1999) Risk factors for

placenta accreta. Obstetrics and Gynecology, 93, 545–550

12. Bardou P, Orabona M, Vincelot A, Maubon A, Nathan N. Uterine artery false aneurysm after caesarean delivery: an uncommon cause of post -partum hemorrhage. Ann Fr Anesth Reanim 2010; 29:909–12

13. Bhatt A, Odujebe O, Bhatt S, Houry D. Uterine artery pseudoaneurysm rupture: a life-threatening presentation of vaginal bleeding. Ann Emerg Med 2010; 55:460–3

14. Paraskevaides E, Stuart B, Gardeil F. Secondary postpartum hemorrhage from non-dehisced lower caesarean section scar: a case for hysteroscopy. Aust N Z J Obstet Gynaecol 1993;33: 427

15. Tidy JA, Rustin GJ, Newlands ES, et al. Presentation and management of choriocarcinoma after non molar pregnancy. Br J Obstet Gynaecol 1995; 102:715–9

16. Economides DL, Kadir RA, Lee CA. Inherited bleeding disorders in obstetrics and gynecology. Br J Obstet Gynaecol 1999; 106:5–13

17. Nichols WL Jr, Hultin MB, James AH, et al. The Diagnosis, Evaluation, and Management of von Willebrand Disease. Bethesda, MD: National Heart, Lung, and Blood Institute, National Institutes of Health; 2007.

18. Kadir RA, Economides DL, Braithwaite J, Goldman E, Lee CA. The obstetric experience of carriers of hemophilia. Br J Obstet Gynaecol 1997; 104:803–10

19. Achiron R, Goldenberg M, Lipitz S, Mashiach S. Transvaginal duplex Doppler ultrasonography in bleeding patients suspected of having residual trophoblastic tissue. Obstet Gynecol 1993; 81:507–11

20. Zuckerman J, Levine D, McNicholas MM, et al. Imaging of pelvic postpartum complications. Am J Roentgenol 1997; 168:663–8

21. Neill AC, Nixon RM, Thornton S. A comparison of clinical assessment with ultrasound in the management of secondary postpartum hemorrhage. Eur J Obstet Gynecol Reprod Biol 2002; 104:113–5

22. Bonnar J., Guillebaud J., Kasonde J.M. and Sheppard B.L. (1980) Clinical applications of fibrinolytic inhibition in gynecology. Journal of Clinical Pathology, 14, 55–59

23. Alok K, Hagen P, Webb JB. Tranexamic acid in the management of postpartum hemorrhage. BJOG 1996; 103:1250–1

24. Ducloy-Bouthors AS, Jude B, Duhamel A, et al. High-dose tranexamic acid reduces blood loss in postpartum hemorrhage. Crit Care 2011; 15: R117

25. Ferrer P, Roberts I, Sydenham E, Blackhall K, Shakur H. Anti-fibrinolytic agents in postpartum hemorrhage: a systematic review. BMC Pregnancy Childbirth 2009; 9:29

26. Novikova N, Hofmeyr GJ. Tranexamic acid for preventing postpartum hemorrhage. Cochrane Database Syst Rev 2010.

27. Boehlen F, Morales MA, Fontana P, Ricou B, Irion O, de Moerloose P. Prolonged treatment of massive postpartum hemorrhage with recombinant factor VIIa: case report and review of the literature. BJOG 2004; 111:284–7

28. Lurie S, Appleman Z, Katz Z. Subendometrial vasopressin to control intractable placental bleeding. Lancet 1997; 349:698

29. Guillebaud J. (1994) Contraception: your questions answered, pp. 420–421. Edinburgh, Churchill Livingstone.

30. JohansonR, Kumar M, ObhraiM, Young. Management of massive postpartum hemorrhage: use of a hydrostatic balloon catheter to avoid laparotomy. BJOG 2001; 108:420–2

31. Lynch C, Coker A, Lawal AH, Abu J, Cowen MJ. The B-Lynch surgical technique for the control of massive postpartum hemorrhage: an alternative to hysterectomy? Five cases reported. Br J Obstet Gynaecol 1997; 104:372–5

32. Pelage JP, Soyer P, Repiquet D, et al. Secondary postpartum hemorrhage: treatment with selective arterial embolization. Radiology 1999; 212:385–9

33. Linee Guida dell'Istituto Superiore di Sanità. Emorragie post partum: come prevenirla e come curarla. Data Pubblicazione Ottobre 2016

34. Bagshawe KD, Dent J, Newlands ES, Begent RHJ, Rustin GJS. The role of low-dose methotrexate and folinic acid in gestational trophoblastic tumors (GTT). BJOG 1989;96: 795–802