

POSTPARTUM HEMORRHAGE AT THE MATERNITY UNIT OF THE HOSPITAL DAS CLÍNICAS DE GOIÂNIA

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ABSTRACT

INTRODUCTION: Postpartum hemorrhage (PPH) is a serious complication that can occur after childbirth and is characterized by excessive blood loss. It is, in fact, the leading cause of maternal mortality worldwide. Studies show that the prevalence of postpartum hemorrhage worldwide is approximately 10%, ranging from 2 to 16%, with uterine atony being the main etiology.

OBJECTIVES: To calculate the prevalence rate of PPH, identify the types of delivery of the patients, identify the causes, and identify maternal and fetal outcomes.

METHODOLOGY: This is a cross-sectional, retrospective, analytical, and descriptive study that evaluated the medical records of women who had hemorrhage at the Hospital das Clínicas from Universidade Federal de Goiás (HC-UFG) in 2021.

RESULTS AND DISCUSSION: The mean age was 26.11 years, and the mean number of previous pregnancies of these patients was 1.55, both of which were consistent with the literature. We found 9 cases of postpartum hemorrhage among the 532 patients, resulting in a prevalence of 1.69%. Uterine laceration was the main cause of PPH, which was different from the global literature.

CONCLUSION: Our study found a prevalence of 1.69%. Five cases (55.55%) were normal deliveries, and 4 (44.44%) were cesarean sections. Five cases (55.55%) were due to vaginal laceration, 2 cases (22.22%) were due to placenta previa, one case (11.11%) was due to uterine atony and previous anticoagulation, and one case (11.11%) was due to an undefined cause. All patients with PPH survived. One newborn died, and the others were discharged from the hospital.

Keywords: Postpartum Hemorrhage; Prevalence; Hemorrhage; Delivery; Labor Complications.

INTRODUCTION

The number of emergencies during pregnancy has been increasing year after year, especially due to the sociodemographic environment in which women are placed. This issue is reflected in the still high rates of maternal mortality, resulting from complications during pregnancy.¹

Among the various complications of emergencies during pregnancy and the postpartum period, hemorrhagic emergencies stand out. With regard to this type of emergency, postpartum hemorrhage was traditionally defined as a blood loss exceeding 500mL after vaginal delivery or more than 1000 mL after cesarean delivery. More recently, postpartum hemorrhage has been defined as a cumulative blood loss of 1000mL or more, or loss associated with signs or symptoms of hypovolemia, regardless of the mode of delivery. The typical clinical signs and symptoms of hypovolemia (e.g., hypotension and

tachycardia) due to postpartum hemorrhage may not appear until blood loss exceeds 25% of total blood volume (>1500 mL during late pregnancy).²

Postpartum hemorrhage can be primary, occurring within the first 24 hours after delivery, or secondary, occurring between 24 hours and up to 12 weeks after delivery. Completing the definition, the causes of postpartum hemorrhage can be summarized by the four “Ts”: tone (uterine atony), trauma (lacerations or uterine rupture), tissue (retained placenta or clots), and thrombin (coagulation factor deficiency).²

Postpartum hemorrhages are not entirely preventable; however, identifying their cause must be immediate (an emergency), as knowing the cause of PPH directly impacts the form of treatment and its effectiveness.³

Regarding its epidemiology, PPH is observed in about 1 to 3% of births. In the global context, the maternal mortality rate in developed regions such as the United States and Canada was 12 per 100,000 live births in 2015, while in developing regions, it was 239 per 100,000.⁴

The literature found that 99% of maternal deaths occurred in developing countries, with more than half of them occurring in crisis contexts, inadequate environments, and resource-poor settings. In the national context, the maternal mortality ratio increased from 62 to 64 per 100,000 live births between 2015 and 2017, varying according to the region.⁴

OBJECTIVES

1. General Objective

To evaluate the prevalence rate of postpartum hemorrhage in women who gave birth at the maternity ward of HC-UFG in the year 2021.

2. Specific objectives

2.1. Calculate the prevalence rate.

2.2. Identify the type of delivery of patients with postpartum hemorrhage.

2.3. Identify the causes of postpartum hemorrhage.

2.4. Identify the maternal and fetal outcomes of the studied cases.

METHODOLOGY

This is a cross-sectional, retrospective, analytical, and descriptive study through data collection from the medical records of women at the maternity ward of the Hospital das Clínicas in Goiânia. The sample for this study consisted of women who gave birth at the maternity ward of the Hospital das Clínicas in Goiânia, from January to December 2021.

1. Procedures

Medical records of patients who gave birth at the maternity ward of the Hospital das Clínicas in Goiânia in 2021 were analyzed. The records analyzed included perioperative assessment, delivery description, hospitalization progress notes, medical prescriptions during hospitalization, and maternal and neonatal discharge reports (when available). Access to the medical records was obtained through the SAMIS (Medical and Health Information Service) of the HC-UFG after approval by the Research Ethics Committee (CEP).

2. Study population

The sample for this study consisted of 532 medical records. The collected data were stored in Google Sheets.

3. Inclusion criteria

The study included medical records of patients who gave birth at the maternity ward of the Hospital das Clínicas in Goiânia in the year 2021.

Exclusion criteria: medical records that were not found in the SAMIS, records that did not contain information about the delivery/hospitalization, and records of patients whose delivery occurred outside the maternity ward of the Hospital das Clínicas in Goiânia in the year 2021 were excluded from the study.

4. Study variables

4.1. Variables for the entire sample

- A. Type of delivery (vaginal or cesarean).
- B. Postpartum hemorrhage: present or absent.

4.2. Variables for the sample with PPH

- A. Type of delivery (vaginal or cesarean).
- B. Maternal age (years).
- C. Obstetric history: GPNCA - Gravida (number of pregnancies), Para (number of viable pregnancies), Normal (number of normal deliveries), Cesarean (number of cesarean deliveries), and Abortions (number of abortions).
- D. Description of previous pregnancies: complications during pregnancy and/or delivery.
- E. Previous diagnoses: morbidities and comorbidities.
- F. Medications used prior to admission.
- G. Date of delivery (dd/mm/yyyy).
- H. Description of delivery: complications during the procedure.
- I. Treatment: intraoperative procedures and/or management during hospitalization.
- J. Maternal outcome: hospital discharge (with date) or death.
- K. Newborn outcome: alive, death, and/or hospital discharge.

5. Approval by the Ethics Committee

This study was approved by the Research Ethics Committee of the Hospital das Clínicas of the Federal University of Goiás, with protocol number 5951.648.

RESULTS

We analyzed 532 medical records of women who gave birth at the maternity ward of the Hospital das Clínicas of the Federal University of Goiás in 2021, which represents our total sample size of 100%. We found 392 cesarean deliveries, accounting for 73.68% of the total, and 140 vaginal deliveries, representing 26.31% of the total.

Among these 532 analyzed deliveries, 9 resulted in Postpartum Hemorrhage (PPH), giving us a prevalence of 1.69%. Detailing each of these 9 cases of PPH, we have: 5 of these cases were from vaginal delivery and 4 from cesarean section. The ratio of "number of cases of postpartum hemorrhage via vaginal

delivery" to "total number of vaginal deliveries" was 3.57%. The ratio of "number of cases of postpartum hemorrhage via cesarean section" to "total number of cesarean deliveries" was 1.02%.

The average age of the women was 26.11 (18, 22, 23, 27, 28, 28, 29, 29, 31) years. The median was 28 years. The mode was 28 and 29 (bimodal).

The average number of pregnancies for the patients, considering the current pregnancy, was 2.55 (1, 1, 2, 2, 2, 3, 3, 4, 5) pregnancies. The average number of previous pregnancies for these patients was 1.55 (0, 0, 1, 1, 1, 2, 2, 3, 4) pregnancies.

In relation to the etiologies of the hemorrhages, we have the following breakdown: of the 9 cases, 5 were due to laceration (55.55%), 2 were due to placenta previa (22.22%), 1 was due to uterine atony and previous anticoagulation (11.11%), and 1 was of undefined cause (11.11%).

All cases of PPH reported in this study had immediate bleeding. The 9 patients survived and were discharged from the hospital.

Of the patients with PPH evaluated, the first patient was 29 years old, with a history of 2 previous pregnancies, both by normal delivery, without complications. The same patient had preeclampsia, was using antihypertensive medication, but still had blood pressure control issues, and hypothyroidism. Regarding prior medication use, the patient was taking ferrous sulfate 40 mg and levothyroxine 25 mcg. The patient's delivery occurred on April 10, 2021, at 6:00 a.m. The description of the delivery indicates that it occurred spontaneously (normal). During the intraoperative period, a second-degree mediolateral laceration to the right was found. Subsequently, the patient had increased, unmeasured bleeding, and suturing was performed with simple Catgut thread, along with one ampoule of oxytocin and one ampoule of Methergine. The bleeding then reduced, the patient was cleaned, and the surgical procedure was concluded. Two and a half hours after delivery, the patient received an additional 1000 ml of 0.9% saline solution intravenously (IV). During the course of hospitalization, the patient did not present new bleeding or other complaints and complications. The patient was discharged on April 12, 2021, along with the newborn.

The second patient was 31 years old, with a history of 4 pregnancies, with no information about the delivery methods or complications in these previous pregnancies. This patient had Chagas disease, gestational diabetes mellitus (GDM), and deep vein thrombosis (DVT) in the left lower limb as pre-existing conditions. The patient was on full anticoagulation with Marevan, with no further information about other possible medications used before. The patient's delivery occurred on January 7, 2021, after being admitted to the emergency room of the Hospital das Clínicas with DVT on full anticoagulation, progressing to an urgent cesarean section due to acute fetal distress. In the description of the patient's delivery, it was noted that it was performed by cesarean section, showing uterine atony and intense vaginal bleeding. During the intraoperative period, a hysterorrhaphy was performed with chromic Catgut 0 thread via abdominal route, after uterine atony was not reversed with massage, oxytocin, and Methergine. During the hysterorrhaphy, ligation of the uterine arteries was performed, a sub-aponeurotic drain was placed, a compressive dressing was applied, and the surgical procedure was concluded. In the immediate postoperative period, the patient received 500 ml of fresh plasma by transfusion. On January 8, the patient received a blood transfusion with 2 units of packed red blood cells (PRBC) and an additional 500 ml of fresh plasma. During the course of hospitalization, the patient did not present new complaints or complications. The patient was discharged on January 13, 2021, and the newborn died due to multiple malformations.

The third patient was 28 years old, with a history of 2 pregnancies. Her first pregnancy was uneventful, while her second pregnancy resulted in a stillborn at 29 weeks due to malformation. The patient had a previous diagnosis of anemia and gestational diabetes mellitus (GDM), and her previous medications included Ferrous sulfate 40 mg, 1 capsule per day. The delivery occurred vaginally on November 27, 2021, starting at 8:30 in the morning. Complete placental detachment and velamentous cord insertion were observed. Additionally, there was a laceration in the posterior cervix with slightly increased bleeding and a second-degree laceration in the perineum. Treatment included intramuscular oxytocin 10 IU, compression of the laceration to stop bleeding, and no suturing of the posterior cervical laceration. Suturing with Catgut 0 was performed for the second-degree perineal laceration. The patient received normal saline 0.9% IV + oxytocin 5 IU and Ibuprofen 600 mg. She was discharged on November 29, 2021, along with the newborn.

The fourth patient was 22 years old, with no previous pregnancies. Her previous diagnoses were preeclampsia, gestational diabetes mellitus (GDM), and preeclampsia. Her previous medications included methyldopa, lamotrigine, and fluoxetine. The delivery occurred vaginally on November 27, 2021, starting at 11:00 in the morning. Placental detachment was observed, which progressed to abundant postpartum hemorrhage. Bimanual uterine compression was performed, and 10 IU of oxytocin IM was administered. Volume replacement was done with 500ml of normal saline (NS) with 4 ampoules of oxytocin. Eight ampoules of tranexamic acid and misoprostol 800mcg rectally were administered, and O- blood was requested. A Pinard safety ball was also formed. Upon revision, a first-degree laceration in the labia minora was found and sutured with Chromic Catgut 3-0, along with a first-degree laceration in the perineum, which was sutured with Catgut 3-0. On the same day, dexamethasone 4mg IM and tramadol 100mg IV were administered. The patient also used ferrous sulfate 40mg orally (PO) and applied cold compress to the perineum twice a day the next day. She was discharged on November 29, 2021, along with the newborn.

The fifth patient was 28 years old, with a history of 3 previous pregnancies and a history of increased bleeding after a normal delivery 8 years ago. Her only previous diagnosis was fetal hemolytic anemia due to Rh factor incompatibility, and there was no information about her previous medications. The delivery in question was a cesarean section, performed on May 30, 2021, at 4:40 pm. At 6:00 pm, the patient, in the immediate postoperative period, began to bleed, so 500ml of 0.9% saline solution with 2 ampoules of oxytocin EV were administered, followed by another 500ml of 0.9% saline solution. Additionally, she was given Tenoxicam 20mg (1 ampoule) and Methergine (1 ampoule) IM. She also received 250mg of Tranexamic acid and an ice pack in the lower abdominal region. And 1000ml Ringer's lactate. Finally, she was discharged on June 1, 2021, along with the newborn.

The sixth patient was 18 years old, in her first pregnancy. There was no information about previous diagnoses or medications in use. The patient was admitted with spontaneous labor, progressing to a normal delivery at 8:00 p.m. on October 1, 2021. In the description of the delivery, after revision of the birth canal and complete placental detachment, there was abundant bleeding due to a second-degree laceration in the perineum, in the median vagina, and in bilateral medium-lateral areas. Intraoperatively, the laceration was sutured with simple chromic catgut 0 and 10 IU of oxytocin IM. On the same day, Ringer's lactate solution 500ml IV, Ibuprofen 50 mg PO every 8 hours, Dipyron 500mg PO, Methergine 1 ampule IM every 8 hours, and Dramin B6 1 ampule IV every 8 hours were administered, along with cold compresses three times a day. On the second and third postoperative days, an additional 500ml of 0.9% saline IV

was given each day. In the following days of hospitalization, the patient progressed without complaints or other alterations. The patient was discharged on October 4, 2021, along with the newborn.

The seventh patient was 23 years old, with an obstetric history of one pregnancy and one uncomplicated cesarean delivery. She was diagnosed with Chronic Myeloid Leukemia and was previously treated with Imatinib and Hydroxyurea before discovering the pregnancy. However, these medications were discontinued, and the patient continued using only ferrous sulfate. The patient's delivery occurred at 4:40 a.m. on July 17, 2021, and was a normal delivery that immediately progressed with increased bleeding due to a second-degree laceration in the fúrcula. Intraoperatively, the laceration was sutured with chromic catgut and simple Catgut 0, and 500ml of 0.9% saline and 10 IU of oxytocin IV were administered. On the same day, the patient was also treated with Ibuprofen 600mg, Paracetamol, Misoprostol 25 mcg, 10 IU of Oxytocin, 1 ampule of Methergine, and an additional 500ml of 0.9% saline. On July 19, 2021, the patient required another surgery for revision of the birth canal. Suturing of a laceration in the left small lip, 2 units of packed red blood cells (PRBCs), Hydrocortisone 500mg, Misoprostol 200mcg, 1 ampule of Methergine, and 1 unit of fresh frozen plasma (FFP) were administered. The patient progressed well and was discharged on July 31, 2021, along with her newborn.

The eighth patient was 27 years old, with an obstetric history of one previous pregnancy with an uncomplicated vaginal delivery. Her only prior diagnosis was central total placenta previa, but there was no information about prior medication use. The delivery in question was a cesarean section, starting on October 15, 2021, at 7:40 a.m. She had intense intraoperative bleeding and, on October 16, 2021, her hemoglobin was 6.28. On October 15, 2021, 1 ampule of Methergine was used IM as needed. On October 16, 2021, 2 units of packed red blood cells (PRBCs) and 100mg of hydrocortisone were used IV. Finally, she was discharged on October 19, 2021, along with her newborn.

The ninth patient was 29 years old, with a history of 1 previous pregnancy, a cesarean section without complications. Her previous diagnoses were gestational diabetes mellitus (GDM), complete central placenta previa, placenta accreta, and a cordiform fetus. There is no information about her previous medications. The delivery was a cesarean section, performed on June 17, 2021, without information about the time. Active and intense bleeding was observed at the point of accretion after the removal of the adhered cotyledon. The following methods were performed: clamping, section, and ligation with chromic 01 of the round ligaments, dissection of the anterior leaf of the broad ligament towards the vesicouterine fold of the peritoneum, clamping, section, and ligation of the utero-ovarian and tubal ligaments, dissection of the vesicouterine space, vesical lowering after section of the vesical pillars to the vagina, clamping, section, and ligation of the uterine vessels with chromic 01 at the level of the uterine isthmus, clamping, section, and ligation with chromic 1 of the cardinal and uterosacral ligaments, vaginal circumcision with removal of the surgical piece (uterus), repair of the vaginal angles with Kocher forceps, fixation of the parametria to the vaginal angles with chromic Catgut 1, closure of the vaginal dome with simple Catgut 0, revision of hemostasis of the vesical wall and vaginal dome, and removal of compresses from the abdominal cavity. She was discharged on June 21, 2021, along with her newborn.

DISCUSSION

Calvert⁵, in a systematic review, found a global estimated prevalence of PPH to be 10.8%, while that of severe PPH was 2.8%. Regarding severe PPH, Calvert⁵ shows that Africa had the highest prevalence (5.1%), followed by North America (4.3%). The estimate is that 3% of women giving birth in South Ameri-

ca, Europe, and Oceania suffer from severe PPH. The lowest prevalence rate of severe forms of this condition is in Asia (1.9%). According to Kebede⁶, in an institutional-based cross-sectional study, the overall prevalence of primary PPH was 16.6%, which, however, exceeds the prevalence estimates of other countries such as Japan, India, Uganda, Zimbabwe, and Ethiopia, which presented prevalence rates of 13%, 3.3%, 9%, 1.6%, and 5.8%, respectively. This study found a prevalence of PPH at the maternity ward of the Hospital das Clínicas of the Federal University of Goiás of 1.69% in 2021, a prevalence that was lower than the global literature average.

Oyelese⁷, in a systematic review from different regions of the world, showed an overall prevalence of PPH (defined as blood loss greater than 500 mL) of 6.09%. However, when blood loss was objectively measured, the rate nearly doubled, to 10.6%. Calvert⁵ also found that studies using subjective measurement methods led to lower prevalence estimates. The prevalence found in our study, 1.69%, does not distinguish between severe and mild cases of PPH, nor is there a diagnostic criterion for blood loss described in the analyzed medical records (whether ≥ 500 ml or ≥ 1000 ml), or a description of how blood loss was assessed during childbirth, which makes data analysis difficult. However, the prevalence found in our study is more similar to what the literature shows about the prevalence of severe PPH.

When analyzing the relationship between age and PPH, Kebede⁶ showed that the mean age of the patients was 27.44 years, with ages ranging from 18 to 40 years, and 83.9% of the patients were aged between 20 and 34 years. In our study, we found a mean age of 26.11 years for the patients, with ages ranging from 18 to 31 years, which is similar to the literature's average.

In relation to the obstetric history of the patients, Kebede⁶ showed that 23.7% of patients with PPH were grand multiparas, with 9.7% having had PPH and 7.1% having a history of stillbirth in previous pregnancies. Our study found that the average number of pregnancies for patients with PPH was 2.55 pregnancies, ranging from one to five pregnancies. Regarding complications in previous pregnancies, our work showed that one patient (11.11%) had a history of PPH in a previous pregnancy, one patient (11.11%) had a previous pregnancy with a stillbirth at 29 weeks, and two patients were grand multiparas (22.22%). These complications in previous pregnancies of patients with PPH in the current pregnancy are consistent with the literature, which indicates a higher occurrence of PPH and stillbirth in previous pregnancies of patients who have PPH in the current pregnancy.

Kebede⁶ shows that 38.2% of women with PPH had preeclampsia, and 23.5% had antepartum hemorrhage in the current pregnancy. In our study, 2 patients (22.22%) had preeclampsia in the current pregnancy, 4 patients (44.44%) had gestational diabetes mellitus (GDM), one patient (11.11%) had hypothyroidism, one patient (11.11%) had Chagas disease, one patient (11.11%) had deep vein thrombosis (DVT), one patient (11.11%) had hemolytic disease due to Rh incompatibility, one patient (11.11%) had chronic myeloid leukemia, two patients (22.22%) had complete central placenta previa, and one patient (11.11%) had a co-twin fetus. The presence of a wide variety of previous diagnoses in our study, compared to the literature, is due to the fact that the maternity ward of the Hospital das Clínicas of UFG is a tertiary healthcare unit specialized in the care of severe conditions, such as high-risk pregnancies.

With regards to the type of delivery, Kebede⁶ shows that normal delivery was present in 81.8% of cases of PPH. Additionally, the literature has shown that the likelihood of PPH increases in patients who have had instrumental vaginal delivery. Our study found that 5 patients (55.55%) had normal delivery and 4 patients (44.45%) had cesarean section, which is in line with the literature, showing a higher occurrence of PPH in normal deliveries, but in a smaller percentage, probably due to our small sample size.

According to Teixeira⁸, a quantitative cross-sectional study in a maternity hospital in Salvador, Bahia, Brazil, maternal mortality from PPH in 2015 was 12 cases per 100,000 live births in developed countries, while in developing countries, deaths reach 239 per 100,000 live births. Furthermore, the author states that in the vast majority of developed countries, the mortality rate is less than 1%. In our study, no maternal deaths from PPH were found, which may be related to the service's ability to manage severe cases and the limited sample size.

Regarding the etiology of PPH, Teixeira⁸ showed that, of the PPH cases found, 66.32% were attributed to atony, 27.97% were attributed to laceration or trauma, and 3.10% were due to coagulation disorders. Kebede¹⁸ revealed that the most common cause was uterine atony (71.4%), followed by genital trauma (14.3%) and retained placenta (14.3%). The epidemiology of PPH in the United States, according to Bateman⁹, showed that uterine atony was present in 79% of PPH cases, and 9.5% had some placental disorder. In our study, we found the etiologies of PPH to be 5 cases due to laceration (55.55%), 2 caused by placenta previa (22.22%), 1 associated with atony and anticoagulation (11.11%), and 1 with no defined cause (11.11%), which differs from what is available in the literature on PPH etiologies, probably due to the limited sample size.

Our study has some limitations, such as a small sample size and the lack of description in the medical records of how the blood loss measurement in PPH was performed, which makes it difficult to compare the data.

We emphasize the need for more studies on the prevalence of PPH in Brazil due to the lack of data in the literature. We recommend that future studies use objective methods to measure blood loss, rather than visual estimation, as the use of non-objective methods can underestimate blood loss due to imprecise measurement, consequently underestimating the prevalence of PPH. It is worthwhile to develop more studies evaluating the impact of early diagnosis and the role of qualified team units on the prevalence of PPH.

CONCLUSION

Our study found 9 cases of PPH among the 532 patients studied, giving us a prevalence of 1.69%. Of the types of delivery, 5 were normal (55.55%) and 4 were cesarean (44.44%). The most common cause (etiology) of PPH was vaginal laceration, accounting for 5 out of the 9 cases (55.55%), followed by placenta previa with 2 cases (22.22%), uterine atony and prior anticoagulation (11.11%), and undefined cause (11.11%). All patients with PPH survived. One newborn died (congenital malformation), while the others were discharged from the hospital.

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