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Retrospective Descriptive Study of Postpartum Hemorrhage at Central Sebha Hospital, Libya, 2004–2006

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ABSTRACT

Postpartum hemorrhage remains one of the most important obstetric emergencies and a major preventable contributor to maternal morbidity and mortality. This retrospective descriptive study evaluated the incidence, causes, selected risk factors, and complications of postpartum hemorrhage among women managed at Central Sebha Hospital, Libya, during 2004, 2005, and 2006. Data were extracted from hospital records for 261 cases and included maternal age, cause of hemorrhage, type of delivery, fetal birth weight, blood transfusion, complications, and pre- and post-delivery packed cell volume changes. The recorded incidence of postpartum hemorrhage increased from 1.20% in 2004 to 2.31% in 2005 and 3.49% in 2006. Uterine atony was the leading cause, accounting for 182 cases (69.7%), followed by abruptio placentae in 37 cases (14.2%), genital tract injury in 24 cases (9.2%), retained products of conception in 12 cases (4.6%), placenta previa in 4 cases (1.5%), and coagulopathy in 2 cases (0.8%). Anemia was the most frequent complication, affecting approximately 87% of cases. Hysterectomy was required in two cases, including one maternal death, and renal impairment was recorded in two cases. Packed cell volume decreased by 4–10% in 48.7% of cases and by more than 10% in 39.8%. These findings indicate that postpartum hemorrhage represented a clinically important burden during the study period and that uterine atony was the dominant cause. Strengthening active management of the third stage of labor, early recognition, quantitative blood-loss assessment, and structured response bundles may reduce preventable morbidity.

دراسة وصفية مرجعية لتزيف ما بعد الولادة في مستشفى سبها المركزي، ليبيا، خلال الفترة من 2004 إلى 2006

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الكلمات المفتاحية:

التدبير النشط
المرضاة الأمومية
ليبيا
نزف ما بعد الولادة
ضعف الرحم

الملخص

يظل نزف ما بعد الولادة من أهم حالات الطوارئ التوليدية ومن أبرز الأسباب القابلة للوقاية للمراضة والوفيات الأمومية. هدفت هذه الدراسة الوصفية المرجعية إلى تقييم معدل حدوث نزف ما بعد الولادة وأسبابه وبعض عوامل الخطورة ومضاعفاته لدى النساء اللاتي عولجن في مستشفى سبها المركزي بليبيا خلال الأعوام 2004 و2005 و2006. استُخرجت البيانات من سجلات المستشفى لعدد 261 حالة، وشملت عمر الأم، وسبب النزف، ونوع الولادة، ووزن المولود، ونقل الدم، والمضاعفات، والتغير في حجم الخلايا المرصوصة قبل الولادة وبعدها. ارتفع المعدل المسجل لتزيف ما بعد الولادة من 1.20% عام 2004 إلى 2.31% عام 2005 و3.49% عام 2006. وكان ضعف الرحم السبب الرئيس، إذ سُجل في 182 حالة (69.7%)، تلاه انفصال المشيمة في 37 حالة (14.2%)، وإصابات المسار التناسلي في 24 حالة (9.2%)، وبقايا منتجات الحمل في 12 حالة (4.6%)، والمشيمة المنزاحة في 4 حالات (1.5%)، واضطرابات التخثر في حالتين (0.8%). وكان فقر الدم أكثر المضاعفات شيوعاً، إذ أصاب نحو 87% من الحالات. وأُجري استئصال الرحم في حالتين، توفيت إحداهما، وسُجل قصور كلوي في حالتين. وانخفض حجم الخلايا المرصوصة بنسبة 4–10% لدى 48.7% من الحالات وبأكثر من 10% لدى 39.8%. وتشير النتائج إلى أن نزف ما بعد الولادة مثل عبئاً سريرياً مهماً خلال فترة الدراسة، وأن وهن الرحم

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كان السبب الغالب. وقد يسهم تعزيز التدبير للنشط للمرحلة الثالثة من الولادة، والاكتشاف المبكر، والقياس الكمي لفقد الدم، وحزم الاستجابة المنظمة في خفض المراضة القابلة للوقاية.

1. Introduction

Postpartum hemorrhage (PPH) is a major obstetric emergency and remains a leading cause of maternal mortality worldwide. Contemporary obstetric guidance commonly defines maternal hemorrhage as cumulative blood loss of at least 1,000 mL, or blood loss accompanied by signs or symptoms of hypovolemia within 24 hours after birth, while many clinical settings continue to use the traditional threshold of at least 500 mL after vaginal delivery for primary PPH [1]. The World Health Organization (WHO) emphasized in 2023 that improved assessment of postpartum blood loss and use of treatment bundles are essential components of effective PPH management [2].

The clinical importance of PPH lies not only in acute blood loss but also in its downstream complications. Severe hemorrhage may lead to shock, disseminated intravascular coagulation, renal impairment, transfusion-related complications, pituitary necrosis, and hysterectomy with loss of fertility [1,3]. These outcomes are especially important in settings where anemia is prevalent, blood transfusion services are limited, and access to emergency obstetric surgery or anesthesia may be delayed. In such circumstances, even blood loss that might be tolerated by a healthy pregnant woman can precipitate severe deterioration.

The principal physiological mechanism preventing excessive postpartum bleeding is effective contraction and retraction of the myometrium at the placental site. After placental separation, uterine muscle fibers compress the uteroplacental vessels and help secure hemostasis. Failure of this mechanism, termed uterine atony, is consistently recognized as the most frequent cause of primary PPH [3,4]. Other important causes include genital tract trauma, retained placental tissue, abnormal placentation, uterine inversion, and coagulation disorders.

Global recommendations emphasize prevention, early recognition, and rapid standardized management. Active management of the third stage of labor, especially timely administration of a uterotonic such as oxytocin, controlled cord traction when appropriate, and close postpartum monitoring, reduces the incidence and severity of PPH [3,5]. FIGO recommendations also support structured response systems, escalation protocols, uterine massage, uterotonics, tranexamic acid when indicated, tamponade, surgical interventions, and resuscitation adapted to resource availability [4].

Table 1. Recorded incidence of postpartum hemorrhage at Central Sebha Hospital, 2004–2006.

Study year	Recorded incidence of PPH
2004	1.20%
2005	2.31%
2006	3.49%

Uterine atony was the most common cause of PPH, accounting for 182 cases (69.7%). Abruptio placentae was the second most frequent cause, with 37 cases (14.2%), followed by genital tract injury in 24 cases (9.2%). Retained products of conception, placenta previa, and

Table 2. Causes of postpartum hemorrhage among the study cases (n = 261).

Cause of postpartum hemorrhage	Frequency	Percentage
Uterine atony	182	69.7%
Abruptio placentae	37	14.2%
Genital tract injury	24	9.2%
Retained products of conception	12	4.6%
Placenta previa	4	1.5%
Coagulopathy	2	0.8%
Total	261	100.0%

The most frequent complication was anemia, which was recorded in approximately 87% of cases. Hysterectomy was required in two cases (0.8%), as recorded in the source dataset, one of whom died. Renal impairment was detected in two cases (0.8%). The available records did not show a clear effect of fetal birth weight, type of delivery, or parity on the occurrence of PPH in this dataset, although

In Libya, hospital-based descriptive data remain valuable for understanding local patterns of obstetric morbidity and for improving institutional protocols. Central Sebha Hospital serves a large population in southern Libya, and review of its PPH cases can help identify major causes, complications, and opportunities for preventive care. The present study therefore aimed to evaluate the incidence, etiology, selected risk factors, hematological changes, and complications of PPH among cases managed at Central Sebha Hospital during 2004–2006.

2. Methods

This study was designed as a retrospective descriptive review of cases of postpartum hemorrhage admitted to or managed at Central Sebha Hospital, Libya, over a three-year period from January 2004 to December 2006. The source of information was hospital case records. The study population consisted of 261 documented PPH cases identified during the study period.

For each case, the extracted variables included maternal age, documented cause of postpartum hemorrhage, type of delivery, fetal birth weight, need for blood transfusion, recorded complications, and the change in packed cell volume or hematocrit percentage before and after delivery. Causes of PPH were categorized as uterine atony, genital tract injury, abruptio placentae, placenta previa, coagulopathy, and retained products of conception. Hematocrit or packed cell volume reduction was grouped into three categories: decrease of 3% or less, decrease of 4–10%, and decrease of more than 10%.

The analysis was descriptive. Frequencies and percentages were used to summarize categorical variables, and the yearly incidence values recorded in the original hospital-based dataset were presented for comparison across the three study years. Because this was a retrospective chart review based on available records, no new patient intervention was performed.

3. Results

A total of 261 cases of postpartum hemorrhage were included in the review. The recorded incidence increased steadily over the three-year period, from 1.20% in 2004 to 2.31% in 2005 and 3.49% in 2006, as shown in Table 1. The available records also indicated that most cases occurred among women aged 26–35 years, representing approximately 56% of the study population.

coagulopathy were less frequent causes, accounting for 4.6%, 1.5%, and 0.8% of cases, respectively. These results are summarized in Table 2.

the retrospective design and limited variables restrict causal interpretation.

Packed cell volume or hematocrit reduction after delivery was clinically important. A decrease of 4–10% was documented in 127 cases (48.7%), while 104 cases (39.8%) had a decrease greater than

10%. Only 30 cases (11.5%) had a decrease of 3% or less, as shown in Table 3.

Table 3. Change in packed cell volume after delivery among PPH cases (n = 261).

Change in packed cell volume	Frequency	Percentage
Decrease of 3% or less	30	11.5%
Decrease of 4–10%	127	48.7%
Decrease of more than 10%	104	39.8%
Total	261	100.0%

4. Discussion

This retrospective review showed a gradual increase in the recorded incidence of postpartum hemorrhage at Central Sebha Hospital during 2004–2006. Although the data do not establish whether the increase reflected a true rise in incidence, improved recognition, changing referral patterns, or documentation differences, the trend indicates that PPH represented a significant burden for obstetric services during the study period. This finding is consistent with international concern that PPH remains a major driver of maternal morbidity and mortality, particularly where emergency obstetric resources may be constrained [1,2].

Uterine atony accounted for nearly seven out of ten cases in this study. This predominance is consistent with the pathophysiology of primary PPH and with the clinical literature identifying atony as the leading cause of postpartum bleeding [3,4]. The finding supports the importance of consistent prophylactic uterotonic administration, careful observation during the immediate postpartum period, and rapid escalation when uterine tone is inadequate. The contribution of abruptio placentae and genital tract injury also highlights the need for careful inspection after delivery, prompt repair of trauma, and readiness to manage bleeding associated with placental separation disorders.

The high frequency of anemia is clinically important. Anemia reduces physiological reserve and may worsen the consequences of even moderate blood loss. In this series, almost 40% of cases had a packed cell volume decrease exceeding 10%, indicating substantial blood loss or hemodilution after resuscitation. These findings support the need for antenatal detection and treatment of anemia, availability of cross-matched blood for high-risk patients, and postpartum follow-up of hemoglobin or packed cell volume in women who experience hemorrhage.

The requirement for hysterectomy in two cases, including one maternal death, demonstrates the potential severity of PPH. While hysterectomy can be life-saving when conservative measures fail, it is associated with major physical and reproductive consequences. Current recommendations emphasize early use of structured treatment bundles, including objective blood-loss assessment, uterine massage, uterotonics, tranexamic acid where indicated, intravenous fluids, blood products, and timely surgical or tamponade interventions when bleeding persists [2,4]. Such bundles are designed to reduce delays in recognition and treatment, which are common contributors to avoidable maternal harm.

The study has several limitations. It was retrospective and depended on the completeness and accuracy of hospital records. The available dataset did not include full denominators for each year, detailed parity distribution, hemoglobin values, timing of interventions, mode-specific incidence, or standardized measured blood loss. The study period was historical, and current practice may have changed since 2006. In addition, the statement that fetal weight, type of delivery, and parity had no significant effect should be interpreted cautiously unless supported by formal statistical testing in the original dataset. Despite these limitations, the findings are useful for institutional audit and for highlighting priority areas in PPH prevention and response.

5. Conclusion

Postpartum hemorrhage at Central Sebha Hospital increased in recorded incidence during 2004–2006 and was most commonly caused by uterine atony. Anemia was the dominant complication, and a substantial proportion of cases had a marked post-delivery decline in packed cell volume. The findings support strengthening antenatal correction of anemia, active management of the third stage of labor, objective assessment of blood loss, early recognition of uterine atony,

and implementation of structured PPH response protocols. Updating institutional guidelines in line with WHO, ACOG, and FIGO recommendations may reduce preventable maternal morbidity and mortality.

6. Recommendations

Active management of the third stage of labor should be consistently applied in all deliveries unless contraindicated. This includes timely administration of oxytocin or another recommended uterotonic, controlled cord traction by trained staff when appropriate, and uterine assessment after placental delivery. Women with antenatal anemia or recognized risk factors for PPH should be identified before delivery, and blood grouping, cross-matching, and referral planning should be arranged according to risk.

Central Sebha Hospital and similar maternity units should use a standardized PPH protocol that includes quantitative or calibrated assessment of blood loss, immediate call for help, uterine massage, uterotonic escalation, tranexamic acid when indicated, rapid intravenous access, fluid and blood replacement, laboratory monitoring, and timely surgical intervention where conservative measures fail. Regular multidisciplinary drills involving obstetricians, midwives, anesthetists, laboratory staff, and blood bank personnel would improve preparedness and reduce treatment delays.

7. Abbreviations and Acronyms

ACOG, American College of Obstetricians and Gynecologists; FIGO, International Federation of Gynecology and Obstetrics; PPH, postpartum hemorrhage; WHO, World Health Organization.

8. Acknowledgement

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9. Conflicts of Interest

The author declares no conflicts of interest.

10. Funding

No external funding was reported for this study.

11. Data Availability

The data supporting this study were extracted from Central Sebha Hospital records. Access to the underlying records is subject to institutional permission and patient confidentiality requirements.

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