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Postpartum Hemorrhage Despite a Well-Contracted Uterus: A Challenging Case Managed with Emergency Hysterectomy

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Abstract

Postpartum hemorrhage (PPH) is a major obstetric emergency and a leading cause of maternal morbidity and mortality worldwide. We report a case of a 28-year-old G2P1L1 with previous lower segment cesarean section and asymptomatic cholelithiasis who underwent elective repeat lower segment cesarean section with bilateral tubal sterilization at 38 weeks and 5 days of gestation. In the immediate postoperative period, the patient developed persistent bleeding per vaginum despite a clinically well-contracted uterus and absence of cervical or vaginal trauma. Initial postpartum hemorrhage management included uterotonic support, vaginal packing, intensive monitoring, fluid resuscitation, and preparation of blood products. Despite conservative measures, bleeding persisted with recurrent soaked vaginal packs and clot evacuation. Surgical re-exploration revealed focal atony at the placental implantation site. In view of uncontrolled hemorrhage, emergency total abdominal hysterectomy with bilateral salpingectomy was performed as a life-saving procedure. The patient received fresh frozen plasma and packed red blood cell transfusions and recovered well postoperatively. This case highlights the importance of early recognition, structured PPH management protocols, multidisciplinary care, timely blood transfusion support, and prompt surgical intervention in reducing maternal morbidity and ensuring favorable outcomes in refractory postpartum hemorrhage.

Keywords: PPH, Postpartum haemorrhage, uterotonics, emergency hysterectomy

Introduction

Primary postpartum haemorrhage (PPH) is one of the most frequently encountered obstetric emergencies and a major contributor to maternal morbidity and mortality. It is traditionally defined as blood loss of 500 mL or more within the first 24 hours following vaginal delivery and 1000 mL or more following cesarean section. Based on the extent of blood loss, PPH is classified as minor when the loss ranges between 500 and 1000 mL, and major when it exceeds 1000 mL. Major PPH may be further categorized into moderate haemorrhage (1001–2000 mL) and severe haemorrhage when blood loss exceeds 2000 mL. Secondary postpartum haemorrhage refers to abnormal or excessive bleeding occurring from 24 hours after delivery up to 12 weeks during the postpartum period[1].

2.Case presentation :

A 28-year-old gravida 2, para 1, living 1 woman with a history of previous lower segment cesarean section and asymptomatic cholelithiasis was admitted at 38 weeks and 5 days of gestation for an elective repeat lower segment cesarean section (LSCS) with concurrent sterilization. She conceived spontaneously and had regular antenatal follow-up throughout pregnancy. At the time of admission, she complained of no abdominal pain, leaking per vaginum, or bleeding per vaginum and reported adequate perception of fetal movements. Her bowel and bladder

habits were normal. She had regular menstrual cycles occurring every 28–32 days with 4–5 days flow. Her last menstrual period was on 25/10/2024, corresponding to an expected date of delivery of 01/08/2025. She had been married for 2 years and 11 months and there was no history of contraceptive usage prior to conception. Her previous obstetric history revealed one full-term cesarean delivery. Her first pregnancy was a spontaneous conception resulting in a full-term LSCS performed on 23/07/2023 for failed induction of labour. She delivered a healthy male baby weighing 3.520 kg. The antenatal, intrapartum, and postnatal periods of her previous pregnancy were uneventful. The child was breastfed for one year, and the patient resumed menstruation two months after delivery. There was no history suggestive of postpartum complications or adverse obstetric outcomes in the previous pregnancy.

In the present pregnancy, urine pregnancy test confirmed conception at 38 days of amenorrhea. Initially, antenatal booking and early pregnancy follow-up were carried out elsewhere. Early dating scan performed on 07/12/2024 demonstrated a single live intrauterine gestation of 6 weeks and 1 day with gestational sac measuring 15.70 mm and fetal heart rate of 110 beats per minute. Crown-rump length corresponded to 6 weeks and 1 day. Repeat early dating scan on 21/12/2024 confirmed a viable singleton intrauterine pregnancy corresponding to 8 weeks and 1 day with fetal heart rate of 176 beats per minute and crown-rump length corresponding to 8 weeks and 2 days, confirming satisfactory interval growth. First trimester nuchal translucency scan was performed on 27/01/2025. The scan showed a single live intrauterine gestation of 13 weeks and 4 days with crown-rump length corresponding to 13 weeks and 1 day. Placenta was noted to be anterior with the lower placental edge reaching up to the internal cervical os, suggestive of a low-lying placenta during early gestation. Amniotic fluid volume was adequate, and fetal heart rate was 166 beats per minute. Nasal bone was visualized, nuchal translucency measured 2.20 mm, tricuspid regurgitation was absent, and ductus venosus flow pattern was normal. Maternal cervical assessment showed cervical length of 40.80 mm with a closed internal os, indicating no evidence of cervical incompetence. First trimester screening was reported as screen negative, thereby lowering the risk for major chromosomal abnormalities. A detailed anomaly scan performed on 24/03/2025 at 21 weeks and 5 days gestation demonstrated a single live intrauterine gestation in breech presentation. An isolated intracardiac echogenic focus was noted in the left ventricle. Placenta was anterior upper segment with Grade I maturity. Amniotic fluid index was adequate at 11.2 cm. Fetal heart rate was 160 beats per minute, and estimated fetal weight was 423 ± 62 grams, corresponding appropriately with gestational age.

Maternal abdominal screening during the anomaly scan incidentally revealed cholelithiasis; however, the patient remained asymptomatic throughout pregnancy without any episodes of biliary colic, jaundice, fever, or gastrointestinal complaints. Following the finding of intracardiac echogenic focus, further evaluation was performed. Maternal echocardiography on 28/04/2025 at revealed no regional wall motion abnormality, with normal left ventricular systolic function and contraction. Ejection fraction was noted to be 68%, and cardiology opinion concluded stable cardiac status. Fetal echocardiography performed demonstrated no evidence of major fetal cardiac anomaly for the gestational age, thereby reassuring normal fetal cardiac development. Serial antenatal growth scans were subsequently performed and demonstrated satisfactory fetal growth with normal Doppler parameters throughout pregnancy. An interval growth scan done on 08/05/2025 at 27 weeks and 6 days gestation showed cephalic presentation with spine to the right, anterior placenta, normal liquor volume with AFI of 16 cm, fetal heart rate of 142 beats per minute, and estimated fetal weight of 1180 ± 118 grams. Umbilical artery and middle cerebral artery Doppler studies were within normal limits. Obstetric ultrasonography repeated on 24/06/2025 at 34 weeks and 6 days gestation revealed cephalic presentation with spine to the left, anterior placenta, adequate liquor with AFI of 14 cm, fetal heart rate of 137 beats per minute, and estimated fetal weight of 2311 ± 231 grams. Fetus demonstrated normal interval growth and Doppler parameters remained reassuring. Final growth scan performed on 10/07/2025 at 36 weeks and 6 days gestation showed continued cephalic presentation, anterior placenta, adequate liquor with AFI of 16 cm, fetal heart rate of 134 beats per minute, and estimated fetal weight of 2777 ± 277 grams. Doppler studies remained normal, and there was no evidence of fetal growth restriction or placental insufficiency. NST

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performed prior to delivery was reactive and reassuring.

3. Course in HospitaL :

Considering the history of previous LSCS and patient preference for permanent sterilization, she was planned for elective repeat cesarean delivery at term. On 23/07/2025, elective repeat LSCS with bilateral tubal sterilization was performed under spinal anesthesia. After appropriate preoperative preparation, abdomen was opened through the previous Pfannenstiel scar, and lower segment cesarean section was carried out through Kerr's incision. A live female baby weighing 3.430 kg was delivered at 4:16 AM on 23/07/2025. The neonate cried immediately after birth and was handed over to the pediatric team for routine newborn care. Liquor was clear and adequate. Placenta and membranes were removed completely. Uterine incision was closed in a single. Bilateral tubal sterilization was performed by Pomeroy's technique. Bilateral ovaries and fallopian tubes appeared normal intraoperatively. Hemostasis was initially satisfactory, abdomen was closed in layers, and patient was shifted to postoperative care in stable condition.

During the immediate postoperative period, the patient developed mild but persistent trickling of blood per vaginum despite a well-contracted uterus. Examination under aseptic precautions did not reveal cervical tears or vaginal lacerations. Vaginal toileting and vaginal packing were performed, and the patient was shifted to ICU for close monitoring. Oxytocin infusion, prostaglandins, tranexamic acid, intravenous fluids, and supportive management were initiated. Initial vital signs remained stable, and abdominal dressing showed no soakage. However, persistent vaginal bleeding continued despite conservative measures. Repeated examinations demonstrated soaked vaginal packs and passage of blood clots amounting to approximately 40 grams. The uterus remained contracted clinically, and no obvious traumatic cause for bleeding could be identified. Laboratory investigations including complete blood count, liver function tests, and coagulation profile were within normal limits, thereby ruling out coagulopathy as the primary etiology, but there was significant drop in her haemoglobin.

In view of ongoing postpartum hemorrhage unresponsive to conservative management, blood products were arranged, including four units of fresh frozen plasma and one unit of packed red blood cells. Decision was made to proceed with surgical exploration under general anesthesia. Re-exploration was performed through the previous Pfannenstiel incision.

Intraoperatively, the uterus appeared generally contracted except for the placental implantation site, which appeared relatively atonic and soft, suggestive of focal placental bed atony as the source of persistent bleeding. Since conservative measures were unlikely to adequately control hemorrhage and continued bleeding posed significant maternal risk, emergency total abdominal hysterectomy with bilateral salpingectomy was undertaken as a life-saving procedure. Bilateral ovaries were healthy and preserved. The procedure involved clamping and ligating the round ligaments, ovarian ligaments, uterine arteries, Mackenrodt's ligaments, and uterosacral ligaments bilaterally. Vaginal vault was closed with continuous locking sutures. Complete hemostasis was achieved, and abdomen was closed in layers after confirming correct instrument and mop counts. Four units of fresh frozen plasma and two units PRBC were transfused intraoperatively.

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Fig 1. Post-delivery placenta showing maternal and fetal surfaces with attached umbilical cord, examined for completeness and abnormalities after childbirth.

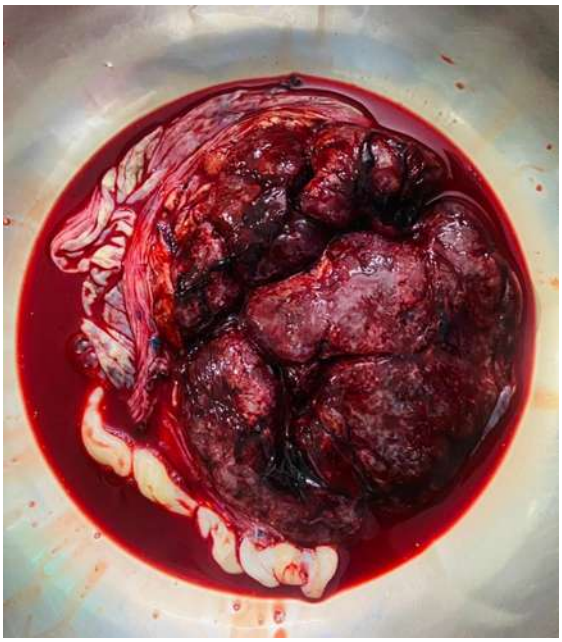
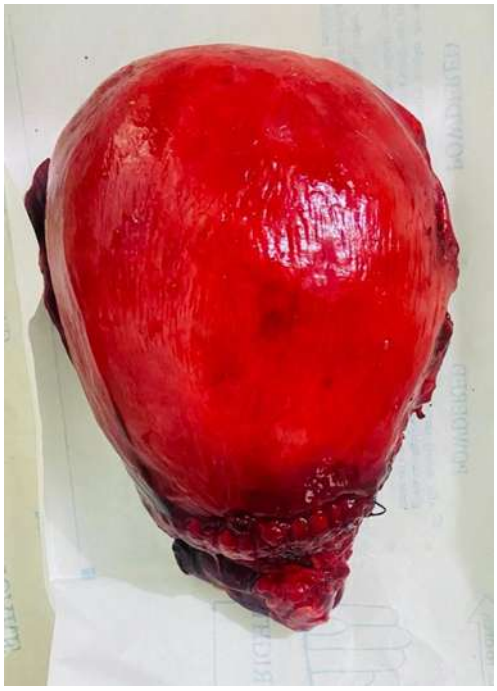


Fig 2. Hysterectomy specimen of the uterus showing features suggestive of uterine atony with a soft, boggy appearance at the affected site.



Postoperatively, the patient was managed in the intensive care unit with continuous monitoring. Multidisciplinary care included evaluation by a general physician. She received intravenous fluids, broad-spectrum antibiotics, proton pump inhibitors, analgesics, vitamins, nebulization, probiotics, and other supportive medications. The postoperative recovery period was satisfactory, with gradual symptomatic improvement and stabilization of hemodynamic parameters. Surgical wound inspection

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performed on 26/07/2025 showed healthy wound healing with no evidence of infection or soakage. The patient remained afebrile, tolerated oral feeds well, and had satisfactory bowel and bladder function. Repeat haemoglobin levels were satisfactory. She was subsequently discharged in stable condition with advice regarding postoperative care, follow-up, nutritional support, and monitoring for any postoperative complications.

4. Discussion:

Labour is classically divided into four stages, of which the third stage is considered the most critical with regard to postpartum haemorrhage (PPH). The third stage begins with the delivery of the baby and ends with the expulsion of the placenta. Evidence suggests that active management of the third stage of labour significantly reduces the incidence of PPH, limiting its occurrence to nearly 5%, compared to approximately 13% with expectant management.[2]

The Society of Obstetricians and Gynaecologists of Canada has published a guideline on the prevention and management of PPH. This summarises the causes of PPH as related to abnormalities of one or more of four basic processes – 'the four T's': tone, trauma, tissue and thrombin. The most common cause of PPH is uterine atony. Active management of the third stage of labourinvolves the use of interventions (including the use of uterotonics, early clamping of the umbilical cord and controlled cord traction) to expedite delivery of the placenta with the aim of reducing blood loss. Inexpectant management, signs of placental separation are awaited and the placenta is delivered spontaneously.

During a cesarean section, postpartum haemorrhage (PPH) is identified mainly through continuous intraoperative assessment rather than relying only on measured blood loss. Clinicians suspect PPH when there is excessive bleeding from the operative field, rapid soaking of surgical mops, continuous bleeding despite uterine closure, poor uterine contraction suggesting uterine atony, formation of large clots, or difficulty maintaining hemostasis. Intraoperative estimation includes measurement of blood collected in suction containers after subtracting amniotic fluid, weighing blood-soaked sponges and mops, and visual assessment by the surgical team. However, visual estimation alone often underestimates actual blood loss during cesarean delivery. Clinical indicators are equally important and include tachycardia, hypotension, pallor, decreasing urine output, falling hemoglobin levels, metabolic acidosis, and signs of shock. A soft, boggy uterus on palpation during surgery is highly suggestive of uterine atony, which is the most common cause of PPH following cesarean section[3].

According to the Royal College of Obstetricians and Gynaecologists Green-top Guideline No. 52, resuscitative management in postpartum haemorrhage (PPH) varies according to the severity of blood loss and maternal clinical condition. In cases of minor PPH, resuscitation includes prompt assessment of maternal vital signs, continuous monitoring of pulse, blood pressure, oxygen saturation, and urine output, along with accurate estimation of blood loss. Intravenous access should be secured with at least one large-bore cannula, and blood samples should be sent for hemoglobin estimation, blood grouping, and cross-matching if required. Crystalloid fluid replacement is initiated to maintain circulatory volume, while uterine massage and uterotonic administration are performed simultaneously to control bleeding and prevent progression to major haemorrhage[4]. Resuscitation in major postpartum haemorrhage should follow the basic principles of airway, breathing, and circulation (ABC). The patient should be positioned flat to optimize venous return and tissue perfusion, while measures should be taken to maintain body warmth in order to prevent hypothermia-associated coagulopathy. High-flow oxygen should be administered, and rapid intravenous fluid resuscitation should be initiated using crystalloids and colloids. Up to 3.5 liters of warmed fluids may be infused while arranging compatible blood products, and blood transfusion should be commenced as early as possible in cases of ongoing or significant blood loss. Continuous monitoring of pulse rate, blood pressure, oxygen saturation, urine output, and level of consciousness is essential throughout the resuscitative process. The therapeutic goals in the management of massive blood loss include maintaining adequate hemoglobin concentration and ensuring effective tissue perfusion and oxygen delivery. The guideline recommends maintaining hemoglobin levels above 8 g/dL during active resuscitation, although the target may vary according to ongoing bleeding, hemodynamic stability, and associated comorbidities. Platelet count should ideally be maintained above 75

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× 10⁹/L, fibrinogen levels above 2 g/L, and prothrombin time and activated partial thromboplastin time less than 1.5 times the normal control values. Early transfusion of packed red blood cells, fresh frozen plasma, platelets, and cryoprecipitate may be required as part of massive transfusion protocols to prevent dilutional coagulopathy and maintain hemostasis[5]

Uterine atony remains the most common cause of primary postpartum haemorrhage (PPH). Therefore, the initial management of PPH should focus on measures aimed at stimulating effective myometrial contractions and controlling ongoing bleeding. Initial first-line management includes palpation and massage of the uterine fundus, commonly referred to as "rubbing up the fundus," to stimulate uterine contraction, along with ensuring an empty bladder through Foley catheterization, as bladder distension may interfere with uterine contraction. Pharmacological management is initiated with oxytocin 5 IU administered by slow intravenous injection, which may be repeated if necessary. Ergometrine 0.5 mg may be administered intravenously or intramuscularly, although it is contraindicated in women with hypertension. Continuous oxytocin infusion, typically 40 IU in 500 mL isotonic crystalloid solution at 125 mL/hour, is recommended unless fluid restriction is indicated. In cases of persistent atony, carboprost 0.25 mg may be administered intramuscularly at intervals of not less than 15 minutes to a maximum of eight doses, with caution advised in asthmatic women. Misoprostol 800 micrograms administered sublingually may also be used as an adjunct uterotonic agent[6].

the use of additional pharmacological agents should not delay timely surgical intervention in cases of uncontrolled postpartum haemorrhage (PPH). Once the decision for surgical haemostasis has been made, the choice of procedure depends largely on the clinical condition of the patient, availability of resources, and the expertise of the attending surgical team. Temporary aortic compression may serve as an effective life-saving maneuver, allowing time for adequate resuscitation, blood replacement, and arrival of appropriate surgical support. Decisions regarding the sequence of interventions should be individualized, taking into consideration the woman's hemodynamic status and future reproductive wishes. For the management of atonic PPH, uterine tamponade using hydrostatic balloon catheters has largely replaced traditional uterine packing techniques. Various devices including the Foley catheter, Bakri balloon, Sengstaken–Blakemore oesophageal catheter, and condom catheter have demonstrated effectiveness in achieving temporary control of haemorrhage[7]. In cases where conservative measures fail, haemostatic compression sutures may be employed. Several successful case series have described the use of uterine brace sutures, among which the B-Lynch suture, first described in 1997, remains the most widely recognized technique. The B-Lynch suture requires hysterotomy for placement and is particularly suitable during cesarean section when the uterus is already open. Other compression suture techniques, including Cho sutures, have also been utilized effectively in the surgical management of severe atonic postpartum haemorrhage.

Stepwise uterine devascularisation is an important conservative surgical technique employed in the management of severe postpartum haemorrhage (PPH) when medical therapy fails to achieve haemostasis. The procedure involves sequential ligation of the pelvic blood supply in a stepwise manner, beginning with unilateral uterine artery ligation, followed by bilateral uterine artery ligation, ligation of the lower uterine arteries, unilateral ovarian artery ligation, and finally bilateral ovarian artery ligation if bleeding persists. The objective of this approach is to progressively reduce uterine perfusion while preserving the uterus and future fertility. The original case series involving 103 women with intractable PPH demonstrated successful control of haemorrhage in all cases without requiring hysterectomy, leading several clinicians to advocate stepwise uterine devascularisation as a preferred first-line conservative surgical intervention in uncontrolled PPH. Internal iliac artery ligation may also be considered in refractory haemorrhage; however, this procedure demands considerable surgical expertise due to the complex pelvic anatomy and the risk of complications such as ureteric injury and vascular trauma. Therefore, involvement of an experienced senior gynecologist or vascular surgeon is strongly recommended when this intervention is planned. A reported case series of 84 women who underwent internal iliac artery ligation as the initial surgical procedure for PPH demonstrated that hysterectomy was still subsequently required in 39% of cases,

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highlighting the technically challenging nature and variable success rate of this procedure in severe obstetric haemorrhage[[9].

5. Conclusion:

Every obstetric unit should establish a well-structured multidisciplinary protocol for the management of postpartum haemorrhage (PPH), with which all healthcare personnel should be thoroughly familiar. Regular updates and training programs on obstetric emergencies, including PPH management, are considered essential components of proactive risk reduction strategies. Simulation-based skills drills should involve all members of the multidisciplinary team, including obstetricians, anesthetists, midwives, nursing staff, and transfusion laboratory personnel, ensuring that each individual clearly understands their role during a haemorrhagic emergency. Evidence from systematic reviews has demonstrated that multidisciplinary simulation training in obstetric emergencies significantly improves clinical knowledge, practical skills, communication, teamwork, and overall team performance. Furthermore, training conducted within local hospital units has been shown to be equally effective as simulation-center-based training in enhancing preparedness and emergency response during PPH management.

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