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VAGINAL HAEMATOMA AS A POSTPARTUM COMPLICATION: A CASE REPORT

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A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: Postpartum hematoma is a complication of the early postpartum period connected with natural childbirth. It can occur as a result of episiotomy or perineal tearing during labor and may require transvaginal hematoma evacuation surgery. Early recognition, diagnosis, and treatment have an impact on the condition of the patient and determine how long they need to stay in the hospital.

Aim of the study: To investigate the specificity of the diagnostic and treatment procedures, and understand the role of the midwife in patient care, following transvaginal hematoma evacuation surgery.

Case study: Data for the case study of a 30-year-old female was obtained by analyzing medical documentation collected during hospitalization and by interviewing and observing the patient. The patient had a perineal incision during labor, and two hours later was diagnosed with a 10 cm vaginal hematoma over the sutured incision site. The patient was then qualified for transvaginal hematoma evacuation surgery.

Conclusions: Management of vaginal hematoma treatment has not changed significantly, however, improved diagnostic methods have been identified. The role of the medical staff, particularly the midwife, is crucial. Indeed, midwives caring for patients should recognize the symptoms of hematoma as early as possible to allow for rapid intervention and prevent serious complications.

KEYWORDS: hematoma, puerperium, postpartum complications, obstetric care

Background

Hematoma is defined as a local build-up of blood that has leaked from damaged blood vessels into subcutaneous or intra-tissue reservoirs. This leads to the compression of blood vessels within tissue structures, extensive hemorrhage into the tissue, and damage to the vasculature [1]. Postpartum hematoma (PPH) is a complication found in obstetrics that develops as a consequence of birth canal injuries [2-6] and has potentially serious consequences for women during or after childbirth. These hematomas are typically found either above or below the levator ani muscle of the lower pelvis [10] and occur at a frequency of 1 in 762 births [7]. Estimates of the occurrence of PPHs based on size have reported small hematomas in 1 in 700 births and large hematomas in 1 in 4,000 [8].

Risk factors for PPH include vaginal delivery, perineal incision, being nulliparous, vulvar blockage, hypertension during pregnancy, fetal macrosomia, prolongation of the second stage of labor, vulvovaginal varicose veins, and coagulation disorders. Trauma during labor is also a major risk factor for the development of PPH, which can develop due to a lack of homeostasis during perineal treatment. Nonetheless, studies have shown that most hematomas result from normal, natural labor, rather than complicated labor or during the postpartum period [7-8]. Fortunately, early recognition and diagnosis of vaginal

Table 1. Details of articles included

Author	Publication year	Type of Study	Number of patients	Woman's age	Which delivery	Risk factors	Time of detection of hematoma / symptoms	Type of hematoma	Diagnostic process	Treatment
Rani et al. [3]	2017	A case-control study	39	26±4.07	Primigravida (29)	Primigravida, hypertensive disease of pregnancy, coagulopathy, and episiotomy.	The median time to detect hematoma was 6 hours / Perineal pain, tachycardia, and bleeding.	Vulvovaginal (35/39) was the most common type of hematoma.	Vaginal examination.	Drainage and occlusion of the dead space with vaginal packing for 24 hours was sufficient management for 38 hematomas. One case had arterial embolization
Youssef et al. [1]	2019	Case report	1	33	Nulliparous	Epidural analgesia, Episiotomy, and Instrumental delivery.	Two hours after labor/ asthenia and throbbing rectal pain.	Hematomas formed above the levator ani muscle.	Vaginal examination and Ultrasonography.	Drained the hematoma. Hemostatic sutures. Embolized afferent vaginal branches to the hematoma using gelatin sponge particles.
Baruch et al. [9]	2015	Case report	1	32	Primigravida	Thrombocytopenia and episiotomy.	Three hours after labor.	A right vaginal sidewall hematoma extending 8 cm in the cranial-caudal axis.	Examination under anesthesia/ ultrasonography	Embolized the distal branches of the right internal iliac artery with gelatin foam from a left femoral approach.
Tilahun et al. [11]	2022	Case report	1	28	Nulliparous	The total duration of labor was 6 hours.	Gradual swelling of the right vulva that was associated with vulvar pain. Significant swelling of the vulva, and vulvar pain. Difficulty with micturition. She also complained of palpitations, easy fatigability, vertigo, and headache.	Vulvar hematoma 12 × 20 cm right-sided vulvar mass extending to the mons pubis and posteriorly to the right buttock.	Genital examination.	Under spinal analgesia, about 700 ml of clotted blood was evacuated from the vulvar hematoma. The actively bleeding vessels were identified and ligated. Then, the wound was sutured in three layers.
Elghanmi A. and Seffar H. [12]	2015	Case report	1	28	Primigravida	Vacuum extraction and episiotomy.	Two hours later, she developed signs of shock.	Right vulvovaginal hematoma of approximately 10 cm in diameter.	On physical exam, the abdomen was tender, and the uterus was tonic. Perineal exam.	In the operating theater and under general anesthesia, the puerperal hematoma was drained. The origin of the bleeding was located in the right vaginal wall and the ischio-rectal fossa. It consisted of venous and arterial rupture of branches of the vaginal and internal pudendal arteries. Hemostatic sutures were applied and different vaginal fascia and perineal tissues were closed. Packing was left in the vagina with compressive wound dressing. Six hours later, the packing was removed with no signs of active bleeding.

Table 1 contd.

Author	Publication year	Type of Study	Number of patients	Woman's age	Which delivery	Risk factors	Time of detection of hematoma / symptoms	Type of hematoma	Diagnostic process	Treatment
Maroyi et al. [13]	2021	Case report	1	37	Primigravida	Eight prior vaginal deliveries.	The patient had visited a private clinic on days 3 and 7 postpartum; however, signs and symptoms of retroperitoneal hematoma went unrecognized. On day 14 after delivery, abdominal pain that had begun immediately after delivery and progressed throughout the postpartum period. The patient had anemia, hypotension, tachycardia, and a left costo-lumbar arch distorting the body shape on a soft and depressed abdomen.	Extensive hematoma in the retroperitoneal space from the left iliac fossa to the left flank.	Abdominal ultrasound.	A laparotomy was performed to evacuate the hematoma.
Redondo Villatoro et al. [14]	2020	Case reports	3	35-years-old, 28-years-old, and 29-years-old	35-year old – was Primigravida	Induced labor due to premature rupture of membranes, and vacuum extraction.	Anemia.	Hematoma on the right posterolateral wall of the vagina, measuring 10×7 cm, without identifying the origin of the bleeding.	Genital examination. Transvaginal and abdominal ultrasounds. Computed tomography angiography.	A conservative approach was decided upon, and the patient was transfused three units of packed red blood cells. An augmentin prescription (875 mg/125 mg, 1 tablet every 8 h as prophylaxis).
					28-year old – Primigravida	An instrumental delivery (vacuum-assisted owing to protracted labor)	In the immediate postpartum period, the patient had buttock pain and severe anemia, which persisted after the administration of 2 units of packed red blood cells.	Retroperitoneal hematoma located in the lesser pelvis, occupying the left lateral face of the vagina (collapsing the sigmoid colon and shifting the bladder) to the anterior wall of the abdomen and measuring 16×10×19 cm.	Ultrasonography, angiography CT	A conservative approach. Antibiotic therapy with augmentin (1 g/8 h) and metronidazole (500 mg/8 h) and underwent antithrombotic prophylaxis with heparin (20 mg/24 h).
					29-year old - Primigravida	Induced labor owing to premature rupture of membranes. Vacuum extraction.	In the immediate postpartum period, the patient had hypogastric pain, active vaginal bleeding, and anemia in the transfusion range.	4-cm laceration in the right lateral face of the vagina, as well as a bleeding vessel. A CT was performed, revealing a retroperitoneal hematoma measuring 6.4×10×10.5 cm	An examination under anesthesia, CT	Selective embolization of vessels was performed, accessed by the left radial artery, with 2 vials of 250-micron microparticles. The patient was prescribed antibiotic therapy with intravenous augmentin (1 g/8 h) and antithrombotic prophylaxis with clexane (40 IU/24 h).

hematoma, along with rapid intervention, can have a positive impact on a patient's condition [1,9].

Risk factors for PPH, as well as the diagnostic and therapeutic processes, were investigated by searching the relevant literature using the Medline repository via PubMed. A combination of the keywords "Vaginal hematoma" and "vaginal hematoma postpartum complication" was used in the search. Additional literature searches were carried out based on the literature cited in selected studies, with preference given to case studies (Table 1).

Aim of the study

The study aimed to understand the specificity of the diagnostic and treatment procedures, as well as the role of the midwife, in the care of patients after transvaginal hematoma evacuation surgery.

Material and methods

Study design and setting

A case study was conducted in February 2020 at The Holy Family Hospital in Warsaw. Data was obtained by analyzing medical documentation, as well as through interviewing and observing the patient during their stay at the hospital. The patient was informed of the intention of the study and provided written informed consent.

Participant

A 30-year-old patient who was 40 weeks and 5 days pregnant was admitted to the hospital on 25 February 2020. The patient was admitted at 07:30 due to three hours of strong contractile activity of the uterine muscle. This indicated that she was in the first stage of labor, and she was admitted to the labor ward.

Data sources/measurements

Examination on admission provided general observations of blood pressure (130 / 90 mmHg), heart rate (HR) (79 beats per minute [bpm]), temperature (36.8 oC), height (178 cm), and weight (56 kg). Patient weight represented a weight gain of 23 kg during pregnancy, and they were generally healthy and did not report any comorbidities during or before pregnancy. No drug allergies were reported.

Gynecological interview indicated that first menstruation occurred at the age of 15, and that menstrual cycles occurred regularly every 28 days. Periods were moderate and painless and lasted 6-7 days.

Physical examination indicated that the patient was pregnant and in generally good condition. Movements of the fetus were felt, the structure of the pelvic bone was normal, the height of the pelvic floor corresponded to the week of pregnancy, and the abdomen was soft and pain-free.

The midwife on duty assessed the obstetric situation by means of an internal examination. Per vaginum examination revealed destruction of the vaginal part of the cervix, 2 cm dilatation, preserved fetal bladder, and fetal head positioned to the left and pressed to the inlet.

After internal examination, a cardiotocographic (CTG) record was made to assess the well-being of the fetus. Fetal heart rate (FHR) was 140 bpm with undulating oscillations and a reactive recording pattern. Spontaneous contractions occurred every 5-7 minutes and basal uterine tone was normal. Estimated Fetal Weight (EFW) was approximately 3563 g on 20 February 2020.

Laboratory tests were undertaken and the results are presented in Table 2.

Table 2. Patient's laboratory tests

Laboratory tests	Wassermann reaction	Hepatitis B antigens	Group B Streptococcus	Erythrocyte antibodies	Toxoplasmosis IgG and IgM	Human immunodeficiency virus	Cytology	Other
Date	2020-01-02	2020-01-02	2020-01-17	2019-05-29	2019-09-30	2020-01-02	2019-04-03	2019-12-30
Result	negative	negative	negative	not tested	negative	negative	Grade 2	Hepatitis C negative

Results

Maternity care in the delivery room

During labor, the patient complained of pain when the uterine muscles contracted. To alleviate the pain, it was decided, inter alia, to adjust the position of the patient, and to use water immersion, breathing techniques, massage by her partner, and nitrous oxide. Despite the methods used by the midwife to alleviate pain, the patient felt that the pain was not relieved sufficiently. The patient was, therefore, qualified for

epidural anesthesia (EPI). After giving the patient 1000 ml of multiple electrolytes as an intravenous infusion, the anesthetic team was asked to administer hormone therapy. During the procedure, fetal cardiac bradycardia of 80 bpm occurred that lasted for three minutes. The doctor on duty was called and an amniotomy was performed in his presence which normalized basal FHR to 135 bpm. Per vaginum examination revealed a 7 cm opening of the external cervix. The head of the fetus was pushed strongly against the inlet and the patient could feel pressure from this. Within an hour, the second stage of labor had begun and FHR remained normal. The patient experienced several partial contractions and their position was changed to the left lateral and then to the right. At 15:24, following a lateral-right perineal incision, LJD was born by natural means and received an Apgar score of 10 points. The placenta was then delivered by Schultze's mechanism.

A continuous suture was applied to the perineal incision in a conventional manner, and sutures were also applied to the ruptured vaginal mucosa (hymen hyphae) at the entrance to the vagina on the left side. For the internal dissection of the mucous membranes of the labia minora, in the area of the clitoris, single sutures were applied.

Blood loss during childbirth was 350 ml. The uterine muscles contracted normally, and the feces from the genital tract were normal. The newborn baby was then attached to the breast and after 2 hours of skin-to-skin contact, the newborn was examined. At this time the patient reported severe pain in the perineum that was penetrating the right buttock. Examination per vaginum revealed hard swelling of the posterior vaginal wall, and the patient reported that the pain worsened on palpation. The doctor asked for an urgent consultation and per vaginum and rectal examination revealed a vaginal hematoma above the sutured incision that was approximately 10 cm in diameter. The patient was qualified for transvaginal hematoma evacuation surgery and was urgently transferred to the operating theatre, but was in generally good condition. Peripheral blood tests (morphology, coagulation system) were taken at the doctor's request.

At 17:50 in the operating room, the PPH was evacuated under general endotracheal anesthesia. The course of the procedure was described in the patient's medical history as follows: "After decontamination of the perineum under general intravenous anesthesia, the patient was catheterized. A speculum was placed in the vagina and a hematoma filling the entire vagina, approximately 10 cm long, and penetrating towards the right vaginal vault without contact with the perineal incision sutures, was observed. The hematoma was incised, and approximately 500 ml of clots were evacuated. Bleeding spots were stabbed and a thin spongostan hemostatic sponge was left in place of the hematoma. Z-sutures were applied in the usual manner to the vaginal mucosa. The patient's condition was checked and no bleeding was observed, there was no damage to the cervix, and vault control was unchanged. The uterus was shrunken and per rectum examination revealed no changes. Total blood loss was approximately 800 ml. A seton was left in place to be removed the following morning. The general condition of the patient after the procedure was good and the course of anesthesia was uneventful".

At 18:40 the patient was awake and her cardiovascular and respiratory condition was stable. She was transferred to the postoperative supervision room, however, the patient again reported severe pain around the perineum at around 20:20, despite receiving painkillers. Examination of her condition provided general observations of oxygen saturation (97%), blood pressure (150/95 mmHg), and HR (140 bpm).

At 20:30 the patient was in moderate general condition but reported increasing pain in the anus and right buttock. General observations were recorded to include blood pressure (100/60 mmHg) and HR (120 bpm). A physical examination was performed and a hematoma approximately 8 cm in diameter was detected during a rectal examination. Morphology was ordered and the patient was qualified for re-operation of the hematoma. Due to severe pain, it was decided to perform an ultrasound examination in the operating room, and the head of the department was called. The patient was informed about the risk of extending the operation to laparotomy and ligation of the iliac arteries, and the possibility of the uterus being removed. Oral consent for the procedure was obtained and surgery commenced at 21:05.

At 22:10 the patient was re-admitted to the recovery room, where two units of red blood cells (RBCs), two units of plasma, and six units of intravenous cryoprecipitate were transfused. Painkillers were administered intravenously (Ketonal 100 mg, Morphine 20 mg in 20 ml 0.9% NaCl 1.5-2 ml/h) along with an antibiotic (Metronidazole 3×500 mg). After repeated transvaginal hematoma evacuation, the patient's general condition and circulatory and respiratory efficiency were recorded. This included oxygen saturation (98%), HR (90 bpm), and blood pressure (124/62 mmHg).

Two hours after the operation, general observations were again recorded, including blood pressure (120/60 mmHg), and HR (90 bpm). The patient did not report any complaints, the abdomen was soft and painless, and the uterus was shrunken. A drain installed during surgery had collected 100 ml of bloody discharge.

At 04:00 a doctor was called because the drain had fallen out. The patient's general condition was good,

with blood pressure (130/78 mmHg), and HR (80 bpm) measured. Per vaginum and rectum examination revealed no hematoma. The drain was re-inserted and the patient remained at in-patient observation.

At around 07:00 the patient was in good general condition, and circulation and respiration were efficient. The abdomen was soft and painless, though there was slight tenderness on the right side near the iliac plate. Diuresis amounted to 1500 ml and a small amount of serous fluid was observed in the drain. The seton was removed and there were no signs of intense hyperemia.

An ultrasound examination was performed, which showed a free diaphragm dome, kidneys without stagnation in the cup-pelvic systems, no abnormal features in the retroperitoneal space, and a normal transperineal image. Tests were ordered and the patient was transferred to the maternity ward.

Obstetric care after the evacuation of vaginal hematoma, planning of care, and implementation of activities.

1. Reduction or minimization of pain through the administration of analgesics following the doctor's instructions:
   - Implement the analgesic procedure following the medical order card.
2. Postoperative wound infection prevention:
   - Supply antibiotics according to the doctor's instructions.
   - Visually evaluate the postoperative wound and observe the seton.
   - Observe the amount and nature of the contents of the drain.
   - Assess and analyze parameters of general condition that may indicate a developing infection.
3. Caring for the proper nutrition and hydration of the patient:
   - Provide an intravenous fluid supply.
4. Maintaining fluid balance:
   - Observe the quantity and quality of urine excreted.
   - Record fluid intake.
5. Pharmacological management of thromboprophylaxis:
   - Administer anticoagulants following the doctor's prescription.
6. Observation of the general condition of the patient:
   - Assess general condition using measurable parameters.
7. Observation of the patient's obstetric condition:
   - Assess obstetric condition to include the height of the fundus, contraction, and puerperal excrements.
   - Visual perineal assessment.
8. Obstetric control by the obstetrician:
   - Observe the quantity and quality of urine excreted.
   - Control of bowel movements and history gathering.
9. Providing a proper diet for the patient:
   - Provide an easily digestible diet and present principles of nutrition to the patient in puerperium and during breastfeeding.
10. Supervision over the course of lactation:
    - Assess the course of breastfeeding.
    - Observe the lactation process.
    - Assess mother-child contact.
11. Control of the patient's emotional state:
    - Assess the patients' behavior and conduct an interview regarding well-being.
12. Activities to improve the patient's well-being:
    - Strengthen the sense of competence as a mother.
    - Reassure the patient that she has a right to feel different because of a big change in her life.
    - Calm the patient by providing accurate information about her condition.
13. Observation of the discharge in the Redon bottle.
    - Visually assess the quantity and quality of the discharge in the Redon bottle.
14. Assessment and reduction of the risk of anemia.
    - Assess morphology and iron supply according to the doctor's instructions.

The obstetric treatment and care provided led to significant improvements. On the 6th day post-surgery, the patient and the newborn left the hospital in good general condition.

During vaginal delivery, perineal tears often occur due to the excessive pressure on the frontal part of the soft tissues of the birth canal; therefore, an important issue is the professional preparation of the therapeutic staff to care for a woman with a perineal injury.

Discussion

Key results

Hematoma diagnosis can be difficult because symptoms are often nonspecific and the therapeutic procedure of choice is most often surgical treatment. Developing a standard protocol for diagnosis, treatment, and care, is an important element in increasing the level of care provided.

Interpretation

Vaginal injuries, including vaginal hematomas, account for 20% of postpartum hemorrhages [15].

Vaginal hematoma is a difficult condition, not only because it is unpredictable and symptoms are often nonspecific, but also due to the potential complications it entails for the patient. The most common methods of diagnosis are imaging modalities, such as computed tomography, magnetic resonance imaging, and ultrasound [16]. The therapeutic procedure of choice is most often transvaginal hematoma evacuation surgery [15].

Before surgical treatment is undertaken the patient must provide written informed consent. This is important as the procedure has the potential for many additional interventions, including the transfusion of blood and blood products and the possibility of extending the operation to laparotomy and ligation of the iliac arteries. Furthermore, it may be necessary in some cases to remove the uterus if an unmanageable hemorrhage threatens the life or health of the patient [17]. Due to the rapid escalation of events that lead to transvaginal hematoma evacuation surgery, it is often impossible to mentally prepare a patient. Therefore, the attending midwife should take care to reduce the patient's anxiety. In the present case study, the close cooperation of midwives with the medical team meant that medical intervention was quickly initiated. As a result, the surgical procedure significantly reduced the symptoms of the growing hematoma.

Although a re-operation was necessary and caused the patient additional stress, there was no requirement to embolize the iliac arteries. Postpartum vaginal hematoma was included in the International Statistical Classification of Diseases and Related Health Problems (ICD)-10, so it can be concluded that it is an important and well-known issue. However, there is no single, strictly adopted, protocol set out to manage the issue. According to the literature, the most frequently used and most effective method of treatment is hematoma resorption to prevent further blood loss and reduce pain [5,18,19]. Indeed, a study by Shikha Rani et al. demonstrated that single resorption was insufficient in only 1 in 39 cases [3].

In the current study, re-operation was required. Morgans et al. [19], described five cases of women in whom the insertion of a drain, pressure dressing, blood transfusion, and antibiotic therapy after the evacuation of the hematoma, was successful. Similar to the current study, this study included a 26-year-old patient with recurrent vaginal hematoma after natural childbirth. Indeed, primary evacuation of the hematoma and layered suturing turned out to be insufficient and the hematoma reappeared within a few hours. Therefore, re-operation was required, and, after removing the clot, a drain was inserted and covered with a pressure dressing in the form of swabs, although the current case study differed in that a seton was used rather than swabs. The patient also had a successful blood transfusion and received antibiotic therapy [19]. However, in a retrospective study conducted between 2013-2017, the medical records of 40 patients with PPH were assessed, including patients with vaginal hematoma. Analysis of the records showed that severe hemorrhage occurred and had to be controlled by embolization of the iliac arteries [20].

The optimal treatment for a hemorrhage depends on its cause. Ultrasound is the most useful tool for the rapid diagnosis and evaluation of PPH build-up [21]. In the current study, ultrasound was only used for assessment of the hematoma when it began to grow again. However, if ultrasound was used to monitor the patient after the evacuation of the hematoma, it could have contributed to earlier detection of its growth and would have allowed for adequate measures to be applied to prevent its re-emergence.

The role of the nurse and midwife is to perform all medical procedures ordered by the duty doctor with due diligence, as well as to mentally and physically prepare the patient for surgery [22]. Immediately after the operation, the midwife has to constantly supervise the patient and take measures to prevent possible complications. In the following days, the midwife's tasks should focus on preparing the patient for childcare and self-observation. Indeed, after a complicated childbirth, patients can experience trauma and depressed mood/anxiety. Therefore, they need the support of medical personnel in addition to the support they receive from family.

Generalizability

An appropriate response to complaints reported by patients allows for quick diagnosis and identification of underlying causes, as well as for the implementation of optimal treatment and care procedures. The midwife has the closest contact with the patient while providing care during the puerperium, at which time they carry out medical orders and monitor the patient's general and obstetric condition. This allows them to quickly verify the condition of the patient and provide qualified assistance should any irregularities occur.

Study limitations

The study was limited by only having one patient. This should be expanded in the future to include additional case studies to allow for a comparison of diagnostic and therapeutic management processes.

Recommendations

In order to increase the level of care provided it is important to develop a standard protocol for the diagnosis, treatment, and care provided following transvaginal hematoma evacuation surgery.

Conclusions

Vaginal hematomas are often difficult to predict, therefore close cooperation between midwives and the medical team is important. Furthermore, procedures and care provided by the staff should give the patient a sense of security, as they may significantly affect their decisions on future reproduction.

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