

Spontaneous Paravesical and Broad Ligament Hematoma after Vaginal Delivery Had Uterine Artery Embolization after Evacuating the Hematoma

Aayat Jaaffar Naseeb*, Abrar Majdi Al Nasheet*

Salmaniya Medical Complex, Manama, Bahrain

Email: dr.alnasheet.abrar@gmail.com

How to cite this paper: Naseeb, A.J. and Al Nasheet, A.M. (2024) Spontaneous Paravesical and Broad Ligament Hematoma after Vaginal Delivery Had Uterine Artery Embolization after Evacuating the Hematoma. *Open Journal of Obstetrics and Gynecology*, 14, 480-486.

<https://doi.org/10.4236/ojog.2024.143041>

Received: February 17, 2024

Accepted: March 26, 2024

Published: March 29, 2024

Copyright © 2024 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Broad ligament hematoma is typically seen during cesarean section due to rupture of branches of uterine and vaginal vessels and it's rare to be seen post-normal vaginal delivery. Addressing puerperal hematomas postpartum presents considerable challenges for obstetric care providers. While hematomas such as those affecting the vulva, vulvovaginal region, or paravaginal area are frequently encountered, retroperitoneal hematomas are rare and notably pose a greater risk to the life of the patient. The medical literature contains scant case reports on retroperitoneal hematomas, with no consensus on a definitive treatment approach. Pelvic arterial embolization has emerged as both a sensible and increasingly preferred method for treating these hematomas recently, but its application is contingent upon the patient maintaining hemodynamic stability and the availability of a specialized interventional embolization unit. In our case, we are presenting a very rare case of a 31-year-old primigravida female with a history of in vitro fertilization pregnancy. She delivered a normal vaginal delivery at 31 weeks gestation. Unfortunately, she experienced multiple complications intrapartum, including preeclampsia and placental abruption. These complications increased her risk of developing a broad ligament hematoma.

Keywords

Broad Ligament, Paravesical Hematoma, Spontaneous Hematoma, Uterine Artery Embolization, Retroperitoneal Hematoma, Vaginal Delivery

1. Background

Retroperitoneal hematomas are exceptionally uncommon in the field of obst-

*Authors both contributed equally to this work (co-first authors).

trics, presenting as hematomas that bleed into the retroperitoneal space [1]. Typically resulting from damage to the uterine artery, uterine rupture, or as an extension from a vaginal hematoma, these hematomas often cause severe abdominal pain. However, in some instances, their clinical symptoms may be subtle and easily overlooked and can lead to a postponed diagnosis, potentially resulting in severe hemorrhagic shock and, in extreme cases, fatality [2]. Thus, documenting cases of retroperitoneal hematomas is critical for raising awareness. Additionally, accumulating management experience in such cases is essential for enhancing outcomes and reducing maternal morbidity and mortality associated with this condition.

In an article [3] written after presenting it at the 25th European Congress of EBCOG on 17 May 2017: Need to recognize retroperitoneal hematomas in pregnancy as an important cause of maternal morbidity and mortality. In the article, they mentioned a classification scheme aiming to provide a clearer differentiation between retroperitoneal hematomas and pelvic hematomas, which are often conflated. By simplifying the classification in **Figure 1**, it is hope to improve the understanding and management of retroperitoneal hematomas in obstetrics.

If we dive into the literature review, articles and case reports regarding retroperitoneal hematoma mostly seek to bridge the gaps in knowledge regarding identifying the symptoms and managing such cases, to contribute to better outcomes for patients with this rare condition as we aim from presenting such a case.

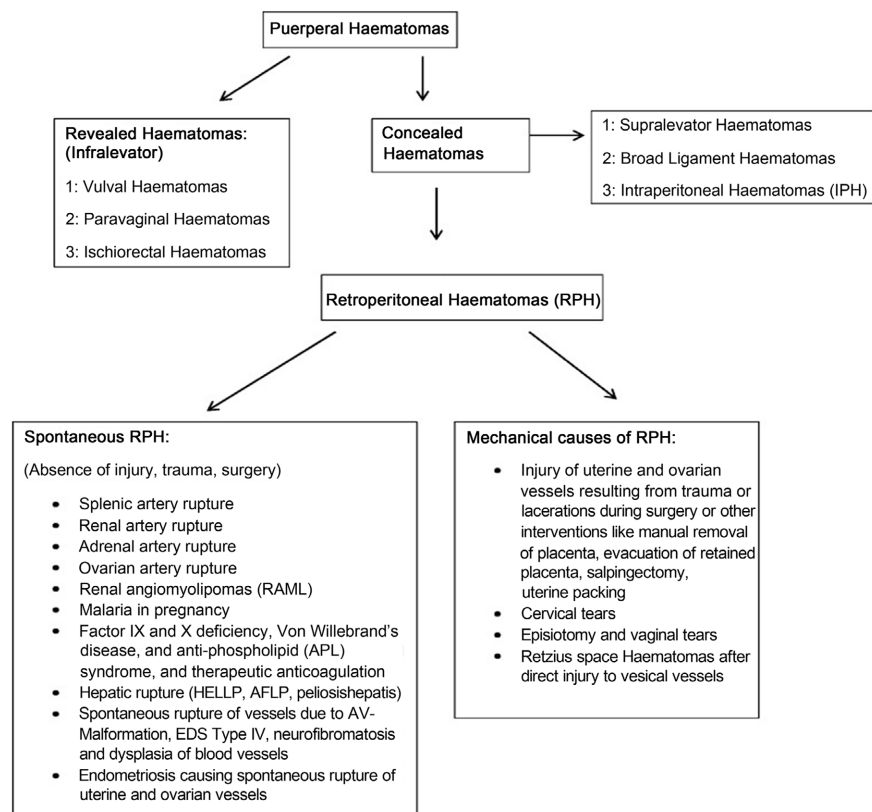


Figure 1. Classification of puerperal and retroperitoneal haematomas in obstetrics [3].

2. Case Presentation

In the case we are discussing, a 31-year-old woman experiencing her first pregnancy, which was conceived through in vitro fertilization, had precipitous labor and gave birth prematurely at 31 weeks through a normal vaginal delivery in Salmaniya medical complex-Bahrain. Intranatal, she faced several health challenges, including preeclampsia and a placenta abruption, both of which heightened the risk of developing a hematoma within the broad ligament.

During the patient's vaginal delivery, she experienced significant blood loss estimated to be 1.3 liters. A few hours following the delivery, the patient developed symptoms of abdominal pain and became hemodynamically unstable, prompting further investigation. The patient was examined for any vaginal hematomas or cervical tears but per speculum and vaginal examination were normal and no pathologies were seen or felt. Hence, a bedside ultrasound revealed hemoperitoneum, thus she was taken for urgent exploratory laparotomy. During the laparotomy, a large broad ligament hematoma measuring 12 × 12 cm was found. The hematoma extended to the right infundibulopelvic ligament and was near the bladder, necessitating the placement of ureter stents to prevent injury to the ureters (see **Figure 2**). Additionally, internal iliac ligation was considered during the surgery but ultimately not performed due to the patient's stable condition and absence of active bleeding.

Intraoperative, the opening was created anteriorly to the broad ligament, the hematoma of around 500 ml clots was removed, and hemostatic stitches were taken on the branches of the uterine artery. Also, Surgicel, Flowseal and Surgiflo filled the oozing areas located in the broad ligament, anterior to the bladder and lateral to the vagina. Postoperative, the patient was kept on meropenem as a wide-spectrum antibacterial.

During the procedure, the patient transfused 5 units of Packed RBC, 4 units of Fresh Frozen Plasma, and 4 units of cryoprecipitate.

Total blood loss during the operation was 1.5 liters, added with 1.3 liters blood loss during delivery making it a total loss of 2.8 liters.



Figure 2. Intraoperative findings of hematoma on the top of the bladder.

On the 2nd day post laparotomy, the patient remained stable, therefore uterine artery embolization was arranged and done uneventfully, the patient was shifted to ICU for observation.

On the 8th day post embolization patient was shifted to a high-risk bed in the gynecology ward. One day later she was found to have spikes of fever reaching up to 38.6 Celsius, tachycardic, and complaining of shortness of breath, hence CT angiography scan was done which showed pleural effusion, so a right-side intercostal chest drain (ICD) was inserted and vancomycin antibiotic added along the meropenem. She received chest physiotherapy and improved gradually.

On the 20th day, ICD was removed; all septic workups came back negative. However, in less than 24 hours she developed a fever, CT abdomen showed few free fluid pockets, a bulky uterus containing a large amount of lightly high-density fluid, and mild pleural effusion.

On the 23rd day, she continued to spike a fever, hence she had her second exploratory laparotomy where turbid fluid was aspirated and sent for culture. Intraoperative, it was found that old hemostatic agents sloughed, and there were adhesions between the uterus to the pelvic wall, adhesions of the bowel to the fundus of the uterus and lateral pelvic wall, peritoneal wash done, and redivac drain kept. The patient clinically improved and in less than a week she was discharged home under stable condition, was followed in the outpatient gynecology clinic, and was contacted 5 months post discharge, both mother and baby were doing well with no complaints.

3. Discussion

Hematomas in the retroperitoneal area are an uncommon occurrence as a result of normal pregnancy and delivery, with the prevalent hematomas related to pregnancy, typically found in the vulva and vagina [4]. These pregnancy-linked retroperitoneal hematomas are unique in their time frame of occurrence, presenting at any time during pregnancy or within the first month after giving birth, they are rare and are a life-threatening condition that needs prompt detection and management.

Current guidelines for assessing maternal collapse and morbidity in pregnancy and the postpartum period should include retroperitoneal hematomas as it is a significant contributor to maternal shock or morbidity. Innovative educational methods are essential to enhance obstetricians' understanding of retroperitoneal hematomas, guiding them to consider the various outcomes during management. The complexity of addressing retroperitoneal hematomas is diminishing as there are continuous enhancements in diagnostic methods, therapeutic choices, and the integration of a multidisciplinary team-based approach.

The incidence of spontaneous retroperitoneal hematomas during pregnancy is notably infrequent. Pregnancy serves as a risk factor for the development of retroperitoneal hematomas, with the strain of childbirth possibly contributing to

their formation. In our case, possible additional risk factors might be preeclampsia and placenta abruption [5]. Another risk factor worth studying was the effect of IVF pregnancy as a possible contributor to a retroperitoneal hematoma, however, no data was found to support it.

After a vaginal birth, retroperitoneal hematoma is often identified during either the early or delayed stages of the postpartum phase, typically because of unrelenting pain or hemorrhagic shock. Although ultrasound may not be as precise as a computed tomography scan or magnetic resonance imaging, it is considered a suitable substitute for the diagnosis of retroperitoneal hematoma.

The treatment of retroperitoneal hematoma can be non-invasive or invasive and is decided based on the hematoma's magnitude and its progression, along with the patient's circulatory stability. For patients who remain stable after a blood transfusion, whose hematoma is not growing, and who are not experiencing symptoms of pressure, a non-surgical approach is advised [6].

Level I evidence, which represents the highest quality of research data, is currently insufficient for determining optimal treatment strategies for retroperitoneal hematoma; existing evidence is derived from small group studies or individual case narratives [6].

Given its higher safety profile and accuracy, percutaneous arterial embolization is preferred over traditional surgery when the patient's hemodynamic condition is stable. In our case, as the patient is primigravida it was important to save the uterus as much as possible, so we weigh the risks vs the benefits and ensure that the patient is hemodynamically stable before proceeding to embolization. Fluid resuscitation, coagulopathy correction, and blood transfusion can effectively manage most patients who are hemodynamically unstable. The use of endovascular procedures, such as targeted intra-arterial embolization or stent-graft placement over the injured vessel, is increasingly becoming a critical treatment method. Open surgical repair of bleeding retroperitoneal vessels is usually considered when conservative or endovascular methods fail to halt the bleeding, or when there is a lack of access to endovascular resources or expertise, as well as in situations where the patient's condition is not stable [6]. Inadequate treatment of retroperitoneal hematoma can result in a high mortality rate.

In instances where a nonoperative method is chosen for patients with stable hemodynamic status, the administration of preventative antibiotics postpartum could be warranted to avert infection of the hematoma, even though there is a lack of widespread support for this practice in the guidelines. Prophylactic antibiotic therapy was seen being utilized in three of the case studies to prevent hematoma superinfection [7]. While there are no uniform recommendations, we suggest that the choice of antibiotics be tailored to the antimicrobial resistance patterns of each institution [7].

In the presented case, the patient was vitally unstable, and a bedside ultrasound showed hematoma, which prompted the decision to perform a laparotomy. The hematoma situated in the paravesical region and amidst the strata of the

broad ligament was drained and followed by artery embolization and was kept. Despite being kept on dual antibiotics, the patient developed multiple spikes of fever that prompted the need for a second exploratory laparotomy.

Lastly, administering prophylactic doses of low-molecular-weight heparin once symptoms have settled seems prudent, considering that the thrombotic tendency associated with the postpartum period, compounded by reduced mobility resulting from this complication and a blood loss exceeding 2.8 liters, heightens the risk of thrombotic events after childbirth [8].

4. Conclusion

According to existing literature, the treatment approach for patients with spontaneous retroperitoneal hematoma varies depending on the patient's hemodynamic status. Continuous monitoring is crucial, and if the condition worsens, surgical intervention may be necessary for better outcomes. Obstetricians should be aware that spontaneous retroperitoneal hematoma can occur without a clear cause and consider it as a potential complication postnatally. Our case report emphasizes the need to have a guideline for a definitive management approach in cases of retroperitoneal hematomas, especially with the exciting of non-invasive vs invasive modalities.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Sheikh, G.N. (1971) Perinatal Genital Hematomas. *Obstetrics & Gynecology*, **38**, 571-575. <https://doi.org/10.1097/00006250-197110000-00011>
- [2] Park, M. and Han, S.-S. (2011) A Case of Secondary Postpartum Hemorrhage with Shock Followed by Rupture of Progressive Retroperitoneal Hematoma through Left Upper Vaginal Wall. *Korean Journal of Obstetrics & Gynecology*, **54**, 314-316. <https://doi.org/10.5468/KJOG.2011.54.6.314>
- [3] Rafi, J. and Khalil, H. (2018) Maternal Morbidity and Mortality Associated with Retroperitoneal Haematomas in Pregnancy. *JRSM Open*, **9**. <https://doi.org/10.1177/2054270417746059>
- [4] Alturki, F., Ponette, V. and Boucher, L.M. (2018) Spontaneous Retroperitoneal Hematomas Following Uncomplicated Vaginal Deliveries: A Case Report and Literature Review. *Journal of Obstetrics and Gynaecology Canada*, **40**, 712-715. <https://doi.org/10.1016/j.jogc.2017.08.045>
- [5] Cital, A. (2023) Huge Retroperitoneal and Pelvic Hematoma Following VBAC (TOLAC): A Case Report. *Obstetrics and Gynaecology Cases—Reviews*, **10**, Article No. 249. <https://doi.org/10.23937/2377-9004/1410249>
- [6] Chan, Y.C., Morales, J.P., Reidy, J.F. and Taylor, P.R. (2008) Management of Spontaneous and Iatrogenic Retroperitoneal Haemorrhage: Conservative Management, Endovascular Intervention or Open Surgery? *International Journal of Clinical Practice*, **62**, 1604-1613. <https://doi.org/10.1111/j.1742-1241.2007.01494.x>

- [7] Redondo Villatoro, A., Azcona Sutil, L., Vargas Gálvez, D., Carmona Domínguez, E. and Cabezas Palacios, M.N. (2022) Diagnosis and Management of Postpartum Retroperitoneal Hematoma: A Report of 3 Cases. *American Journal of Case Reports*, **23**, e935787. <https://doi.org/10.12659/AJCR.935787>
- [8] Hart, C., Bauersachs, R., Scholz, U., *et al* (2020) Prevention of Venous Thromboembolism during pregnancy and the puerperium with a special focus on women with hereditary thrombophilia or prior VTE-position paper of the Working Group in Women's Health of the Society of Thrombosis and Haemostasis (GTH). *Hämostaseologie*, **40**, 572-590. <https://doi.org/10.1055/a-1132-0750>