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Research Article

Spontaneous Nontraumatic Retroperitoneal Hematoma Postlaparoscopic Hysterectomy: A Case Report and Review of Litterature

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Abstract

Background *- Retroperitoneal hematoma after laparoscopy is rare but can lead to morbidity and high mortality. Diagnosis of this condition is challenging due its complexity and its nonspecific signs and symptoms. Nowadays, studies and case reports regarding retroperitoneal hematoma are few.*

Case presentation *- We report the case of a 52-year-old multiparous woman who presented for abnormal vaginal bleeding for a laparoscopic total hysterectomy. Two hours immediately after the surgery, she complained of severe abdominal pain and she started to faint. She was diagnosed with retroperitoneal hematoma on an urgent abdominal pelvic CT scan.*

Methods *- We searched Medline for pseudoaneurysms developing as complications of laparoscopic procedures.*

Results - There are many reported cases of retroperitoneal hematoma in the literature. None of them was formed without trauma at the site of none insertion of trocar and without the use of Veress needle.

Conclusion *- The case, we presented, highlights the importance of considering retroperitoneal hemorrhage as a diagnosis when a patient presents with abdominal distention or even an abdominal mass.*

Background

Retroperitoneal hematoma after laparoscopy is rare but can lead to morbidity and high mortality. Diagnosis of this condition is challenging due its complexity and its nonspecific signs and symptoms. Nowadays, studies and case reports regarding retroperitoneal hematoma are few. On the other hand, it is more known that laparoscopic surgery procedures are associated with low percentage of cases of iatrogenic traumatic lacerations of the arteries of the peritoneal and retroperitoneal spaces. These lesions rarely lead to pseudoaneurysm formation. In this article we present a spontaneous formation of retroperitoneal hematoma postlaparoscopic hysterectomy without any trauma nor trocar insertion at the site of the hematoma formation. We performed a review of the literature on postlaparoscopic pseudoaneurysms focusing on specific parameters: (1) artery involved, (2) type of laparoscopic operation, (3) time interval between the laparoscopic operation and the final diagnosis of the pseudoaneurysm, (4) clinical presentation, (5) diagnostic tools used, (6) mode of treatment applied, and (7) clinical outcome.

Case presentation

We report the case of a 52-year-old multiparous woman with history of breast cancer status postbilateral mastectomy and hormonotherapy who presented for abnormal vaginal bleeding for a laparoscopic total hysterectomy. She underwent the laparoscopic hysterectomy with salpingectomy and conservation of the ovaries. Two hours immediately after the surgery, she complained of severe abdominal pain and she started to faint.

Clinical findings and diagnostic investigations

The patient started to have hypotension reaching 65/36 mmHg and abdominal distension mainly on the right side. The intra-abdominal drain contained only 10 mL of serous liquid and checked adequately without showing any obstruction. At this time, the patient lost consciousness. Two intravenous lines inserted and blood drawn for complete blood count, which showed hemoglobin of 6.7 g/dL. The patient taken immediately to the operating room and transfusion of PRBCs started. The surgeon has started an emergent exploratory laparoscopy which showed, no intraperitoneal bleeding and a huge bulging pseudoaneurysm at the right peritoneum. The umbilical trocar was then guided through the retroperitoneum were multiple clots were found with a bleeding area.

Surgical technique

Under general anesthesia, the patient placed in dorsal lithotomy position then scrubbed and drapped in the usual sterile manner with betadine. RUMI manipulator inserted in means to manipulate the uterus. A urinary foley catheter was placed to drain the bladder. An intraumbilical incision was done to insert a 10 mm Trocar with camera optic 0° then by direct trocar entryand then a left suprapubic incision was done for insertion of 5 mm and a suprapubic incision was done for another 5 mm Trocar. The hysterectomy started with complete excision of the right then the left fallopian tubes. The surgeon dissected the broad ligaments and then the vesico-uterine space to push the bladder. The right and left uterine arteries coagulated and sectioned. The surgeon cut at the level of the cup of the manipulator to remove the uterus with the cervix. The uterus removed from the vagina and closure of the vaginal vault with four separated sutures in figure-of-eight with polypropylen 3.0. Maryland LigaSure was used during the procedure for ligation and sectioning. An intraperitoneal drain was placed and fixed with Silk 0. The instruments were removed safely and the hemostasis was secured. The insicions were closed with nonresorbable sutures.

Materials and Methods

We searched Medline for pseudoaneurysms developing as complications of laparoscopic procedures. The search terms used were ‘’iatrogenic hematoma’’, ‘’complications after laparoscopic procedures’’, traumatic arterial laceration’’, “hematoma formation’’, “retroperitoneal hematoma” , and ‘’postoperative hematoma’’ in various combinations.

Results

Postlaparoscopic iatrogenic hematoma are late manifestations of arterial complications developing during routine laparoscopy. There are many reported cases of retroperitoneal hematoma in the literature. None of them was formed without trauma at the site of none insertion of trocar and without the use of Veress needle. The majority occurs in the arteries of the operation field of the respective laparoscopic procedure. Distal vessels are involved less frequently. The usually present after a mean period of approximately 6 weeks. The clinical picture includes upper and lower gastrointestinal bleeding, diffuse or localized abdominal pain, hematuria, and drain bleeding.

Discussion

Retroperitoneal hematoma is a life-threatening condition where early diagnosis and correct treatment are of utmost importance. Bleeding in the retroperitoneal space has a high mortality rate. The aim of this study was to present a very rare case of postoperative retroperitonal hematoma, the current published scientific evidence regarding the incidence, mechanism of injury, diagnostic methods and treatment based on a review of international literature covering the last 10 years. (1)

The diagnosis is often delayed as symptoms are nonspecific. Retroperitoneal haematoma should be suspected in patients with significant groin, flank, abdominal, back pain or hemodynamic instability following an interventional procedure. Spontaneous hemorrhage usually occurs in patients who are anticoagulated. Multi-slice CT and arteriography are often important for diagnosis. Most hemodynamically stable patients managed with fluid resuscitation, correction of coagulopathy and blood transfusion. Endovascular treatment involving selective intra-arterial embolization or the deployment of stent-grafts over the punctured vessel is attaining an increasingly important role. Open repair of retroperitoneal bleeding vessels reserved for cases when there is failure of conservative or endovascular measures to control the site of bleeding or if endovascular facilities and expertise are unavailable and in cases where the patient is unstable. If treated inappropriately, the mortality of patients with retroperitoneal hematoma (RH) remains high. There is a lack of level I evidence for the best management plans for retroperitoneal hematoma, and evidence is based on small cohort series or isolated case reports. Conservative management should only be reserved for hemodynamically stable patients. Interventional radiology with intra-arterial embolization or stent-grafting is the treatment of choice. Open surgery is now rarely required.(2)

Management of RH is complex and continues to improve with advancements in the investigative strategies, treatment options and critical care specialty. Further we highlight the importance of basic principles of clinical examination, the need for multidisciplinary input and the current trend in the management options.(3)

In the case we presented in this article, the patient was not anticoagulated, the site of retroperitoneal bleeding was not the site of trocar entry and there was no signs of any bleeding intraoperatively. The clinical examination was very important in this case, because the drain was empty even when checking for its patency and that there was no obstruction. The patient was hypotensive, started fainting and the abdominal examination changed between immediate postoperative palpation where it was soft and not tender and after 2 hours postoperatively where it became distended on the right side and very tender. At this time, a high

suspicion of bleeding was present.

There are nowadays numerous classification systems of RH existing and they make comparison of management techniques from different centers difficulty. Some of the available classification systems are summarized in Table 1(4).

TABLE 1. *Classification Systems of Retroperitoneal Hematomas*

Shaftan, 1980*	Kudsk and Sheldon, 1982†	Henao and Aldrete, 1985‡	Feliciano et al., 1988§
Abdominal	Central-medial (zone 1)	Central	Midline supramesocolic (includes lesser sac)
Midline		Vascular Peripancreatoduodenal	Midline inframesocolic
Flank Perirenal Pericolonic	Flank (zone 2)	Flank	Lateral perirenal, paraduodenal, and pericolonic
Pelvic Anterior Posterior Unilateral Bilateral	Pelvic (zone 3)	Pelvic	Pelvic
		Combined	Portal and retrohepatic

* Shaftan GW. Retroperitoneal trauma. Contemporary Surgery 1980; 16:25–35.

† Kudsk KA, Sheldon GF. Retroperitoneal hematoma. *In* Blaisdell FW, Trunkey DD, eds. Abdominal trauma. New York: Thieme-Stratton, 1982: 279–93.

‡ Henao F, Aldrete JS. Retroperitoneal hematomas of traumatic origin. Surg Gynecol Obstet 1985; 161:106–16.

§ Modified from Feliciano DV, Burch JM, Graham JM. Abdominal vascular injury. *In* Mattox, KL, Moore EE, Feliciano DV, eds. Trauma. East Norwalk: Appleton & Lange, 1988. pp. 519–36.

Stable idiopathic retroperitoneal hematoma cases with uncertain origin have been described, but their occurrence has been reported in less than 5% of cases. There are no consensus guidelines for retroperitoneal hemorrhage. Generally, recommendations for stable, non-expanding retroperitoneal hematomas are non-operative management. A review of the management of traumatic retroperitoneal hematoma states that operative exploration is recommended for zone one central retroperitoneal hematomas such as the paraduodenal case. Surgery is indicated in patients refractory to conservative treatment, such as those who remain unstable and continue to bleed or develop pressure symptoms from the hematoma, as described in our case. As well as cases where medical, endoscopic and interventional radiology treatments fail, visceral obstruction, perforation or occlusion occur. Idiopathic retroperitoneal hematoma is a rare clinical entity, which can pose a diagnostic challenge due to variable presentations. Timely management requires a high index of suspicion and a multidisciplinary approach. As in our case, explorative surgery remains strongly indicated not only for diagnosis, but also for treatment.(5)

In a case report published by Yokoe et al, they demonstrated that laparoscopic surgery is a viable treatment option for postpartum retroperitoneal hematomas with antibiotic resistant infections. This surgical strategy has the advantage of providing secure hemostasis and a clean drainage route.(6)

In a study conducted by Nezhat C et al, they sought to assess the outcome of large retroperitoneal vascular injury that occurred during operative laparoscopy but which was not related to trocar or Veress needle injury. They conducted a retrospective review of cases operated and reviewed by their centres. They identified eight cases. Four women were undergoing lymphadenectomy, where vascular injury is a recognized risk. Distorted anatomy was a compounding factor in three of the remaining four patients who were undergoing intraperitoneal procedures. The injuries involved the inferior vena cava (n = 2), the right external iliac artery (n = 2), the left external iliac artery (n = 1), the right external iliac vein (n = 1), the hypogastric artery (n = 1) and the inferior mesenteric artery (n = 1). Injuries were caused by unipolar electrode (n = 1), electrosurgical scissors (n = 3), sharp scissors (n = 2) and CO2 laser (n = 2). They repaired the vessel injury at laparotomy in four women. The other four cases managed laparoscopically. Two cases needed transfusion attributable to the vascular injury. The outcome in seven cases was good. Mortality occurred in one case. These cases demonstrate that all energy sources used without proper understanding and caution can cause significant vascular injury. The adequacy and safety of laparoscopic control of major vessel bleeding should be investigated further and consultation with a vascular surgeon should be considered in all cases.(7)

Malmusi et al reported a case of 47-year-old woman presenting for intensive pain in the left flank region with history of skin melanoma, and progressing to hypovolemic shock. The patient was urgently transferred to the operating room for a video laparoscopy. A vast left retroperitoneal hematoma diagnosed along with voluminous enlargement of the left ovary and she underwent a left adnexectomy and received blood transfusion. Subsequent contrast-enhanced CT revealed a left subcapsular, perirenal hematoma and a voluminous retroperitoneal hematoma. Kidney metastasis was also seen. The final histological diagnosis was metastatic amelanotic malignant melanoma of the ovary.(8)

Our case describes a spontaneous RP hematoma secondary to laparoscopic hysterectomy, which is a complication that has not been widely reported or described in the literature. Previous cases, and our case report, have demonstrated that stability, treatment, and outcome of the RP hematoma can vary between patients.

The RP hematoma as a surgical complication can range in severity from benign and self-limiting to potentially devastating consequences; therefore, intervention can range from supportive and non-invasive to requiring embolization for active hemorrhage. While internal iliac artery ligation has been effective for the treatment of postpartum hemorrhage, there is less information available regarding the frequency,

treatment, and outcome of RP hematoma in gynecologic procedures. Future direction for the literature in this field may involve analysis of incidence and risk of RP hematoma as a complication of hysterectomy, as well as the efficacy of the intervention used and outcome in such cases. Currently, we know that it is imperative to recognize the signs of hemodynamic instability during gynecologic surgery and to consider RP hematoma in the differential diagnosis. In the case of an unstable and rapidly expanding hematoma, it is important to identify the source, as a multidisciplinary approach to management can help prevent further complications. (9)

Major vascular injury during laparoscopy is usually caused by Veress needle or the first laparoscopic trocar. In our case, there was no insertion of Veress needle and no major injury. Failure to recognize the injury during the laparoscopic procedure itself can be attributed to the intraperitoneal CO2 pressure compressing the bleeding vessels and to the decreased venous return caused by the steep Trendelenburg position. Major vascular injury should be recognized as early as possible since it is a life-threatening condition that necessitates immediate and prompt treatment. (10)

In recent years, laparoscopy has become a common and well established procedure for diagnostic and operative purposes. The incidence of vascular injury during laparoscopy has been reported to be 2.6–11/1000 laparoscopies. Most vascular injuries involve the deep inferior epigastric blood vessels in the anterior abdominal wall and only a few involve major retroperitoneal pelvic and abdominal blood vessels. Injury to the inferior epigastric vessels is usually not a catastrophic event, since it is almost always recognized and can successfully be treated by techniques such as application of local pressure, suturing or electrocoagulation.

On the other hand, injury to major retroperitoneal pelvic and abdominal blood vessels usually is a catastrophic event that can be lethal if not promptly treated.(10)

Puerperal hematomas may be vulval, vaginal, or retroperitoneal. Retroperitoneal hematomas are rare in obstetrics. Common risk factors to developing these retroperitoneal hematomas include multiple pregnancies, traumatic deliveries, prolonged labour, manual removal of placenta, inadequate hemostasis at Caesarean section, and anticoagulation therapy. Retroperitoneal hematoma can be managed conservatively, surgically, or through use of angiographic embolization. The therapeutic approach is very dependent on the hemodynamic status of the patient and its evolution. In this report, Alturki et al presented a case of idiopathic spontaneous retroperitoneal hematoma following normal non-traumatic vaginal delivery that was managed conservatively (11)

Retroperitoneal hematomas occur as a consequence of injury to branches of the internal iliac arteries. The majority of cases occur in the context of uterine artery lacerations during hysterectomy, uterine rupture, or as an extension of a paravaginal hematoma.

Other reported causes of spontaneous puerperal retroperitoneal hematomas include vascular/aneurismal anomalies, eclampsia, and blood dyscrasias.

Reported iatrogenic causes of puerperal retroperitoneal hematomas include traumatic deliveries, manual removal of placenta, inadequate hemostasis at Caesarean section, and anticoagulation therapy.

As in the case we present in this article, the most common presenting symptom of retroperitoneal hematomas is acute onset of abdominal pain and hypovolemic shock. Common signs include tachycardia, hypotension, and, ultimately, shock, palpation of a mass, and fever. When retroperitoneal hematoma is suspected, the diagnostic approach requires CT scanning if the patient is stable, to confirm its presence, determine the size and location of the hematoma, as well as define the source of bleeding. Management of retroperitoneal hematomas may be conservative management or surgical angiographic selective arterial embolization. The patient's hemodynamic stability plays a central role in the management plan. Conservative management is usually preferred for hemodynamically stable patients with no active bleeding. Surgically, hemostasis is achieved by accessing the retroperitoneal space in order to identify and ligate any lacerated vessel. Packing of retroperitoneal space may also be attempted to tamponade retroperitoneal hemorrhage. This approach is commonly reported in trauma surgery involving pelvic fractures.

Russ reported a case of large retroperitoneal hematoma in the retrovesical space, which developed after therapeutic abortion. Laparotomy was performed to evacuate the hematoma.

Becker et al. reported a case of a large postpartum retroperitoneal hematoma developed as a consequence of rupture of the lateral branches of the left uterine artery. The patient presented with pain and hemoglobin deficiency. Laparotomy was performed, hematoma was removed, and the bleeding vessels were sutured.

Dabeny et al. described two cases of retroperitoneal hematoma that were developed as a complication of low molecular-weight heparin (enoxaparin). After discontinuation of enoxaparin, both were managed by laparotomy and evacuation of the hematoma. Selective arterial emobilization was initially implemented to control bleeding of traumatic or tumour origin. Subsequently, embolization was suggested as an alternative treatment for uterine myofibromas.

In 1979, Brown et al. reported the first utilization of trans-catheter arterial embolization to control

postpartum hemorrhage. The procedure involved catheterization and embolization of the pudendal artery. Subsequently, a considerable number of cases have been reported in the literature within the last 20 years. The embolized arteries described in the literature are uterine, vaginal, pudendal, and ovarian arteries.

In 2008, Poilblanc et al. reported a case of puerperial rupture of an aneurysm of the ovarian artery managed with endovascular treatment.

Gilbert et al. reported successful management of 10 cases of pregnancy-related hemorrhage including four cases of vaginal wall hematomas using angiographic embolization.

Expansion of retroperitoneal hematomas can be limited by the spontaneous self-tamponading effect that can occur in the confined retroperitoneal space. The confined nature of the retroperitoneal space also lowers the risk of hematoma infections.

Sherer et al. reported an uncommon case of extensive spontaneous retroperitoneal hemorrhage as a complication of heparin anticoagulation. The patient was treated conservatively with intravenous fluid hydration. The hematoma was self-tamponated and did not require any surgical intervention. Ylmaz et al. reported a case of life-threatening retroperitoneal hemorrhage in a child with hemophilia A. Due to the associated high mortality risk, the authors' favored conservative treatment with recombinant activated factor VII. The retroperitoneal hemorrhage was successfully treated conservatively.

Yamashita et al. reported 12 cases with pelvic extra peritoneal hematomas, most of which disappeared spontaneously. Laparotomy was necessary in two patients with large hematomas.

Conclusion

The case, we presented, highlights the importance of considering retroperitoneal hemorrhage as a diagnosis when a patient presents with abdominal distention or even an abdominal mass. Abdominal ultrasonography is a useful, noninvasive, and irradiation-free modality that should be performed promptly in patients with gastrointestinal symptoms to differentiate surgical problems from nonsurgical ones. Since our patient had silent spontaneously expanding hematoma after a laparoscopic hysterectomy with a drain placed postoperatively, a variety of rare complications may provide unexpected challenges for clinicians in the future. The treatment of retroperitoneal hematoma remains dependent on the clinical presentation and the hemodynamic presentation and stability.

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