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CASE REPORTS

Uterine Artery Embolization for Uncontrollable Hemorrhage after Vaginal Hysterectomy

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Abstract

Hysterectomy is the most common gynecologic procedure performed all over the world and various complications may appear depending on the surgical route. Delayed postoperative hemorrhage is a rare, life threatening complication. It requires timely management and recently the surgical reinterventions tend to be replaced by minimally invasive techniques. Transcatheter arterial embolization shows good results as a treatment strategy for massive vaginal bleeding post hysterectomy, when vaginal vault suturing fails to achieve hemostasis. We report a case of right uterine artery bleeding occurring 30 days after vaginal hysterectomy that was successfully treated by transcatheter arterial embolization.

Keywords: massive vaginal bleeding post hysterectomy, vaginal hysterectomy complication, uterine artery embolization, case report.

Rezumat

Histerectomia este cea mai frecventă procedură ginecologică efectuată în lume și poate asocia complicații diverse în funcție de calea de abord chirurgical. Hemoragia postoperatorie tardivă este o complicație rară, dar care pune în pericolviața pacientei. Aceasta necesită management în timp util și reintervențiile chirurgicale tind să fie înlocuite cu tehnici minim invazive. Embolizarea arterială prezintă rezultate bune ca strategie terapeutică pentru sângerarea vaginală masivă post histerectomie, atunci când sutura la nivelul bontului vaginal nu reușește să realizeze hemostaza. În această lucrare, raportăm un caz de sângerare de la nivelul arterei uterine survenite la 30 de zile după histerectomie vaginală, care a fost tratată cu succes prin embolizare endovasculară.

Cuvinte cheie: sângerare vaginală masivă după histerectomie, complicație histerectomie vaginală, embolizarea arterei uterine, prezentare de caz.

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INTRODUCTION

Hysterectomy is the most common gynecologic procedure performed in the world. Complications of hysterectomy depend on the route of surgery (vaginal, abdominal, laparoscopic) and can include infectious events, genitourinary and gastrointestinal tract injury, venous thromboembolic events, nerve injury, bleeding, and vaginal cuff dehiscence[1].

Among women undergoing hysterectomy for benign disease, the vaginal approach appears to be superior to the laparoscopic or abdominal approach, being associated with a shorter returning to normal activities. Due to faster recovery and fewer febrile postoperative episodes, vaginal hysterectomy - when feasible - is the method of choice over abdominal hysterectomy. In cases where vaginal hysterectomy cannot be performed laparoscopic hysterectomy has also some advantages over open abdominal route like quicker recovery, fewer febrile episodes, less frequent abdominal wound infection[2]. A meta-analysis published in 2019 encompassing 18 studies and 1618 patients showed no differences between vaginal and laparoscopic hysterectomy in overall complications, intraoperative conversion, postoperative pain in the first 48 h, in patient's length of stay and recovery time. The vaginal route was associated with a shorter operating time and lower postoperative pain at 24 h than the laparoscopic route, underlining that the vaginal route is the method of choice for benign hysterectomies[3].

Bleeding complications after hysterectomy are rare. Estimated blood loss varies between 238-660.5 mL for abdominal hysterectomy, 156-568 mL for laparoscopic hysterectomy and 215-287 mL for vaginal hysterectomy. Transfusion is more likely to be necessary after laparoscopic compared to vaginal hysterectomy (odds ratio 2.07, confidence interval 1.12-3.81)[1].

Vaginal cuff dehiscence has a rate of 0.39%, being more frequent after total laparoscopic hysterectomy - 1.35%, while in cases of laparoscopic-assisted vaginal hysterectomy appears in 0.28% of patients. The rate of vaginal cuff dehiscence decreases to 0,15% in total abdominal hysterectomy cases and reaches the lowest level of 0,08% in patients undergoing total vaginal hysterectomy[1].

Most cases of delayed hemorrhage from the vaginal stump after hysterectomy can be managed by vaginal packing with or without vaginal vault suturing. Where such initial management fails, the condition is potentially life-threatening and requires immediate intervention[4].

In the past literature there are few cases reported of laparoscopic management of post hysterectomy bleeding[5], but minimally invasive techniques such as transcatheter arterial embolization started to gain ground (due to the procedure's diagnostic and therapeutical simultaneous advantage) as a safer and more precise alternative to conventional surgical techniques for postoperative bleeding, which are a burden for the surgical team and for the patients.

In 2018, in Journal of Minimally Invasive Gynecology, Lee found 4 cases of secondary hemorrhage out of 1237 patients who underwent abdominal, laparoscopic, and vaginal hysterectomy between 2013 and 2015. The complication appeared at a median time range of 28.4 days post-surgery (16-52 days). Blood transfusions were necessary in all cases before embolization. Transcatheter arterial embolization was the chosen method for hemostasis with a mean hospitalization time of 12 days[6].

In a multicenter study regarding transcatheter embolization for hemorrhage following hysterectomy published by Chen Shi Chen in 2022, 11 patients were included between 2004-2020. Contrast extravasation and /or pseudo-aneurysmal appearance at the level of anterior iliac artery branches, posterior branches or at the level of cervical stump were identified through angiography. Transcatheter embolization was successful in 10 out of 11 cases, in one of the cases additional surgical hemostasis being performed. The median time range between surgery and angiography varied between 0-82 days[7].

Uterine artery embolization (UAE) is used in our hospital for more than 20 years. Among its first indications were the treatment of symptomatic myoma associated with heavy bleeding and anemia where conservative management was the method of choice, then uterine cancers, especially advanced cervical cancers prior to radiotherapy, while uterine arteriovenous fistulae or malformations had a good outcome also. Furthermore, UAE proved its utility in obstetrical use, for the management of uterine scar pregnancies or postpartum hemorrhages[8].

In this paper we report a case of intractable delayed hemorrhage after vaginal hysterectomy that was successfully managed by endovascular embolization.

CASE REPORT

We present the case of D.O., a 56 years old patient who was referred to our hospital with intractable hemorrhage after vaginal hysterectomy combined with anterior and posterior colporrhaphy for pelvic organ prolapse in a different Bucharest setting. Acute heavy vaginal bleeding installed 30 days after the surgery and an attempt of vaginal hemostatic sutures was made in the first setting, but was unsuccessful, as her hemoglobin level continued to decrease to less than 5 mg/dl, requiring hemodynamical stabilization and blood transfusions. The managing medical team considered Bucharest University Emergency Hospital as the final point of care where emergency surgery, intensive care therapy and minimally invasive technique as arterial transcatheter embolization can be supported.

She presented to our Emergency Unitwith altered general status, pale and confused, with a hemoglobin level of 7,6 mg/dl.

The pelvic CT-scan showed a hematic collection of 67/41 mm in the Douglas pouch and free intraperitoneal fluid, with extravasation of contrast from the right uterine artery (figure 1).

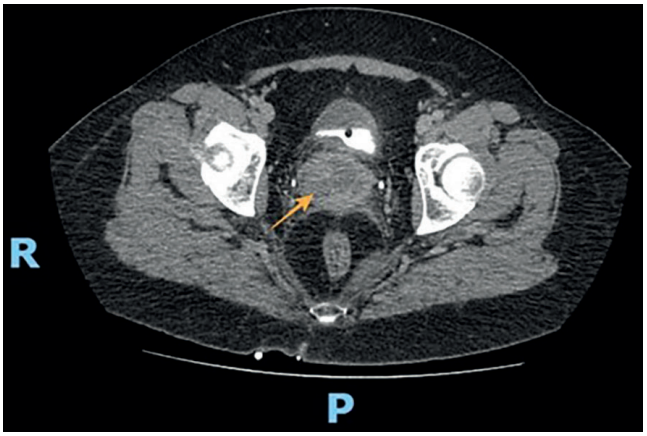

Figure 1. Computed tomography scan showing pelvic mass and free intraperitoneal fluid

She was immediately admitted to the interventional radiology unit where emergency uterine artery angiography was performed. The procedure identified a clear bleeding source from the right uterine artery (figure 2) and was followed by insertion of 2 metallic coils with subsequent cessation of the bleeding (figures 3,4). Mean intervention time was about 20 minutes.

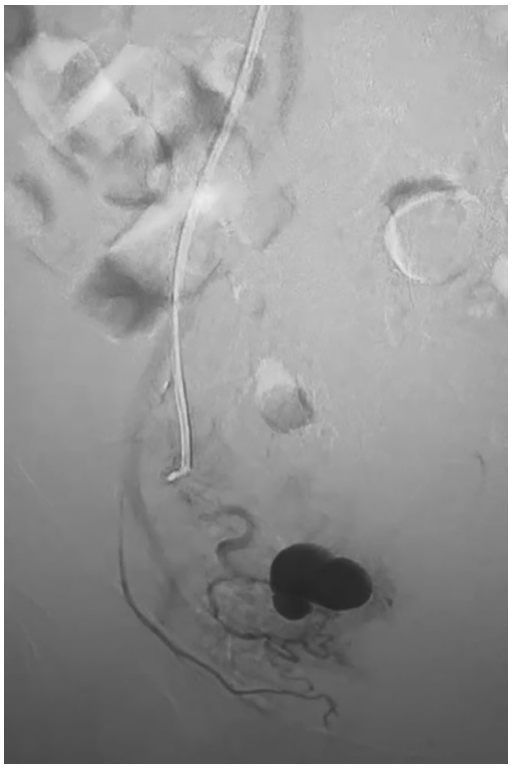

Figure 2. Preinterventional selective angiogram showing active bleeding (contrast leakage) from the right uterine artery

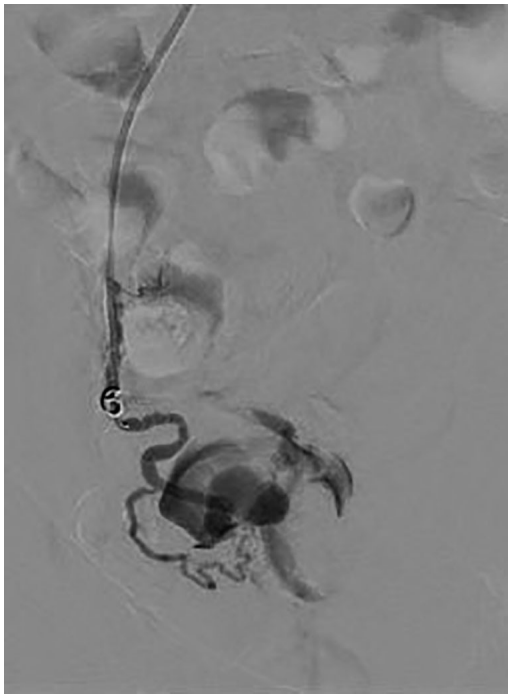

Figure 3. Angiogram showing the insertion of the first embolization coil

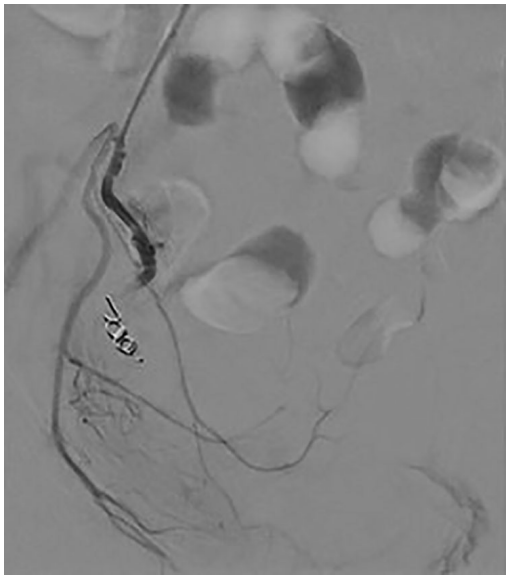

Figure 4. Final angiographic aspect with blocked flow into the damaged uterine artery

The patient slowly recovered with a mild post embolization syndrome - fever, pain and nausea. Conventional hemodynamic stabilizing therapy, prophylactic intravenous antibiotic, parenteral iron therapy and analgesia were provided, as well as psychological support. Serial follow-up by transvaginal ultrasound showed a decrease of the pelvic mass. A computed tomography reevaluation prior to discharge was performed, confirming no contrast extravasation and no free intraperitoneal fluid. After 8 days of inpatient stay, the patient was discharge in good condition. The follow-up visit one month after the UAE showed a good recovery with a 13 mg/dl level of hemoglobin and local normal status.

DISCUSSIONS

Vaginal surgery proved to be superior to abdominal or laparoscopic way with a decreased operating time and postoperative pain. Vaginal stump bleeding is less frequent after vaginal surgery and can usually be managed successfully with vaginal packing and or vaginal sutures.

Among interventions to reduce vaginal stump hematoma a meta-analysis of performed by Rachaneni found two studies on modified vaginal vault closure. Incorporating peritoneal edges in vaginal closing showed a significant reduction in vault hematoma incidence[9].

Vaginal packing after vaginal hysterectomy was evaluated at 337 patients showing no clear evidence that vaginal bleeding, hematoma formation, or postoperative vaginal cuff infection had a lower percentage of appearance. The procedure may impair spontaneous bladder emptying and necessitate permanent bladder catheterization, vaginal pain, with risk of urinary infection, delayed discharge, increased costs[10].

One of the causes of delayed vaginal hemorrhage may be the postoperative tissue necrosis due to cautery applied for hemostasis, thus the extensive use of hemostatic electrosurgery should be careful considered[11].

This particular case we report is not the classical case of vaginal stump bleeding, as the source detected at CT scan and angiography had uterine artery origin, thus explaining the failure of vaginal hemostatic measures. The presence of pelvic blood clots and free pelvic fluid suggested a higher source of the bleeding and we also took into consideration an ovarian artery source, but angiography proved that there was no leakage from that level. Other therapeutic alternatives for the bleeding would have been blind hemostatic through open or laparoscopic surgery, with an increased morbidity and difficult hemostasis.

CONCLUSIONS

Postoperative bleeding after either abdominal, laparoscopic or vaginal surgery ca be a life-threatening condition. It can benefit from angiography as a diagnostic tool, as well as a rescue maneuver in settings where such procedure is available.

Targeting the injured vessel can lead to the right curative decision. Transcatheter embolization can be an excellent choice with no need of reoperating the patient, avoiding all of the consequences of the second surgery performed on a distorted anatomy.

The dissemination of the information may be beneficial for gynecologic surgeons that can benefit from the procedure by referring the patient to a tertiary hospital.

Statement: The study was conducted with approval of the local Ethics Committee and in accordance with the ethical standards of the Helsinki Committee for Human Rights. The patient gave signed informed consent for image publishing.

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