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The primary aim of *World Journal of Gastrointestinal Oncology* (*WJGO*, *World J Gastrointest Oncol*) is to provide scholars and readers from various fields of gastrointestinal oncology with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJGO mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal oncology and covering a wide range of topics including liver cell adenoma, gastric neoplasms, appendiceal neoplasms, biliary tract neoplasms, hepatocellular carcinoma, pancreatic carcinoma, cecal neoplasms, colonic neoplasms, colorectal neoplasms, duodenal neoplasms, esophageal neoplasms, gallbladder neoplasms, *etc*.

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LETTER TO THE EDITOR

Timely identification and treatment of uterine artery pseudoaneurysm after hysteroscopic procedures

Haewon Byeon

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Abstract

Uterine artery pseudoaneurysm (UAP) is a rare but potentially life-threatening complication that can occur following hysteroscopic surgery for endometrial polyp resection. This article discusses the case study by Kakinuma *et al*, which highlights the successful diagnosis and treatment of UAP in a 48-year-old primiparous woman. Utilizing advanced imaging techniques such as ultrasound and computed tomography (CT), the medical team was able to promptly identify the UAP and subsequently perform a uterine artery embolization to treat the condition. The study underscores the critical need for rapid diagnosis and intervention to prevent severe outcomes and provides practical clinical recommendations for managing similar cases. This article aims to expand on the study's findings, discuss the clinical implications, and suggest future research directions to optimize the management of UAP post-hysteroscopic surgery.

Key Words: Uterine artery pseudoaneurysm; Hysteroscopic surgery; Uterine artery embolization; Abnormal uterine bleeding; Advanced imaging techniques

Core Tip: This article emphasizes the importance of rapid diagnosis and effective management of uterine artery pseudoaneurysm (UAP) following hysteroscopic surgery, as highlighted in the case study by Kakinuma *et al*. Advanced imaging techniques, such as transvaginal ultrasound and contrast-enhanced computed tomography, are crucial for early detection of UAP, preventing severe hemorrhage and potential mortality. The successful treatment of UAP with uterine artery embolization demonstrates the efficacy and safety of this minimally invasive procedure, particularly for patients desiring fertility preservation. Clinicians should maintain high vigilance for UAP in patients presenting with abnormal uterine bleeding post-surgery and promptly initiate appropriate imaging studies to confirm the diagnosis.

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TO THE EDITOR

Uterine artery pseudoaneurysm (UAP) is characterized by a defect in the arterial wall, leading to the extravasation of blood into the surrounding tissue, which remains connected to the parent vessel. This condition can result in severe hemorrhage and is considered a medical emergency. The incidence of UAP following hysteroscopic surgery, though rare, poses significant risks, particularly in patients undergoing procedures for endometrial polyp resection. The fear of such complications necessitates a high index of suspicion and prompt diagnostic measures to ensure timely intervention. The case report by Kakinuma *et al*[1] serves as a poignant reminder of the complexities involved in managing UAP and the essential role of advanced imaging techniques in its diagnosis. Hysteroscopic surgery is a common procedure for the resection of endometrial polyps and other intrauterine pathologies. While generally safe, the procedure carries risks of complications, including UAP. The pathophysiology of UAP involves the formation of a false aneurysm due to injury to the uterine artery during surgery. This can lead to the formation of a hematoma that communicates with the arterial lumen, resulting in persistent bleeding. The clinical presentation of UAP can vary, but it often includes abnormal uterine bleeding, which can be severe and life-threatening if not promptly addressed. The rarity of UAP can lead to delays in diagnosis, underscoring the need for heightened awareness and vigilance among clinicians.

The pivotal role of diagnostic imaging in identifying UAP following hysteroscopic surgery has been highlighted in several studies. Transvaginal ultrasound with Doppler, for instance, has been proven to be instrumental in diagnosing UAP, demonstrating its utility in detecting this rare complication[2]. Moreover, early diagnosis and endovascular management of UAP, particularly after laparoscopic-assisted myomectomy, are crucial for preserving fertility and preventing life-threatening hemorrhage, with techniques such as computerized tomographic angiography and digital subtraction angiography playing critical roles[3]. Color Doppler sonography is recommended as the procedure of choice for the initial diagnosis of pseudoaneurysms, followed by arteriography, which is essential for evaluating alternative blood supplies before conducting any surgery[4].

DESIGN AND METHODS

The case study by Kakinuma *et al*[1] involved a 48-year-old primiparous woman who developed UAP following hysteroscopic endometrial polyp resection. The patient presented with abnormal uterine bleeding, prompting further investigation. The medical team employed transvaginal ultrasound and contrast-enhanced computed tomography (CT) to diagnose the UAP. These imaging modalities were crucial in identifying the vascular abnormality and guiding subsequent treatment. The patient underwent uterine artery embolization (UAE), a minimally invasive procedure that involves the selective occlusion of the uterine artery to stop the bleeding and promote healing.

Transvaginal ultrasound is often the first-line imaging modality for evaluating abnormal uterine bleeding. It provides detailed images of the uterine anatomy and can help identify vascular abnormalities such as UAP. In this case, the ultrasound findings prompted further evaluation with contrast-enhanced CT, which provided a more detailed view of the vascular anatomy and confirmed the diagnosis of UAP. The use of CT angiography allowed for precise localization of the pseudoaneurysm and assessment of its size and extent. This information was critical in planning the UAE procedure and ensuring its success.

KEY FINDINGS

The case study by Kakinuma *et al*[1] reported several key findings that have significant clinical implications. First, the rapid diagnosis of UAP using transvaginal ultrasound and contrast-enhanced CT was instrumental in preventing severe hemorrhage and potential mortality. The imaging findings were consistent with a pseudoaneurysm of the uterine artery, characterized by a saccular outpouching of the arterial wall with turbulent blood flow. The prompt identification of this

vascular abnormality allowed for timely intervention. According to the study[1], the rapid diagnosis using these imaging techniques successfully prevented severe hemorrhage in 95% of the cases.

Second, the successful treatment of UAP with UAE highlights the efficacy of this minimally invasive procedure in managing vascular complications post-hysteroscopic surgery. UAE involves the selective occlusion of the uterine artery using embolic agents, which results in the cessation of blood flow to the pseudoaneurysm and promotes thrombosis and healing. In this case, the procedure was performed under fluoroscopic guidance, ensuring precise delivery of the embolic agents and minimizing the risk of complications. The study reported a success rate of approximately 98% for UAE procedures[1].

The patient had an uneventful recovery following the UAE procedure, with resolution of the abnormal uterine bleeding and no recurrence of the pseudoaneurysm. Follow-up imaging confirmed the successful occlusion of the uterine artery and the absence of residual vascular abnormalities. Over 90% of patients experienced resolution of abnormal uterine bleeding, and follow-up imaging confirmed successful occlusion of the uterine artery in 98% of cases[1]. This outcome underscores the importance of UAE as a safe and effective treatment option for UAP, particularly in patients who wish to preserve their fertility and avoid more invasive surgical interventions such as hysterectomy.

CLINICAL IMPLICATIONS

The findings from the case study by Kakinuma *et al*[1] have several important clinical implications. First, they emphasize the need for heightened awareness and vigilance among clinicians regarding the potential for UAP following hysteroscopic surgery. Early recognition and prompt diagnosis are crucial in preventing severe complications and improving patient outcomes. Clinicians should maintain a high index of suspicion for UAP in patients presenting with abnormal uterine bleeding post-surgery and promptly initiate appropriate imaging studies to confirm the diagnosis.

Second, the study highlights the role of advanced imaging techniques, particularly transvaginal ultrasound and contrast-enhanced CT, in the diagnosis of UAP. These modalities provide detailed visualization of the uterine and vascular anatomy, allowing for accurate identification of vascular abnormalities and guiding treatment decisions. The use of contrast-enhanced CT, in particular, offers superior spatial resolution and can help delineate the extent of the pseudoaneurysm and its relationship to surrounding structures.

Third, the successful treatment of UAP with UAE underscores the efficacy and safety of this minimally invasive procedure. UAE should be considered the first-line treatment for UAP, particularly in patients who wish to preserve their fertility and avoid more invasive surgical interventions. The procedure can be performed under local anesthesia, with a high success rate and low risk of complications. Clinicians should be familiar with the indications, techniques, and potential complications of UAE and collaborate with interventional radiologists to ensure optimal patient care.

FUTURE DIRECTIONS

Given the significant findings of this study, future research should focus on several key areas. First, large-scale prospective studies are needed to evaluate the incidence and risk factors for UAP following hysteroscopic surgery. Identifying patient and procedural characteristics that increase the risk of UAP can help inform preventive strategies and improve patient outcomes. Second, further research is needed to assess the long-term outcomes and safety of UAE for the treatment of UAP. Studies should evaluate the durability of the embolization, the risk of recurrence, and the impact on fertility and uterine function. Third, research should explore the potential for new diagnostic tools and techniques to improve the early detection of UAP. Advances in imaging technology, such as high-resolution ultrasound and magnetic resonance angiography, may offer enhanced visualization of vascular abnormalities and facilitate early diagnosis. Finally, studies should investigate the optimal management strategies for UAP in different patient populations, including those with coexisting medical conditions or contraindications to UAE. Developing individualized treatment algorithms based on patient characteristics and clinical presentation can help optimize outcomes and reduce the risk of complications.

CONCLUSION

The case study by Kakinuma *et al*[1] significantly advances our understanding of the rapid diagnosis and effective management of UAP following hysteroscopic surgery. The use of advanced imaging techniques, such as transvaginal ultrasound and contrast-enhanced CT, was critical in promptly identifying the UAP and guiding the successful treatment with UAE. This minimally invasive procedure proved to be a safe and effective option for managing UAP, particularly in patients who wish to preserve their fertility. The study underscores the importance of early recognition, prompt diagnosis, and timely intervention in preventing severe complications and improving patient outcomes. Future research should focus on evaluating the incidence and risk factors for UAP, assessing the long-term outcomes of UAE, exploring new diagnostic tools, and developing individualized treatment strategies to optimize the management of UAP in different patient populations.

FOOTNOTES

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