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Intravesical Migration of a Copper IUD Complicated by Bladder Stone and Vesicovaginal Fistula in Advanced Cervical Cancer: A Case Report

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ABSTRACT

Introduction: Intravesical migration of an intrauterine device (IUD) is a rare complication that may remain undetected for years due to nonspecific urinary symptoms. When present within the bladder, the device can act as a foreign body and serve as a nidus for stone formation, potentially leading to more complex urogenital complications.
Case Report: A 44-year-old woman with a history of copper IUD insertion 10 years prior and no subsequent follow-up presented with continuous urinary incontinence for six years. She had previously been diagnosed with stage IIIB cervical cancer and experienced a period of loss to follow-up. Cystoscopic evaluation revealed a large vesicovaginal fistula measuring approximately 4 cm with a bladder stone impacted within the fistulous tract. Transvaginal extraction was performed, and the extracted calculus contained a migrated IUD as its core. Histopathological examination of bladder and vaginal tissue demonstrated chronic nonspecific inflammation without evidence of malignancy.
Conclusion: This report describes a rare combination of intravesical IUD migration, bladder stone formation, and vesicovaginal fistula in a patient with advanced cervical cancer, highlighting the importance of early recognition and multidisciplinary management to prevent delayed diagnosis and associated morbidity.

INTRODUCTION

Intrauterine device (IUD) are widely utilized as effective, long-acting reversible contraceptives with a favorable safety profile. However, rare complications such as uterine perforation and extrauterine migration have been documented. Migration into adjacent pelvic organs, including the urinary bladder, is uncommon but clinically significant, as the device may act as a foreign body, promoting encrustation and bladder stone formation[1-3].

Intravesical IUD may remain asymptomatic for prolonged periods or present with nonspecific lower urinary tract symptoms, often leading to delayed diagnosis[3-5]. While bladder stone formation secondary to migrated IUD has been described, the coexistence of vesicovaginal fistula (VVF) remains rare[6]. VVF is more commonly associated with obstetric injury and pelvic malignancies, particularly cervical cancer, where tumor invasion, ischemia, and tissue necrosis contribute to fistula

development[7-8].

We report a rare and complex case of intravesical IUD migration associated with bladder stone formation and VVF in a patient with advanced cervical cancer. Unlike previously reported cases focusing mainly on bladder stone formation secondary to migrated IUD, this case highlights the interaction between chronic foreign body reaction, stone-related mechanical injury, and malignancy-associated tissue compromise as contributing factors for fistula formation.

CASE REPORT

A 44-year-old woman presented with continuous urinary incontinence for six years, requiring multiple urinary pads per day. She had a history of copper IUD insertion approximately 10 years prior without routine follow-up. Six years before admission, she developed continuous urinary leakage through the vagina. During the course of the disease, she was diagnosed with stage IIIB cervical cancer and subsequently experienced a one-year period of loss to follow-up.

Laboratory evaluation showed impaired renal function at initial evaluation, with a serum urea level of 61 mg/dL and creatinine level of 2.2 mg/Dl. Clinical evaluation suggested urinary leakage of vaginal origin. Cystography could not be performed due to inability to pass a urethral catheter. Therefore, the patient underwent further evaluation under anesthesia.

The patient subsequently underwent cystoscopic examination, which revealed a large VVF measuring approximately 4 cm, with a bladder stone impacted within the fistulous tract. Transvaginal extraction of the stone was performed successfully, and examination of the calculus revealed an IUD as its core. After stone and IUD extraction, renal function showed improvement, with serum urea decreasing to 49 mg/dL and creatinine to 1.7 mg/dL.

Figure 1. Intraoperative cystoscopic view demonstrating a bladder stone impacted within the VVF tract. The fistulous opening was identified in the bladder wall, with the calculus occupying the tract and contributing to persistent urinary leakage.

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Figure 2. Gross specimen showing the extracted bladder stone with a migrated copper intrauterine device identified as the core of the calculus after complete removal. The finding confirms the role of the intravesical IUD as a foreign body contributing to stone formation.

Histopathological examination of the bladder biopsy demonstrated chronic nonspecific inflammation characterized by epithelial erosion, inflammatory cell infiltration consisting of lymphocytes, plasma cells, macrophages, and neutrophils, with associated hemorrhagic changes. No malignant cells were identified. Vaginal tissue examination showed extensive necrotic tissue with inflammatory infiltration without evidence of malignancy or metastasis. Postoperative pelvic magnetic resonance imaging demonstrated persistent VVF, with the catheter balloon visualized passing through the defect in the posterior bladder wall into the vaginal cavity. No residual intravesical calculus was identified following extraction. Despite intervention, the patient continued to experience urinary incontinence, consistent with a large persistent fistula.

Figure 3. Postoperative pelvic magnetic resonance imaging demonstrating persistent VVF without residual intravesical calculus after stone and IUD extraction.

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ETHICAL CONSIDERATION

Written informed consent for publication of this case report and accompanying clinical images was obtained from the patient. The publication was conducted in accordance with institutional ethical standards and patient confidentiality was maintained.

DISCUSSION

This case underscores several important clinical considerations. First, persistent urinary symptoms or unexplained incontinence in women with a history of IUD use should raise suspicion for device migration. Second, delayed diagnosis may result in complex complications, particularly in patients with coexisting pelvic malignancies. Finally, multidisciplinary evaluation is essential in managing such cases, given the interplay between urological and gynecological pathologies

Uterine perforation associated with IUD insertion may occur either immediately during insertion or as a delayed process due to gradual erosion of the uterine wall[1,2]. Once extrauterine, the device may migrate into adjacent pelvic organs, including the urinary bladder, facilitated by anatomical proximity and chronic inflammatory processes[3-5].

Within the bladder, the IUD functions as a persistent foreign body, promoting mineral deposition and progressive encrustation, ultimately leading to bladder stone formation. Chronic mechanical irritation from the stone, combined with local inflammation, contributes to mucosal injury, ischemia, and eventual tissue necrosis[6-9].

Although intravesical IUD complicated by bladder stones have been reported, fistula formation is less commonly described and is typically associated with additional pathological factors[6]. In the present case, advanced cervical cancer likely played a central role. Cervical malignancy can invade adjacent pelvic structures, including the bladder and anterior vaginal wall, resulting in tissue destruction, ischemia, and impaired healing[7,10].

The coexistence of a migrated IUD, bladder stone, and cervical cancer created a unique pathophysiological environment. Chronic pressure from the stone and persistent inflammation due to the foreign body were compounded by tumor-related tissue fragility and necrosis. This multifactorial interaction likely accelerated the formation of a VVF.

To our knowledge, only limited reports have described intravesical IUD migration, bladder stone formation, and VVF in the setting of advanced cervical cancer are extremely limited.

Another notable finding was the impaction of the bladder stone within the fistulous tract. The fistula likely acted as a low-resistance pathway, allowing partial migration and entrapment of the calculus. This mechanism may further perpetuate local tissue damage and contribute to enlargement of the fistula, exacerbating urinary incontinence.

Previous literature has described intravesical IUD migration complicated by bladder stone formation; however, the coexistence of intravesical IUD migration, impacted bladder stone, VVF, and advanced cervical cancer remains rarely reported. This case emphasizes that chronic foreign body reaction and malignancy-related tissue vulnerability may synergistically contribute to complex urological complications.

Definitive fistula repair was not immediately performed in this case due to the large fistula size, chronic inflammation, and compromised tissue condition associated with advanced cervical malignancy. Reconstruction in a poorly vascularized and inflamed field may increase the risk of failure. Therefore, initial management focused on removal of the foreign body and calculus, with further consideration of definitive repair based on oncological status and tissue condition[11-15]. In this patient, transvaginal extraction was selected due to the large fistula and impacted stone.

LIMITATION

This case report has several limitations. The exact pathway and timing of IUD migration could not be determined because the patient had no previous follow-up after insertion. Additionally, the relative contribution of chronic foreign body reaction and cervical cancer-related tissue damage cannot be completely separated; therefore, fistula formation is considered multifactorial.

CONCLUSION

Intravesical migration of an IUD is a rare complication that may lead to bladder stone formation and complex VVF. In patients with advanced cervical cancer, malignancy-related tissue damage may further contribute to fistula development and affect management strategy. Persistent urinary incontinence in women with previous IUD insertion should prompt evaluation for possible device migration. Early diagnosis and multidisciplinary management are essential to prevent delayed complications.

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