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Case Report

Intrauterine Device Translocation to the Ureter Resulting in Hydronephrosis: A Rare Case Report

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Abstract

Background: Intrauterine device (IUD) translocation is a rare but potentially serious complication that may cause injury of adjacent organs. This case report describes an unusual instance of delayed IUD translocation involving the ureter and highlights its diagnostic and management implications. **Case:** We report the case of a 57-year-old woman diagnosed with IUD displacement to the right ureter, which subsequently resulted in ureteral injury. Seventeen years after IUD insertion, the patient presented with lower abdominal pain that radiated to the right flank. During laparoscopic exploration, the IUD was partially embedded in the uterine horn and partially within the wall of the right ureter. The IUD was embedded in the ureteral muscular layer but had not penetrated the mucosal layer. The IUD was completely removed, and the abdominal and pelvic cavities were repeatedly irrigated, with purulent fluid suctioned. The uterine and right ureteral walls were repaired. Under guidewire guidance and direct ureteroscopic visualization, a ureteral stent was placed. **Conclusions:** IUD translocation to the ureter is a rare but serious complication that may occur many years after insertion. Early recognition and appropriate surgical management are essential to prevent severe urological injury.

Keywords: IUD translocation; Uterine Perforation; hydronephrosis; Ureteral Injury; case report

1. Introduction

Intrauterine device (IUD) is an effective and widely used long-acting reversible contraceptive method [1]. Approximately 159 million people worldwide use IUDs [2]. The most common complications associated with IUD insertion include insertion failure, infection, pain, abnormal uterine bleeding, and expulsion [3]. Rare complications during IUD insertion include myometrial embedment and perforation of the uterine serosa, with an incidence rate of 0.1% [4,5]. The IUD may translocate to locations such as the peritoneum, colon, or bladder, while translocation to the ureter is exceptionally rare and sparsely reported in the literature.

In this study, we report a case of a 57-year-old female patient diagnosed with an IUD displacement into the right ureter, which subsequently resulted in right ureteral injury.

2. Case Presentation

The patient was a 57-year-old woman with a history of five vaginal deliveries and two induced abortions. She has been menopausal for 10 years. Approximately 17 years prior to presentation, ago, an IUD was inserted three months following an induced abortion, and the device was never removed. Nine years prior to presentation, a follow-up ultrasound failed to identify the IUD within the uterine cavity, and it was presumed to be spontaneously expelled. No further evaluation or intervention was pursued at that time. Additionally, the patient also had a history of nephrolithiasis, which improved with conservative management.

More than a month before presentation, the patient developed lower abdominal pain without any identifiable precipitating factors, with radiation of pain to the right flank. The patient did not exhibit clinical features suggestive of a febrile urinary tract infection (UTI). On October 21, 2025, the patient sought medical attention at another hospital. Abdominopelvic computed tomography (CT) demonstrated a "V"-shaped hyperdense shadow in the right adnexal region (Fig. 1A,B). Significant findings included right hydronephrosis, characterized by proximal right ureteral and renal pelvis dilation with fluid accumulation (Fig. 1C). An abdominal ultrasound conducted on the same day showed a 31 mm separation of the right renal collecting system, along with dilatation of the upper segment of the right ureter. The middle segment could not be observed, while the lower segment showed no significant abnormalities. The left ureter exhibited no dilation. These findings suggested mild right sided hydronephrosis, with possible dilation of the upper right ureter and suspected of the middle segment, potentially due to a ureteral calculus. Concurrent transvaginal and transabdominal ultrasonography suggested the presence of an IUD embedded within the anterior uterine myometrium, raising suspicion of IUD embedment. As a result, the patient was referred to our hospital for further evaluation.

Physical examination revealed normal body temperature and mild tenderness upon percussion over the right renal area. There was no abdominal tenderness, rebound tenderness, or muscle rigidity. Preoperative pelvic exami-

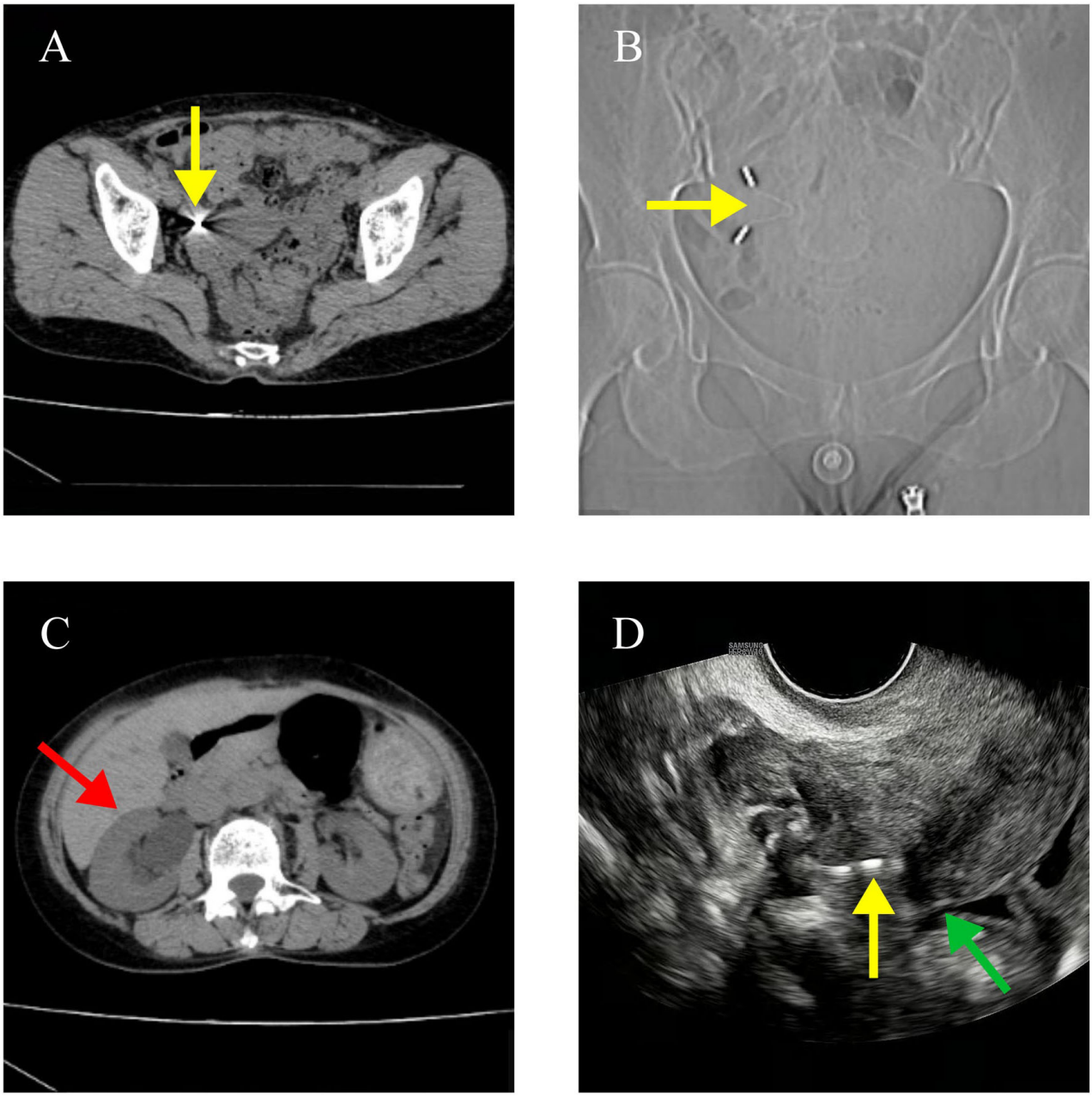

Fig. 1. CT and ultrasound findings of the patient. (A) Axial CT image demonstrating a hyperdense shadow (arrow) in the right adnexal region. (B) Coronal reconstructed CT image showing the corresponding V-shaped hyperdense structure (arrow) in the right adnexa. (C) Axial abdominal CT image showing right-sided renal pelvis dilation and fluid accumulation (arrow). (D) Transvaginal pelvic ultrasound demonstrating partial IUD-like echo (likely representing a V-shaped Ai Mu IUD) was visible in the right uterine horn muscle layer (yellow arrow), approximately 10 mm in the muscle layer, with a two-arm-like echo seen in the right adnexal region. The green arrow indicates the uterine horn. CT, computed tomography; IUD, intrauterine device.

nation was unremarkable, with no visible IUD strings at the cervix and no palpable adnexal masses. Follow-up pelvic ultrasound at our institution showed no IUD-like echoes in the uterine cavity; a partial IUD-like echo (likely representing a V-shaped Ai Mu IUD) was visible within the muscular layer of the right uterine horn, approximately 10 mm deep, with a two-arm-like echo seen in the right adnexal region. Bowel-like echoes were visible around the IUD, and a mixed echo area near one arm showed potential bowel peristalsis (Fig. 1D). The patient's serum creatinine was 64.28 µmol/L, with a corresponding estimated glomerular filtration rate (eGFR) of 94 mL/min/1.73 m^2. The urine was light yellow, with negative occult blood and 9 red blood cells/µL, 126 white blood cells/µL, and 17.3 non-squamous epithelial cells/µL.

During laparoscopic exploration, the right uterine cornu was observed to be elongated, deformed, and densely adherent to the right pelvic sidewall and the right ureter.

A mass had formed at the right uterine horn and also adhered to the right pelvic sidewall. The right ureter was notably thickened. Careful dissection of the adhesions was performed, and the right ureter was mobilized. During separation, approximately 2 mL of yellow purulent fluid was observed draining from the mass at the right uterine horn. The IUD (V-shape) was partially embedded in the uterine horn and partially in the wall of the right ureter. The adhesions between the IUD and the surrounding tissue were dissected. The IUD was found to be embedded in the ureteral muscular layer but had not penetrated the mucosal layer. The IUD was completely removed, and the abdominal and pelvic cavities were repeatedly irrigated, and the purulent fluid was suctioned out (Fig. 2A–D). Intraoperative ureteroscopy showed extrinsic narrowing at the site of IUD entrapment. The ureteral mucosa was intact, and no intraluminal foreign bodies were identified. The ureteral defect was then repaired using 4-0 Vicryl absorbable sutures with an interrupted technique. Given the 17-year history of IUD translocation, the presence of a localized abscess, and preoperative hydronephrosis, a long-term indwelling double-J stent (planned for 2–3 months) was recommended to ensure luminal patency during the resolution of chronic inflammation. The uterine wall defect was repaired with a continuous 1B410 absorbable suture.

The patient had the urinary catheter removed on the third postoperative day and was discharged. There were no significant postoperative discomforts. The patient was advised to have the ureteral stent removed 2–3 months after catheter placement. At one month postoperatively, the patient was contacted for telephone follow-up and reported no significant abnormal symptoms. The patient reported that her quality of life has significantly improved following pain relief. Owing to personal reasons, the patient did not return for clinical consultation and ureteral stent removal until 118 days postoperatively. A repeat CT scan at that time showed the ureteral stent *in situ*, with mild persistent dilation of the right renal pelvis and ureter, and slight thickening of the ureteral wall (Fig. 3A,B). The patient remained asymptomatic, and the stent was successfully removed on the same day. She was advised to undergo a follow-up CT scan in 1–2 months.

3. Discussion

Symptoms associated with IUD-related uterine perforation are mostly mild, and approximately 30% of patients may be asymptomatic [6]. Abnormalities may not be detected until several months or years after insertion. Some patients may present with chronic pelvic pain, lower abdominal heaviness, irregular vaginal bleeding, or other discomforts. In this case, IUD translocation was only discovered following the patient's presentation with lower abdominal pain radiating to the right flank of unknown etiology, approximately seventeen years after IUD insertion. In general, translocation to the urinary tract is rare; only four similar cases have been reported until now [7,8,9,10]. This is the first report of IUD displacement progressing to purulent collection. Our case provides a valuable reference for addressing the clinical ambiguity regarding the necessity of postoperative ureteral stenting. By correlating the depth of tissue damage with successful ureteral stent placement, we demonstrate a feasible management strategy. By drawing on insights from previous cases that required reoperation for radical reconstruction, we suggest that precise identification of the injury layer can help avoid such invasive procedures, including ureteroneocystostomy.

IUD embedment, secondary perforation, and expulsion may result from a size mismatch between the IUD and the uterine cavity, leading to asymmetrical uterine forces [11]. Clinicians with limited experience may fail to place the device correctly, resulting in an asymmetrical placement. This allows the IUD to penetrate the myometrium under the influence of these persistent asymmetrical forces. A large-scale study found that the incidence of uterine perforation was higher when the IUD insertion was performed by clinicians who inserted fewer than 50 IUDs per year, compared to those who inserted 50 or more IUDs per year [4]. The post-partum period, lactation, and amenorrhoea may increase the risk of perforation [12]. This case presents an exceedingly rare etiology for ureteral pyocele and hydronephrosis.

In this study, the IUD used by the patients was the V-shaped IUD, which is a copper-bearing intrauterine contraceptive device designed to fit the physiological morphology of the female uterus. A multicenter retrospective cohort study indicates that women using copper IUDs have a lower risk of uterine perforation compared to those using levonorgestrel-releasing intrauterine devices, while the risk of IUD expulsion is higher [13]. Although copper IUDs are associated with a lower risk of perforation, device translocation and secondary involvement of adjacent organs may still occur under certain conditions.

In this case, the IUD could not be observed within the uterine cavity during a gynecological ultrasound performed one year after insertion. The physician at that time did not request further comprehensive imaging studies, possibly assuming spontaneous IUD expulsion and considering the potential financial burden of X-ray or CT examinations on the patient. However, ultrasound is more suitable for assessing the intrauterine position of the IUD, rather than for locating an extruded IUD. Previous studies have indicated that translocated or perforated IUDs often cannot be successfully observed by ultrasound, with more than half of the patients failing to have a positive detection [14]. This highlights the importance for clinicians to consider the possibility of IUD displacement due to uterine perforation, in addition to spontaneous expulsion, when the device is not detected on ultrasound during follow-up. If necessary, more accurate information should be obtained via abdominopelvic X-ray or CT scans to facilitate early detection of a displaced IUD and mitigate associated complications.

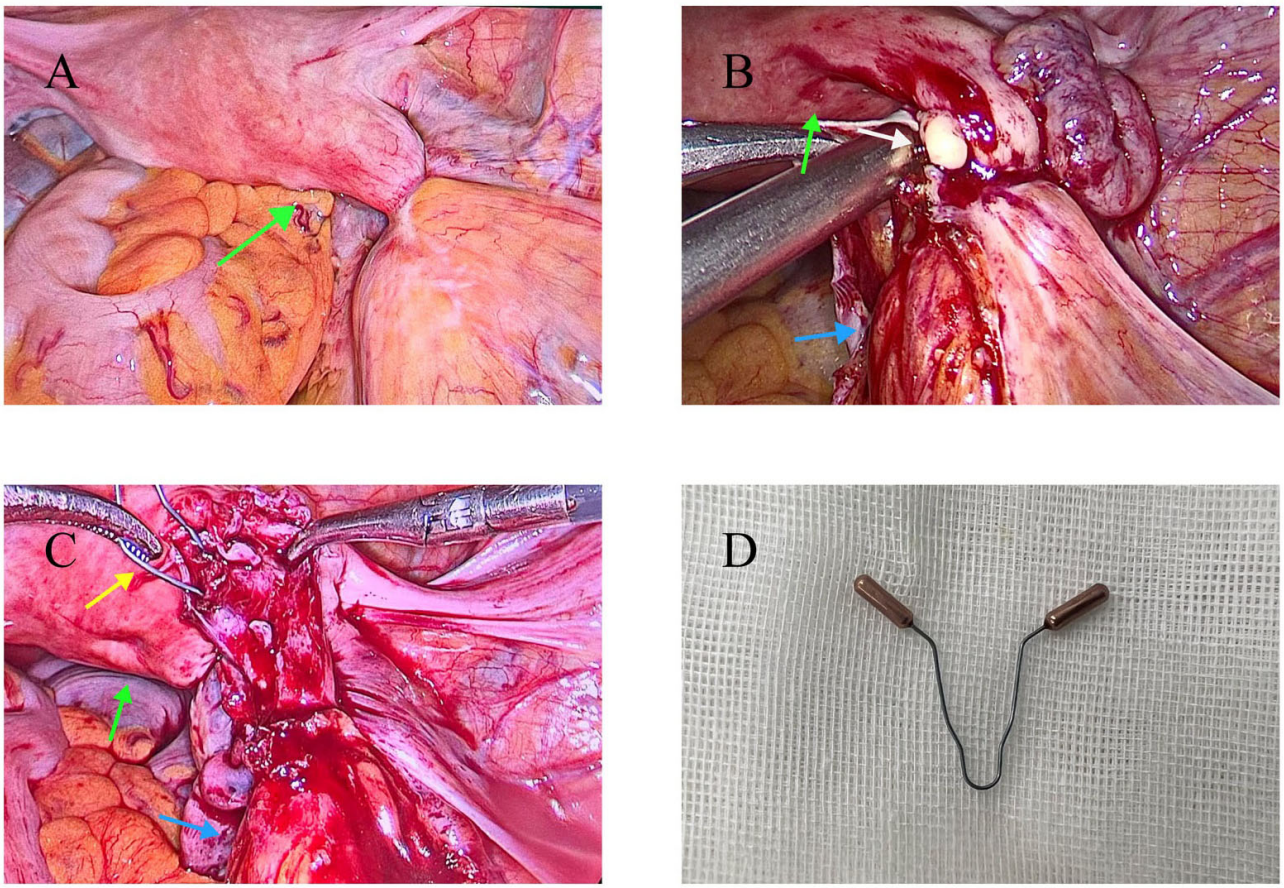

Fig. 2. Intraoperative findings and Ai Mu IUD. (A) Initial laparoscopic view showing the right uterine horn (green arrow) to be elongated and deformed, forming an inflammatory mass densely adherent to the right pelvic side wall and the right ureter. (B) Approximately 2 mL of yellow purulent fluid (white arrow) is observed draining from the abscess at the right uterine horn (green arrow). The right ureter (blue arrow) is identified in close proximity to the site of inflammation. (C) The IUD (Ai Mu type, yellow arrow) was partially embedded in the uterine horn and partially in the wall of the right ureter. The IUD was found to be embedded in the ureteral muscular layer but had not penetrated the mucosal layer. The green arrow indicates the uterus. The blue arrow indicates the ureter. (D) Photograph of the V-shaped Ai Mu IUD.

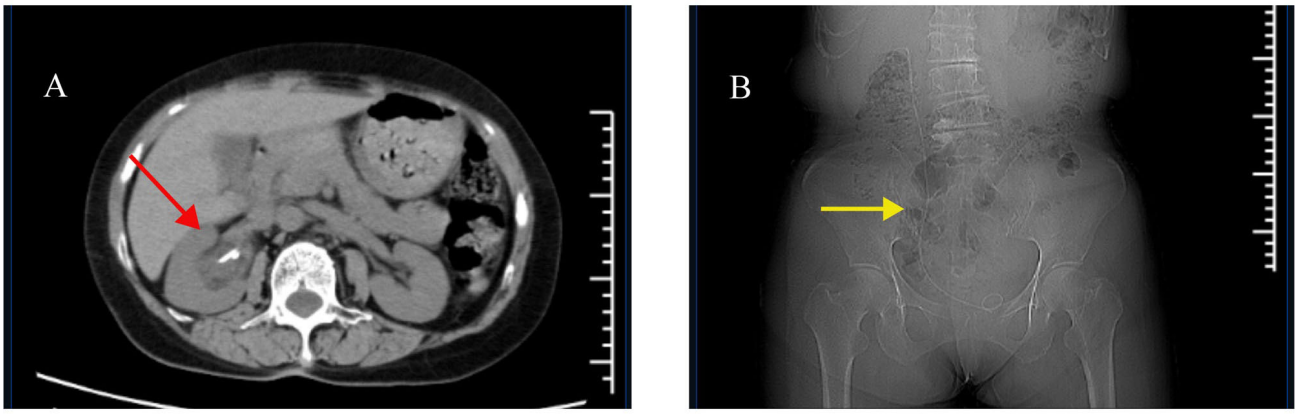

Fig. 3. Postoperative imaging evaluation before double-J stent removal. (A) Axial CT scan showing the right kidney. The red arrow indicates mild persistent dilation of the right renal pelvis, which represented improvement compared to the preoperative right hydronephrosis, with no evidence of new or high-grade obstruction. (B) CT scout view (topogram) demonstrating the stable and correct position of the indwelling right ureteral stent (yellow arrow) prior to its planned removal.

In this case, imaging studies consistently failed to locate the IUD definitively. Beyond the aforementioned limitations of sonography, the copper or metal components of the V-shaped ring may cause artifacts, and overlying intestinal gas can interfere with image acquisition, collectively hindering the precise observation of the IUD's exact position. Laparoscopy allows for the precise determination of the IUD's position, assessment of damage to surrounding organs, and repair, while also facilitating safe IUD removal to prevent further damage. Therefore, laparoscopic intervention was both appropriate and necessary after the IUD displacement was identified in this case.

In this case, following the laparoscopic discovery of an IUD embedded in the ureter, an F8/9.8 rigid ureteroscope was advanced transurethrally into the bladder. Under ureteroscopic observation, the right ureteral orifice was identified, and a hydrophilic guidewire was inserted. A ureteral stent was then advanced over the guidewire and placed under direct observation using the rigid ureteroscope. It is worth noting that in a case reported by Xuesong Yang et al. [10], a ureteral stent was initially placed, followed by laparoscopic removal of the IUD, which was embedded in the uterine round ligament and adhered to the left pelvic ureter. The ureteral stent was removed three months later; however, two months thereafter, the patient returned with worsening left flank and abdominal pain. Examination revealed increased hydronephrosis, and the patient subsequently underwent ureteroneocystostomy. Previous case reports have also documented IUDs causing uterine perforation followed by translocation to the ureter, resulting in obstruction and subsequent fibrosis [8]. These cases ultimately required excision of the fibrotic ureteral segment and subsequent ureteroneocystostomy. These cases indicate that even after the surgical removal of the IUD and placement of a ureteral stent, patients may still experience recurrent symptoms, worsening hydronephrosis, and other complications. Long-term follow-up is essential, with close monitoring of the patient's symptoms and renal function. In cases of severe complications, ureteroneocystostomy should be considered based on the specific situation. Given that the IUD in the present case was embedded in the ureteral muscular layer without penetrating the mucosal layer, ureteroneocystostomy is not currently required.

Limitations

This case study has several limitations. First, preoperative computed tomography urography (CTU) was not performed. If a CTU had been performed, it would have helped determine whether there was extrinsic ureteral compression, inflammatory infiltration, fibrosis, or ureteral stricture. This case can serve as a reminder that, in similar situations, evaluations such as CTU, ureteroscopy, or retrograde ureterography should be considered to better assess the patient's condition and guide surgical planning. Furthermore, due to limited medical conditions, three-dimensional (3D) CT reconstruction was unavailable, limiting a more comprehensive assessment of the spatial relationships between the IUD and the ureteral anatomical structures. Second, the duration of ureteral stenting in this case was long. Although intraoperative ureteroscopy showed that the mucosal layer remained intact, a conservative indwelling period of 2–3 months was initially recommended given the 17-year translocation history, associated hydronephrosis, and the intraoperative discovery of a localized abscess. Despite repeated reminders about the removal schedule, the patient further delayed the procedure until 118 days postoperatively for personal reasons. While no significant adverse effects were identified during the follow-up, such delays could potentially increase the risk of stent-related complications. Third, the patient was required to undergo a follow-up CT scan 1–2 months after stent removal, and long-term monitoring remains essential to detect late-onset complications.

4. Conclusions

In conclusion, enhancing clinician training in insertion techniques and, where feasible, using ultrasound guidance may help reduce the incidence of malposition and subsequent translocation. Women with an IUD should undergo regular ultrasound follow-up. If the device is not localized within the uterus, clinicians must be highly vigilant and rule out the possibilities of uterine perforation and IUD translocation. When necessary, abdominopelvic X-rays or CT scans can assist in diagnosis and management. Laparoscopic management is pivotal in the management of IUD translocation, and long-term postoperative follow-up is essential to ensure patient safety and optimal outcomes.

Availability of Data and Materials

All data reported in this paper will also be shared by the corresponding author upon request.

Author Contributions

ZW, RS and FL designed the research study. RS and ZW performed the research. FL analyzed the data. FL and ZW wrote the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

The study was conducted in accordance with the Declaration of Helsinki. Written informed consent was obtained from both the patient and her immediate family members for the publication of this clinical case report. Ethical approval was not required because this study was a single case report.

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Conflicts of Interest

The authors declare no conflicts of interest.

Declaration of AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT-3.5 in order to check spelling and grammar. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at https://doi.org/10.31083/CEOG50328.

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