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## **Intrauterine Device induced Vesicouterine Fistula and Urinary Bladder Stone. A Rare Complication**

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**Abstract** Vesicouterine fistulas is extremely rare and reported cases are often iatrogenic after gynecologic surgeries. The presentation of urogenital fistulas can be unspecific. Most common presentations are hematuria, vaginal urine leak, lower urinary tract symptoms (LUTS) as urgency, frequency and nocturia and abdominal pain. We present two cases of rare occurrence of vesicouterine fistula and the up to date and minimally invasive management.

**Keywords** Intrauterine device, vesicouterine fistula, Lower Urinary Tract Symptoms (LUTS), Hematuria, Cystoscopy.

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### **Introduction**

Intrauterine devices (IUD) are extensively used form of birth control due to its low risk of complications. However, a rare but serious complication of IUD usage is perforation of the uterine wall during insertion. Urogenital fistulas usually are ureterovaginal, vesicovaginal, or urethra-vaginal. Vesicouterine fistulas represent about 1-4 % of all urogenital fistulas [1]. Clinical findings of hematuria and urinary leakage from the vagina are suggestive of a urogenital fistula. Clinical presentation is nonspecific, and findings on examinations used to depict the fistulas are negative, leading to considerable delay in diagnosis [2]. We present two cases in order to expand on the most recent diagnosis and management of urinary complications resulting from migration of IUD.

### **Case presentation and methods**

#### **Case I**

A 35 year old woman with a three month history of IUD placement, presented with LUTS, suprapubic pain and cyclic hematuria. The IUD was inserted three months earlier for the purpose of long term contraception. Further history noted no fever, chills or malaise. Physical and vaginal exam revealed no abnormalities. Ultrasonography and cystourethrogram was performed and there was no clear evidence of extravasation or migration of the dye through the uterus, which did not support the diagnosis of an IUD induced vesicouterine fistula.

After detailed discussion with the patient about possible diagnoses and management, the decision was to perform a diagnostic cystoscopy and surgical management of a vesicouterine fistula if it is confirmed. The patient was informed that there was a possibility of managing the case by using grasping forceps through the cystoscope and placing a urethral catheter for a three week period; only if the presence of vesicouterine fistula confirmed and the fistula tract was narrow. Diagnostic cystoscopy was performed which confirmed migration of the IUD through the posterior bladder wall along with evidence of a narrow fistula tract and a minor surrounding congestion



A trial of the IUD extraction using the grasping forceps was performed successfully by removing the IUD and its threads. Endoscopic fulguration of the fistula tract was achieved. Foley catheter was placed. Cystourethrogram and ultrasonography was performed three weeks after the procedure which confirmed the absence of any extravasation, leakage and other abnormalities. Foleys catheter was removed. After a six month follow up, urinalysis showed no evidence of UTIs and patient symptoms were resolved. Patient started using contraceptive pills for family planning.

## Case II

A 36 year old woman was referred for 6 months history of lower urinary tract symptoms (LUTS), pyurea and cyclic hematuria. The clinical exam was unremarkable. Imaging studies using ultrasonography, plain x-ray and cystourethrogram was performed and a 2x3cm bladder stone attached to a migrated IUD along with an extravasation at the site of the posterior bladder wall was observed. [Fig.] After discussion with the patient regarding the treatment options, a decision was reached to perform cystoscopy and surgical exploration for removal of the IUD and the attached bladder stone, followed by closure of the vesicouterine fistula. Cystoscopy was performed, which confirmed a migrated IUD through the posterior bladder wall forming a vesicouterine fistula and a bladder stone encapsulating the IUD. The procedure was completed by placing the omental flap in between the urinary bladder and the uterine wall. Cystourethrogram was performed three weeks after surgery which confirmed the absence of extravasation at the repair site. The urethral catheter was also removed. After a six months follow up, the patient symptoms were completely resolved. Urinalysis reveled no evidence of urinary tract infection [UTIs]. Ultrasonography showed no evidence of fluid collection or other abnormalities.



Figure 1: Migrated IUD along with extravasation and UB stone shadow.



*Figure 2: Post-voiding cystogram shows IUD attached to UB stone.*



*Figure 3: Removed IUD attached to UB stone.*

### Discussion and Conclusion

The most common type of female urinary tract fistula is vesicovaginal [3]. The least common type is vesicouterine fistula which is typically caused by caesarian sections, It counts 1-4 % of all urogenital fistulas [4]. Foreign bodies such as IUDs can penetrate the uterine wall and the urinary bladder forming vesicouterine fistula [5]. Cystoscopy and radiographic study for diagnosis and management is commonly performed. Cystogram can outline the uterine cavity if the track of the fistula is wide [6]. IV urogram or contrast enhanced C.T. can be used to exclude concomitant ureteral injury [7]. For treatment of a vesicouterine fistula, spontaneous resolution may occur; fulguration of the fistula and prolonged bladder drainage could be successful in the case of small fistula with a narrow track. Surgical treatment for vesicouterine fistula depends on the age of the patient and if there is desire for child bearing [8]. For patients who want to avoid a risk for infertility, uterus sparing surgery should be considered. If fertility is not desired, then trans-abdominal hysterectomy with closure of the bladder should be done [8]. Prevention of vesicouterine fistula should be emphasized and a post-IUD insertion follow-up is essential. It should therefore be advocated that a regular post-IUD insertion follow-up can dramatically prevent the incidence of these types of fistulas.

In summary, we have reported two cases of an extremely rare complication. We also conclude that cystoscopic management of narrow tract IUD induced vesicouterine fistula can be achieved with very successful results and is a minimally invasive maneuver. For the wide tract vesicouterine fistula, surgical management is the only definitive treatment. We suggest performing periodically post IUD insertion follow up which can reduce the incidence of these cases.

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