

UROLOGICAL COMPLICATIONS OF INTRAUTERINE CONTRACEPTIVE DEVICE

Khalid Farouk, Zia-ud-Din Afridi, Muhammad Ashraf Farooq,
Ishtiaq Ahmad Qureshi

Department of Urology and Department of Radiology
Foundation University Medical College, Fauji Foundation Hospital and
Islamic International Medical College, Rawalpindi Pakistan.

ABSTRACT

Objective: To elucidate the urological complications of Intrauterine contraceptive device (IUCD).

Material and Methods: This study was conducted in Fauji Foundation Hospital Rawalpindi to elucidate the urological complications of IUCD presenting to Urology department from January 2002 to December 2006. During this period 12 ladies having IUCDs presented with lower urinary tract symptoms (LUTS). After thorough work up, 6 patients were managed surgically and the remaining 6 were managed conservatively.

Results: In all cases the IUCDs were inserted by paramedics. Out of six cases managed surgically, 3 patients had developed complete intravesical migration of device with stone formation. While in two other patients there was partial migration of the IUCD and stone formation over the migrated component of the device. One patient had simultaneously two IUCDs, one in uterus and another in bladder. We successfully performed cystolitholapaxy and retrieved four IUCDs in these patients endoscopically. A large vesical stone and the entombed IUCD in one of our patients was also removed endoscopically. The patient who presented with two IUCDs also got the vesical IUCD removed endoscopically. In remaining six cases, the IUCDs were in proper location and the cause of LUTS in these patients was urinary tract infection. These patients were successfully managed conservatively.

Conclusion: Insertion of IUCD necessitates regular follow-up to confirm its correct position. Migration of an IUCD warrants prompt removal, even in asymptomatic patients. Cases presenting with UTI with undisplaced IUCD should be managed with appropriate antimicrobial therapy.

Key words: IUCD, Migration, Complication, Bladder Stone, Endoscopic Retrieval.

INTRODUCTION

Intrauterine contraceptive device (IUCD) has been widely used since 1965.^{1,2} It is the most popular method of reversible contraception in developing countries due to its high efficacy & low cost,³ with millions of women using it world wide. Its efficacy is close to tubal ligation with the added benefit of the ease of reversal. Failure rate of IUCD is 1-3%. It is generally a safe modality for long term contraception.^{1,5} However, still on occasions an IUCD can give rise to complications. Most of these IUCDs are placed by paramedics of variable skills and follow-up evaluations are not performed.³ Some of the IUCDs are forgotten, others are lost, while a few are misplaced. A missed IUCD is defined as the condition when strings of IUCD are not felt by the patient or the

strings are not visible on speculum examination. Various causes of a missed IUCD can be expulsion, uterine perforation, pregnancy, breaking of the strings, curling of strings inside the uterus, etc.⁴ Regular self-examination for "missing threads" is useful for early detection of a migrated IUCD.¹ Associated complications of an IUCD are bleeding, infection, ectopic pregnancy, septic abortion and uterine perforation with partial or complete migration of the IUCD into adjacent structures e.g. peritoneum, appendix, colon, wall of iliac vein and urinary bladder. These displaced devices have been incriminated for perforation of surrounding viscera.^{5,6} The urological complications reported in literature include partial and complete vesical migration and stone formation, ureteric calculus formation and obstruction,⁷ acute and



Fig 1. A patient having two IUCDs. One IUCD is covered with faint opacification.

chronic pyelonephritis, persistent lower urinary tract symptoms (LUTS) and vesico-uterine fistula.⁸ Intravesical migration of the IUCD is exceptionally rare but it must be kept in mind in women with recurrent urinary symptoms using the contraceptive devices. Diagnosis can be made with the help of ultrasound and confirmed by cystoscopy.⁵ In difficult locations Computerized Tomography (CT) scan can be advised for better preoperative assessment.⁸ Magnetic resonance imaging is not contraindicated in copper containing IUCDs.⁹ Endoscopic retrieval^{5,8} of the device along with the associated stone if present is the preferred treatment modality. In those cases where it is badly stuck or embedded in the uterine and bladder wall and is difficult to retrieve endoscopically, laparoscopy^{10,11} and open surgery may be employed.^{3,8} If there is a vesico-uterine fistula it should be repaired during open surgery. We⁸ report a series of twelve cases of urological complications of IUCD. Six IUCDs had migrated partially or completely into the urinary bladder while the other six were present in the uterus but the patients experienced LUTS. Present study was designed as to elucidate the urological complications of IUCD.

MATERIAL AND METHODS:

This study was conducted from January 2002 to December 2006. A total of twelve ladies who had IUCDs presented with lower urinary tract symptoms to the department of Urology Fauji Foundation Hospital, Rawalpindi, were included in the study. A detailed history was taken and their

symptoms were evaluated. The patients were asked whether the IUCD was inserted by a qualified doctor or a paramedic. They were asked about the duration of IUCD and the onset of urinary symptoms. All of these ladies complained of suprapubic pain, increased frequency of urine and dysuria. Two patients complained of terminal haematuria as well. A speculum examination was conducted by a lady doctor. Midstream and bacteriological examination of urine was performed. A plain X-ray KUB and ultrasound scan of abdomen and pelvis were performed.

RESULTS

The mean age of these ladies was 39 years. The average duration of the IUCDs was nine years, ranging from five to twelve years. The duration of symptoms ranged from 03 to 12 months with average symptomatic duration being 9.2 months. All of these patients had got IUCDs placed by paramedics of variable skill. None of the IUCDs was introduced by a qualified medical practitioner. The threads of the IUCD were not seen on speculum examination in six patients while in the other six cases the threads were visible. The IUCDs in these six patients had migrated while in the other six the device was undisplaced. Patients who were diagnosed to have a partially or completely migrated IUCD required surgical procedures under general anesthesia for their management (Table No.1). Three young ladies had formed vesical stones over completely migrated IUCDs lying intravesically. Two other patients had partially migrated IUCDs. The intravesical component had formed a stone over it and the remaining part of the IUCD was embedded in the bladder wall. Another patient had two IUCDs (Fig 1); one of them was lying free in the bladder and other one was present in the uterus. She had conceived and delivered a full term baby approximately 04 years after insertion of the first IUCD. A few months after delivering a healthy



Fig 2. Complete intravesical migration of IUCD & stone formation on its transverse limbs



Fig 3. Partial migration of IUCD with stone formation on its vertical limb

baby, she got another IUCD inserted by a quack. Five patients had successful endoscopic retrieval of IUCD without any complication. In one of these cases the IUCD broke during cystoscopic retrieval. However, we were able to remove the complete device piecemeal (Fig 2, 3 & 4). We chose to perform cystolithotomy in one of our patients who had formed a large vesical stone over a completely migrated IUCD. A large stone (6 cm x 4.5 cm) formed over the buried IUCD (Fig 5) was removed by cystolithotomy. None of the patients developed vesico-vaginal fistula or any other complication. Remaining six patients complained of significant LUTS and had recurrent urinary tract infections after five to six years of insertion of the device (Table 2). On evaluation the device in these patients was not found to be displaced. Urinalysis in these patients revealed significant pus cells. Two patients grew *E. coli* in their urine. All of these six cases were treated conservatively for urinary tract infection and their symptoms settled.

DISCUSSION

Intrauterine contraceptive device (IUCD) is the most popular method of reversible contraception. It is generally a safe modality for long-term contraception. However this device is often inserted by paramedics of variable skills.³ Migration of the IUD into the neighboring organs or the abdominal cavity is a rare complication. In a review of 165 cases, the omentum, rectosigmoid, peritoneum, bladder, appendix, small bowel, adnexa, and iliac vein were the location of migrated IUCDs, in 45, 44, 41, 30, 8, 2, 1, and 1 patients, respectively.^{9,4} Migration into the urinary

bladder either partial or complete is extremely rare and approximately 35 cases of IUCD migration and calculus formation have been reported in literature by 2007^{1,3,5,9,14,15}, inclusive of the present study. However Derevianko IM and colleagues report a series of 64 cases of IUCD presenting with urological complications but none of the IUCDs in this study had migrated outside or perforated the adjoining viscera.¹⁶ Extra uterine migration of the device has been reported as early as one week to as late as 18 years after insertion.¹ How and when migration into urinary bladder occurs is unclear. The mechanism of bladder perforation is either primary i.e. at the time of insertion or secondary by slow migration across the walls of uterus & bladder. Most of the perforations take place at the time of insertion and go unnoticed. Delayed onset of symptoms support secondary migration.^{5,8} Factors contributing to the possibility of uterine perforation are inept insertion or positioning, fragility of the uterine wall due to recent birth, abortion, or pregnancy.¹⁷ The minimum duration of presence of IUCD in our series was five years and the interval between the insertion and onset of symptoms was 4.4 years. and the average symptomatic duration was just above nine months. So our observation favours late migration. Direct transurethral introduction of the IUCD into the urinary bladder looks highly unlikely but some authors do not rule out such a possibility.¹⁸ It has been proposed that during insertion of the IUCD a partial perforation of the uterine wall occurs and subsequently gradual migration into the urinary bladder is facilitated by the uterine contractions.¹⁹ Perforation occurring at the time of insertion correlates inversely with the skill of the clinician.¹ Being a foreign body, IUCD causes decubitus & inflammation of the adjacent tissues. Long term carriage of the device may give rise to endometritis, myometritis and parametritis.¹⁷ If the device migrates into the urinary bladder, it acts as a foreign body and causes cystitis. Presence of IUCD in bladder leads to urinary symptoms and in some cases calculus formation. The degree of stone formation is variable and independent of the



Fig 4.A reconstructed IUCD showing stone formation; the IUCD was broken during endoscopic removal



Fig 5. A large vesical stone with buried IUCD

duration in bladder.²⁰⁻²² As primary vesical stone is an uncommon pathology in females, a foreign body must be considered in case of bladder stone in females especially those ladies using an IUCD.

In one of our cases, we found two IUCDs; one lying in bladder & the second in uterus. The patient had conceived and delivered a full term baby some years after insertion of the device and got another one inserted a few months after delivery. This is the first ever case of its nature in which a patient had two IUCDs along with a pregnancy. After a thorough review of the literature we have found only two reported cases of pregnancies after insertion of the IUCD. In one case the patient with contraceptive device had two full term uneventful pregnancies. She had experienced severe pain during insertion of the contraceptive device but the pain settled soon. The

urinary symptoms appeared a few years later & a completely migrated IUCD was recovered from the bladder.¹⁹ The highest probability in this case favours the migration of the device soon after insertion. There are also reports of multiple IUCDs in a single uterus^{4,23} but only one case of IUCD has been previously reported in a pregnant uterus. The pregnancy in that case was terminated as the fetus was dead. However the small size and softness of the uterus in the early months after delivery call for great care during insertion of an IUCD.²⁴ Previous studies showed IUCD insertion 0-3 months postpartum increased the risk of uterine perforation as compared to its insertions at 3-6 months postpartum.²⁵ It must be kept in mind that there is always a chance of the patients developing a vesico-uterine fistula either during migration or removal of IUCD. It⁹ needs extra care in dealing with those IUCD which are partially migrated or stuck in the surrounding tissues. However, we did not get any case of vesico-uterine fistula. Withdrawal of the migrated IUCD is advisable even if its migration has not given rise to any clinical symptoms.²⁶ Endoscopic retrieval remains the preferred method of choice for a completely or partially migrated device into the bladder.^{5,19} Transvaginal removal (colpotomy), laparoscopy¹⁰ or open surgical options⁸ are reserved for difficult cases only or for those who have already developed a vesico-uterine fistula. We successfully managed five cases cystoscopically and chose to perform vesicolithotomy for a large vesical calculus entombing an IUCD in one of our cases. The women using IUCD should be properly educated for a missed IUCD.⁴ Regular self

UROLOGICAL COMPLICATIONS OF IUCD MANAGED SURGICALLY

Sr No	Pt's Age	Duration of Symptoms (months)	Duration of IUCD (years)	IUCD inserted by	Complications	Management
1	30	8	5	Lady Health Visitor (LHV)	Complete intravesical migration & stone formation	Litholapaxy & endoscopic intact IUCD retrieval
2	38	12	8	Dai (Quack)	Complete intravesical migration & stone formation	Cystolithotomy & removal of entombed IUCD
3	35	11	12	LHV	Complete intravesical migration & stone formation	Litholapaxy & endoscopic intact IUCD retrieval
4	36	3	10	Nurse	Partial intravesical migration & stone formation	Litholapaxy & endoscopic intact IUCD retrieval
5	48	12	12	Dai (Quack)	Partial intravesical migration & stone formation	Litholapaxy & endoscopic piecemeal IUCD retrieval
6	40	12	1st IUCD:10 2nd IUCD:4	LHV (Both IUCDs)	First IUCD: Complete intravesical migration. Second IUCD: present intrauterine	Endoscopic retrieval of intravesical IUCD

Table 1

UROLOGICAL COMPLICATIONS OF IUCD MANAGED CONSERVATIVELY (IUCD WAS UNDISPLACED)

Sr No	Pt's Age	Duration of Symptoms (months)	Duration of IUCD (years)	IUCD inserted by	MSU	Urine Culture & Sensitivity	Management
1	32	06	05	Lady Health Visitor (LHV)	Numerous Pus Cells	No growth	Tab: Ciprofloxacin 500 mg BD X 5 days
2	45	03	08	Dai (Quack)	Numerous Pus Cells	E. Coli Sensitive to Ciprofloxacin	Tab: Ciprofloxacin 500 mg BD X1 Week
3	39	05	12	Dai (Quack)	10-12 Pus Cells	No growth	Tab: Ciprofloxacin 500 mg BD X 5 days
4	38	08	10	LHV	8-10 Pus Cells	No growth	Tab: Ciprofloxacin 500mg BD X 5 days
5	41	12	06	Nurse	Numerous Pus Cells	No growth	Tab: Ciprofloxacin 500mg BD X 5 days
6	32	12	11	Nurse	18-20 Pus Cells	E. Coli Sensitive to Ciprofloxacin	Tab: Ciprofloxacin 500mg BD X1 Week

Table 2

examination for “missing threads” is useful in the early detection for a migrated IUCD. If a patient cannot feel the thread she should approach a qualified medical person at her first opportunity.

CONCLUSION

No doubt an IUCD is currently the most popular, cheap and effective reversible method of contraception. The device should always be inserted by a qualified gynaecologist. Insertion of an IUCD necessitates regular follow-up to confirm its correct position. Migration of an IUCD warrants prompt removal, even in asymptomatic patients. Cystoscopic retrieval of the device along with the vesical stone is the preferred treatment option while cystolithotomy may be chosen for a large stone formed over an IUCD. A high index of suspicion is important for the early detection of complications.

Interests & conflicts:

None declared.

REFERENCES

- Chang HM, Chen TW, Hsieh CB, Chen CJ, Yu JC, Liu YC, et al. Appendicitis: A case report. *World J Gastroenterol* 2005;11: 5414-5.
- Zakin D, Stern WZ, Rosenblatt R. Complete and partial uterine perforation and embedding following insertion of intrauterine devices. *Obstet Gynaecol Surg* 1981; 36: 335- 53.
- Nouira Y, Rakrouki S, Gargouri M, Fitouri Z, Horchani A. Intravesical migration of intrauterine contraceptive device complicated by bladder stones: A report of six cases. *Int Urogynecol J* 2007; 18: 575-8.
- Rani SS, Krishna S. Multiple intrauterine devices in a pregnant uterus. *J Obstet Gynecol India* 2005; 53: 551-2.
- Manan A, Andhikari DB, Chughtai MN. Intravesical migration of intrauterine contraceptive device. *J Nepal Med Assoc* 2001; 40: 215-6.
- Yeni E, Unal D, Verit A. Migration of intrauterine device as a cause of bladder stone. *Brazil J Urol* 2002; 28: 43-4.
- Dabbas M, Maaita M. Ureteric calculus around an intrauterine contraceptive device. *J Obstet Gynecol* 2002; 22: 101-2.
- El-Hefnawy AS, El-Nahas AR, Osman Y, Bazeed MA. Urinary complications of migrated intrauterine contraceptive device. *Int Urogynecol J Pelvic Floor Dysfunct.* 2008 ;19:241-5.
- Esfahani MR, Abdar A. Unusual Migration of Intrauterine Device into Bladder and Calculus Formation. *Urol J (Tehran).* 2007; 4: 49-5.
- Tunçay YA, Tunçay E, Güzin K, Öztürk D, Omurcan C, Yücel N. Transuterine migration as a complication of intrauterine contraceptive devices: Six case reports. *Europ J Contracep Reprod Health* 2004. 9:194-200.
- ZierenJ, MoebiusB, Zieren B, Menenakos C. Combined laparoscopic-colonoscopy approach for the removal of a migrated intrauterine contraceptive device penetrating the sigmoid colon. *Gynecol Surg* 2006; 3: 223-5.
- Allen D, Glass J. Transvaginal contraception-

- avoid the bladder. *Int J Clin Pract* 2005; 59: 87-8.
13. Kassab B, Audra P. The migrating intrauterine device. Case report and review of the literature. *Contracept Fertil Sex* 1999;27:696-700.
 14. Demirci D, Ekmekcioglu O, Demirtas A, Gulmez I. Big bladder stones around an intravesical migrated intrauterine device. *Int J Urol Nephrol*. 2003;35:495-6.
 15. Gonzalvo Pérez V, López García LM, Aznar Serra G, Mola Ariza MJ, Navarro Antón JA, Botella Almodóvar R, Polo Peris A. Uterine perforation and vesical migration of intrauterine device. *Actas Urol Esp* 2001;25:458-61.
 16. Derevianko IM, Derevianko TI, Ryzhkov VV. The urological complications of contraception using intrauterine coils. *Urol nefrol (Mosk)*1997; 5: 27-30.
 17. Junceda Avello E, Gonzalez Torga L, Lasheras Villanueva J, De Quiros A GB. Uterine perforation and vesical migration of an intrauterine device. Case observation. *Acta Ginecol* 1977;30:79-86.
 18. OzgurA, Sismanoglu A, Yazici C, Cosar E, Tezen D, Iker Y. Intravesical stone formation on intrauterine contraceptive device. *Int Urol Neph J* 2004; 36: 345-8.
 19. Senanayke HM, Fernando H. An intrauterine device in the bladder mimicking urinary tract infection. *Ceylon Med J* 2002. 47: 28-9.
 20. Lu HF, Chen JH, Chen WC, Shen WC. Vesical calculus caused by migrant intrauterine device. *Am J Roentgenol* 1999;173: 504-5.
 21. El-Diasty TA, Shokeir AA, al-Gharib MS, Sherif LS, Shamaa MA. Bladder stone: A complication of intravesical migration of Lippes loop. *Scan J Urol Nephrol* 1993;27:279-80.
 22. Güvel S, Tekin MI, Kiliç F, Peskircioglu L, Ozkardes H. Bladder stone around a migrated and missed intrauterine contraceptive device. *Int J Urol* 2001;8:78-9.
 23. Nanda S, Rathee S. Three intrauterine contraceptive devices in a single uterus. *Trop Doct* 1992; 22: 33-4.
 24. Kiilholma P, Makinen J, Maenpaa J. Perforation of the uterus following IUD insertion in the puerperium. *Advan Contracep* 1990; 6:57-61.
 25. Heartwell S, Schlesselman S. Risk of uterine perforation among users of intrauterine devices. *Obstet Gynecol J* 1983; 61: 31-6.
 26. Treisser A, Colau JC. Causes, diagnosis and treatment of uterine perforations by intrauterine devices. *J Gynecol ObstetBiol Reprod* 1978; 7: 837-47

Address for Correspondence:**Dr. Khalid Farouk**

H-No.22, Street No.119,

G-11/4, Islamabad – Pakistan

E-mail: khalidfarouk@hotmail.com