

Value of Using Urology Accessories of Biorad Medisys

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ABSTRACT

The main objective of this literature is to intercept the use of value added Urology disposables. There are well-described literatures available on Catheter and Guidewire associated urinary tract infection. Hence this paper is to emphasize the importance of using quality driven urology disposables.

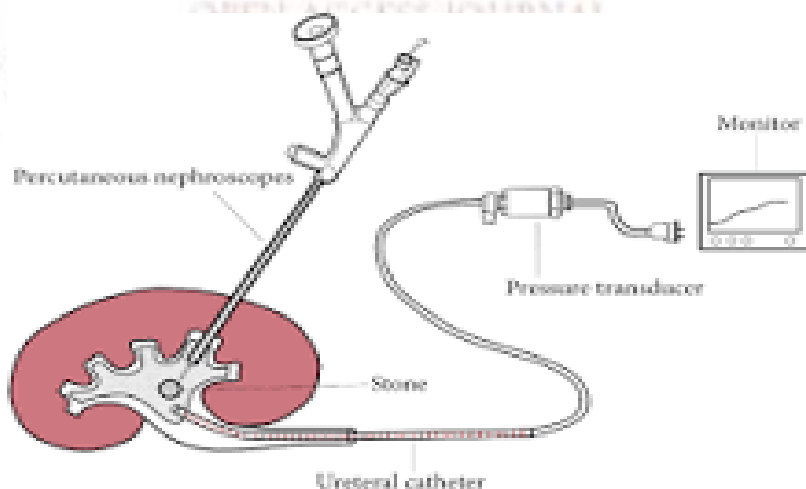
URETERAL CATHETER

Background

Ureteral catheter is one of the surgical instruments commonly used in surgery. We aimed to explore the innovative use of a ureteral catheter in the surgery of obstructive uropathy. Ureteral catheter is a long, small gauge catheter mainly used for drainage, retrograde pyelogram, atraumatic entry of Ureteral orifice and navigation of tortuous ureter. Open end tip allows placement over a guidewire for negotiation of a looped or stenotic (tortuous) ureter.

A catheter (pictured) is a soft, flexible tube that is passed through your urethra (waterpipe) into your bladder to drain urine

A catheter is passed through the lower abdomen instead of the urethra. This is called a suprapubic catheter. Urinary catheters are used to drain the bladder. It is used for Urinary incontinence (leaking urine or being unable to control when you urinate) Urinary retention (being unable to empty your bladder when you need to).



Keywords

CAUTI (Catheter-associated urinary tract infections), Guide wire, Indwelling catheterization, Intermittent catheterization, Ureteral catheter,

GUIDE WIRE

A Guidewire picture below Guidewire is a thin, flexible wire that can be inserted into a confined or tortuous space to act as a guide for subsequent insertion of a catheter / stents / dilators.

Guidewire is a device used to facilitate the placement of endourological instruments during diagnostic or treatment procedures.



BACKGROUND

List of surgeries performed with Bioradmedisys medical devices (Ureter Cather and Guidewire)

S. No.	Name of Surgery	No. of Patients
1.	AMS artificial urinary sphincter	2
2.	Bilateral Stenting DJ With TRUS Guided Prostate Biopsy	1
3.	BMG urethroplasty	1
4.	D J Stenting	3
5.	Dorsal Onlay BMG Urethroplasty (Kulkarni technique)	1
6.	Double face Urethroplasty	1
7.	Lap Uretero Ureterostomy	2
8.	Laparoscopic Boari Flap	3
9.	Left rpg + Laparoscopic left (BMG)ureteroplasty	1
10.	Nephrectomy	2
11.	Pedicled prepucial tube Urethroplasty	1
12.	Pelvic flap for upper ureteric stricture	1
13.	Penile Prosthesis-2 Piece	1
14.	PerCutaneous Aspiration Of Abscess	1
15.	Per Cutaneous Nephrostomy	1
16.	Percutaneous Nephrolithotomy	1
17.	Pyeloplasty	1
18.	Retrograde intrarenal surgery (RIRS)	2
19.	Retrograde Pyelogram	1
20.	Robotic radical prostatectomy	3
21.	Robotic ureteric reimplantation/BMG Ureteroplasty	3
22.	Robotic uretero-calicostomy	1
23.	Stenting	3
24.	Step 3 Anastomotic Urethroplasty	1
25.	Transpubic Urethroplasty	1
26.	Transurethral resection of the prostate (TURP)	1
27.	Ureteroscopy	4
28.	Ureteroscopy (URS) Left side with DJ Stenting	1

29.	Ureteroscopy (URS) right urs + DJ Stenting	1
30.	Ureteroscopy Laser	1
31.	Urethroplasty	6
32.	Urethroplasty – Anastomotic	2
33.	URS with cystolitholapaxy	3

GUIDEWIRE AND CATHETER-ASSOCIATED URINARY TRACT INFECTIONS

Catheter-associated urinary tract infections (CAUTI) are a common complication of indwelling urinary catheters and have been associated with increased morbidity, mortality, hospital cost, and length of stay (Gould et al., 2009). Urinary drainage systems are often reservoirs for multidrug-resistant organisms (MDROs) and a source of the transmission of microorganisms to other patients (Gould et al., 2009). The most important risk factor for developing a CAUTI, a health care associated infection (HAI), is the prolonged use of a urinary catheter (Centers for Disease Control and Prevention [CDC], 2015). Urinary tract infections (UTIs) are the most commonly reported HAIs in acute care hospitals and account for more than 30% of all reported infections (Gould et al., 2009). Catheters in place for more than a few days place the patient at risk for a CAUTI. A health care provider must assess patients for signs and symptoms of CAUTIs and report immediately to the primary health care provider. Signs and symptoms of a CAUTI include:

- Fever, chills
- Lethargy
- Lower abdominal pain
- Back or flank pain
- Urgency, frequency of urination
- Painful urination
- Hematuria
- Change in mental status (confusion, delirium, or agitation), most commonly seen in older adults

The following are practices for preventing CAUTIs (Perry et al., 2014):

- Insert urinary catheters using sterile technique.
- Only insert indwelling catheters when essential, and remove as soon as possible.
- Use the narrowest tube size (gauge) possible.
- Provide daily cleansing of the urethral meatus with soap and water or perineal cleanser, following agency policy.
- Ensure a closed drainage system.
- Ensure that no kinks or blockages occur in the tubing.
- Secure the catheter tube to prevent urethral damage.
- Avoid use of antiseptic solutions on the urethral meatus and/or in the urinary bag.

URINARY CATHETERIZATION

Urinary catheterization refers to the insertion of a catheter tube through the urethra and into the bladder to drain urine. Although not a particularly complex skill, urethral catheterization can be difficult to master. Both male and female catheterizations present unique challenges.

Having adequate lighting and visualization is helpful, but does not ensure entrance of the catheter into the female urethra. It is not uncommon for the catheter to enter the vagina. Leaving the catheter in the vagina can assist in the correct insertion of a new catheter into the urethra, but you must remember to remove the one in the vagina.

For some women, the supine lithotomy position can be very uncomfortable or even dangerous. For example, patients in the last trimester of pregnancy may faint with decreased blood supply to the fetus in this position. Patients with arthritis of the knees and hips may also find this position extremely uncomfortable. Catheterization may also be accomplished with the patient in the lateral to Sims position (three-quarters prone).

The male urinary sphincter may also be difficult to pass, particularly for older men with prostatic hypertrophy.

There are two types of urethral catheterization: intermittent and indwelling.

Intermittent catheterization (single-lumen catheter) is used for:

- Immediate relief of urinary retention
- Long-term management of incompetent bladder
- Obtaining a sterile urine specimen
- Assessing residual urine in the bladder after voiding (if a bladder scanner is not available)

Indwelling catheterization (double- or triple-lumen catheter) is used for:

- Promoting urinary elimination
- Measuring accurate urine output
- Preventing skin breakdown
- Facilitating wound management
- Allowing surgical repair of urethra, bladder, or surrounding structures
- Instilling irrigation fluids or medications
- Assessing abdominal/pelvic pain
- Investigating conditions of the genitourinary system

The steps for inserting an intermittent or an indwelling catheter are the same, except that the indwelling catheter requires a closed drainage system and inflation of a balloon to keep the catheter in place. Indwelling catheters may have two or three lumens (double or triple lumens). Double-lumen catheters comprise one lumen for draining the urine and a second lumen for inflating a balloon that keeps the catheter in place. Triple-lumen catheters are used for continuous bladder irrigation and for instilling medications into the bladder; the additional lumen delivers the irrigation fluid into the bladder.

Indwelling urinary catheters are made of latex or silicone. Intermittent catheters may be made of rubber or polyvinyl chloride (PVC), making them softer and more flexible than indwelling catheters (Perry et al., 2014). The size of a urinary catheter is based on the French (Fr) scale, which reflects the internal diameter of the tube. Recommended catheter size is 12 to 16 Fr for females, and 14 to 16 Fr for males. Smaller sizes are used for infants and children. The balloon size also varies with catheters: smaller for children (3 ml) and larger for continuous bladder irrigation (30 ml). The size of the catheter is usually printed on the side of the catheter port.

An indwelling catheter is attached to a drainage bag to allow for unrestricted flow of urine. Make sure that the urinary bag hangs below the level of the patient's bladder so that urine flows out of the bladder. The bag should not touch the floor, and the patient should carry the bag below the level of the bladder when ambulating.

Case 1

This 72-year-old male patient has a medical history that includes a laparoscopic cholecystectomy in 2008 and laparoscopic repair of a right inguinal hernia eight years ago. On 15/5/23, he underwent laparoscopic radical prostatectomy. Subsequent to the surgery, he experienced ureteric issues, leading to DJ stenting on 21/07/2023. On 05/08/2023, the patient had a post-radical prostatectomy and right ureteric calculus with a right DJ stent in situ. Additionally, on 09/08/2023, a right ureteric calculus with a stent in situ was noted. Several surgical interventions have been performed, including laparoscopic cholecystectomy (2008), laparoscopic repair of a right inguinal hernia (8 years ago), laparoscopic radical prostatectomy (15/5/23), DJ stenting (21/07/2023), ureteroscopy with laser (17/08/2023), and stent removal on the right side (18/09/2023).

Case 2

On 06/11/2023, the patient, a 41-year-old male, was diagnosed with a left ureteric stricture. Subsequently, on 07/11/2023, a robotic left buccal mucosal graft (BMG) ureteroplasty was performed. The Foley catheter was removed on 14/11/2023, and the patient was scheduled for a follow-up on 27/12/2023. During this follow-up, on 27/12/2023, the DJ stent was successfully removed.

Case 3

On 07/07/2023, a Retrograde Pyelogram was conducted for a 51-year-old female. On 26/07/2023, an asymptomatic urinary tract infection was diagnosed, and conservative management was initiated. Subsequently, on 03/08/2023, the left-sided stent was successfully removed. No significant issues were noted during this period.

Case 4

The patient, a 70-year-old male with a history of URS in 2005, presented with recurrent UTIs over the past six months. Upon evaluation, a right PUA calculus measuring 26 mm was identified, accompanied by a significant decline in right kidney function to 8%. To address these issues, a PCNL (Percutaneous Nephrolithotomy) procedure was performed on 22/07/2023. Subsequently, the patient is scheduled for DJ stent removal following the successful intervention on 21/08/2023.

Case 5

The patient, a 23-year-old male, initially presented with chronic headaches. Following evaluation, left PUJO (Pelviureteric Junction Obstruction) was diagnosed, leading to a Pyeloplasty procedure on 27/07/2023. Post-operative assessment was conducted on 16/08/2023, and the patient is scheduled for DJ stent removal on 11/09/2023.

Case 6

The 32-year-old male patient underwent endoscopic surgery on 22/08/2023 to address a left ureteric stone and left upper ureteric stricture. Following a detailed pre-surgery history assessment on 23/08/2023, a pelvic flap procedure for the upper ureteric stricture was performed on 06/10/2023. Subsequently, on 07/10/2023, the patient underwent DJ stent removal.

Case 7

The 64-year-old male patient, with a history of PCNL in the past, presented on 28/09/2023 with left PUJ and upper ureter narrowing. Stenting was initiated on 02/10/2023, but on 17/10/2023, left PUJ obstruction was diagnosed. Pre-surgery history on 25/10/2023 revealed the decision for a robotic uretero - calicostomy performed on 06/11/2023. A follow-up case was recorded on 06/12/2023, indicating the continued management with a left DJ in situ. This detailed overview emphasizes the multi-step approach to address urological complications, with an emphasis on ongoing follow-up care for the patient.

Case 8

The 32-year-old female patient was diagnosed with a right lower ureteric stricture on 27/10/2023. A Laparoscopic Boari Flap procedure was conducted on 31/10/2023 to address the stricture. Follow-up on 22/11/2023 indicated ongoing postoperative care. On 16/12/2023, the patient underwent both DJ removal and stent removal on the right side. This comprehensive approach to urological intervention and follow-up underscores the tailored management of the patient's condition.

Case 9

The patient a 54-year-old male presented on 01/11/2023 with acute retention due to a urethral calculus. Subsequently, on 02/11/2023, URS with cystolitholapaxy was performed. Follow-up on 01/12/2023 involved postoperative care, noting the occurrence of postoperative bacteriemia. A scheduled right check URS is planned for 17/12/2023, and on 19/12/2023, a URS check with DJ stenting will be conducted.

Case 10

Prior to surgery, on 11/07/2023, the 69-year-old male patient underwent RIRS. On 26/07/2023, a procedure related to phimosis was performed. Scheduled for DJ removal on 04/10/2023, followed by a postoperative assessment on 13/11/2023. The patient's urological history includes these events, and ongoing monitoring and care are being provided.

Discussion:

The goals of a physician should be to promote, to preserve, and to restore health when it is impaired. These goals come to life in the term "prevention," and urology disposables associated complications can also be prevented by the judicious use of indwelling catheter and Guidewires .

Conclusion:

Based on the above various case reports , number of surgeries performed using the urology disposal products (Ureteral Catheters and Guidewires)manufactured by Biorad medisys, it is concluded that the Ureteral catheters and Guidewires manufactured by Biorad medisys is safe and well tolerated to be used in all the patients.

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