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Use of Guidewires of BioradMedisys in Urology

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Abstract
Guidewires are commonly used in clinical practice over a wide range of specialities.Their use has become more popular as a result of advances in endourology and Guidewire of Biorad Medisys 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. It is used to facilitate the placement of endourological instruments during diagnostic or treatment procedures. This case study discussed about the use of Biorad Medisys guide wire in various Urological procedures

Keywords: Aureteroscopy (URS), Buccal Mucosal Graft (BMG), Transurethral Resection of the Prostate (TURP), Urethroplasty,

Introduction

Guidewires play a vital role in most specialities across the board of the medical profesion from cardiology most commonly, to anesthetics, Urology and interventional Radiology. An ideal guidewire should have a minimal side-effect profile.

Guidewires have been used In different conditions in Urology like insertion of ureteris stents, insertion of urinary catheters and in operative procedures involving the use of gudewires extend from obtaining retrograde access for Ureterorenoscopy and in Ureteral stenting etc.,

The use of guide wires in modern day urology is essential**.** They constitute, in fact, the foundation of the entire study of endourology. There are numerous varieties of guide wires on the market that have been

developed. Every guide wire is engineered with distinct structural characteristics to achieve particular objectives. The below mentioned case reports explains regarding the useage of Biorad Medisys Guidewire in various Urological procedures for different clinical conditions with different age group peoples.

Case 1

The 30-year-old female patient has been on suprapubic catheter (SPC) care for a duration of two years. On 19th April 2022, the individual was diagnosed with genitourinary tuberculosis and tested positive for anti-neutrophil cytoplasmic antibodies (ANCA). A cystoscopy was performed on 22nd April 2022 for diagnostic purposes, revealing urethral loss attributed to Wegener's Granulomatosis. Subsequently, on 28th May 2022, a neo-urethral wall reconstruction took place, followed by postoperative care on 4th June 2022. On 9th July 2022, a martius flap procedure was conducted. However, on 23rd November 2022, the patient experienced urethrovaginal fistula, leading to repair procedures. Furthermore, on 17th December 2022, the patient developed vesical calculi, necessitating a cystolithalopaxy. A diagnostic cystoscopy was performed on 26th May 2023, and on 19th October 2023, the patient reported incontinence issues. Pre-surgery, on 20th October 2023, an AMS artificial urinary sphincter was recommended, and the procedure was carried out on 22nd December 2023.

Case 2

The 52-year-old male patient experienced iatrogenic stricture following stone surgery, leading to a failed buccal mucosal graft (BMG) urethroplasty in 2012. The urethra remained open in 2015, necessitating continuous intermittent catheterization since then. An angioplasty was performed in 2020, and endoscopic dilatation was done in 2021. On 15th November 2022, a urethral stricture was identified, prompting a Stage 2 urethroplasty on 18th November 2022. Subsequent BMG urethroplasty took place on 24th November 2022, followed by postoperative care on 2nd December 2022 and further urethroplasty on 9th December 2022. Unfortunately, on 22nd December 2022, the patient encountered issues. A DVIU (Direct Visual Internal Urethrotomy) was performed on 1st July 2023. However, on 25th October 2023, a recurrent stricture in the urethra was identified, specifically a proximal bulbar stricture on 27th October 2023. Pre-surgery, on 28th October 2023, a double-face urethroplasty was planned. The catheter became blocked on 3rd November 2023, with postoperative care provided on 27th November 2023.

Case 3

The 67-year-old male patient underwent angioplasty in May 2022 and is currently on Ecosprin and Brilinta 60. On 10th March 2023, a urethral stricture was identified. Subsequently, on 4th October 2023, the patient underwent urethroplasty, followed by postoperative care on 1st November 2023.

Case 4

The 51-year-old male patient, experienced a bulbar urethral stricture diagnosed on 26th May 2023. Subsequently, a buccal mucosal graft (BMG) urethroplasty was performed on 27th May 2023.However, on 12th August 2023, the patient underwent an evaluation for lower urinary tract symptoms (LUTS). Unfortunately, on 11th October 2023, a recurrent stricture was identified. Follow-up care was provided on 9th November 2023.

Case 5

The 22-year-old male patient has a history of two urethroplasties and two visual internal urethrotomies (VIU) in the past. On 29th June 2023, a redo perineal fistula urethroplasty (PFUI) was performed, followed by Step 3 anastomotic urethroplasty on 1st July 2023. Postoperative follow-up took place on 6th August 2023. Subsequently, on 7th September 2023, a re-redo urethroplasty was undertaken for suprapubic catheter (SPC) removal. A follow-up case was documented on 2nd October 2023. On 16th November 2023, another urethroplasty, specifically an anastomotic procedure, was conducted, with postoperative care documented on 19th December 2023.

Case 6

The 38-year-old male patient underwent aurethroplasty two years ago and optical internal urethrotomy (OIU) two months ago. On 10th August 2023, a urethral stricture was identified, and on 30th August 2023, a recurrent stricture was noted. Pre-surgery, on 31st August 2023, an anastomotic urethroplasty was performed. Subsequently, on 30th October 2023, a pedicledpreputial tube urethroplasty was conducted.

Case 7

The 64-year-old male patient has a history of percutaneous nephrolithotomy (PCNL) in the past. On 28th September 2023, he experienced left pelvi-ureteric junction (PUJ) and upper ureter narrowing. Stenting was performed on 2nd October 2023. There is a mention of an event on 17th October 2023. Pre-surgery, on 25th October 2023, a robotic uretero-calicostomy was conducted. Follow-up care was provided on 6th November 2023. On 6th December 2023, the left double-J (DJ) stent was left in situ.

Case 8

On 4th October 2023, the 48-year-old male patient underwent a perineal fistula urethroplasty (PFUI) along with recurrent stricture urethra. Additionally, on the same date, another PFUI was performed for a pan-urethral stricture. The following day, on 5th October 2023, a Step 3 anastomotic urethroplasty was carried out.

Case 9

The 27-year-old male patient, with a history of similar complaints in the past, opted for medical management. On 4th October 2023, he experienced left ureteric colic, leading to aureteroscopy (URS) on 5th October 2023. Follow-up care for the left URS with double-J (DJ) stenting occurred on 10th October 2023. On 4th November 2023, a postoperative case was documented, including the removal of the stent on the left side on the same date.

Case 10

On 6th October 2023, the 41-year-old male patient underwent an evaluation for right hydronephrosis and hydroureter. Simultaneously, on the same date, a right vesico-ureteric junction (VUJ) calculus and urethral calculus were identified. On the following day, 7th October 2023, aureteroscopy (URS) was performed.

Case 11
On 7th October 2023, the 41-year-old male patient was diagnosed with left renal cell carcinoma (RCC). Subsequently, on 10th October 2023, a left partial nephrectomy was performed using robotic assistance. On 4th December 2023, a follow-up for left cystic RCC was conducted, and on the same date, the double-J (DJ) stent was removed.

Case 12
On 10th November 2023, the 72-year-old male patient was diagnosed with BalanitisXeroticaObliterans (BXO) and a panurethral stricture. The following day, on 11th November 2023, aurethroplasty was performed to address the condition. Postoperative care for the urethroplasty was conducted on 17th November 2023.

Case 13
On 10th October 2023, the 19-year-old male patient presented with right ureteric calculus. The following day, on 11th October 2023, aureteroscopy (URS) was performed. On 7th November 2023, a right ureteroscopy operation was carried out, and concurrently, the double-J (DJ) stent was removed on the same date.

Case 14
On 18th October 2023, the 17-year-old male patient was diagnosed with a bulbar stricture. The following day, on 19th October 2023, another instance of bulbar stricture was identified. On 22nd October 2023, a pan-urethral buccal mucosal graft (BMG) urethroplasty was performed to address the condition.

Case 15
On 27th October 2023, the 32-year-old female patient was diagnosed with a right lower ureteric stricture. To address this, on 31st October 2023, a laparoscopic Boari flap procedure was performed. Subsequent follow-up care occurred on 22nd November 2023. On 16th December 2023, the patient returned for the removal of the double-J (DJ) stent, specifically on the right side. Additionally, on the same date, the stent on the right side was removed.

Case 16
On 28th October 2023, the 59-year-old male patient was diagnosed with abdominal prostatic enlargement. Subsequently, on 31st October 2023, a Transurethral Resection of the Prostate (TURP) procedure was performed. Postoperative care was provided on 30th November 2023.

Case 17
On 6th November 2023, the 41-year-old male patient was diagnosed with a left ureteric stricture. Subsequently, on 7th November 2023, a robotic left buccal mucosal graft (BMG) ureteroplasty was performed. On 14th November 2023, the Foley catheter was removed. Follow-up care was conducted on 27th December 2023, during which the double-J (DJ) stent was also removed.

Case 18

On 6th November 2023, the 65-year-old male patient experienced a post-Transurethral Resection of the Prostate (TURP) stricture. Subsequently, on 17th November 2023, a urethral stricture was identified, leading to aurethroplasty with a spiral graft on 18th November 2023. Postoperative care for the urethroplasty was provided on 16th December 2023.

Discussion

One fascinating and developing aspect of clinical practice is the use of guidewires. They are utilized every day for a growing number of clinical operations all over the world, each with potential drawbacks of its own. The development of guidewires has significantly improved clinical practice in the field of urology and facilitated ureteral procedures, particularly suprapubic and proplematic urethral catheterization. Because guidewires are used in so many clinical settings, there will inevitably be legal cases involving their use, something that cautious clinicians may choose to avoid[1].

Recently, guidewires have beed used for the insertion of suprapubic catheters. For example, with the new Mediplus™ suprapubic catheter kit, a guidewire is introduced into the bladder initially through a needle that punctures the bladder in the midline 1-2 finger breadths above the symphysis pubis. The needle is then removed leaving the guidewire in place. Subsequently, the tract is dilated using dilators that pass over the guidewire. Later, a trocar is introduced over the guidewire which is then removed leaving the trocar inside the bladder.Finally a specially designed urethral catheter is passed into the bladder and the ballon is inflated to leave it in place. This new suprapubic system has the theoretical advantage of decreasing the risks of bladder injury that are associated with the blind technique[2].

One of the primary treatments that urology doctors perform in our own setting for urine retention and unsuccessful catheterization attempts is suprapubic catheterization. A retrospective study conducted in Ahmadu Bello University Teaching Hospital have reported that urinary retention was the most common urological emergency noted over a 6-year period, 352 out of 681 urological emergencies and 41.9% of the patients proceeded to have suprapubic catheter (SPC) following failed urethral catheterization. Several different approaches have been described by literature to achieve transurethral catheterization for patients with DUC; however, many of the basic requirements to achieve this are not readily available to us or expensive to procure[3].

Although the practice of open suprapubic catheterization has given way to percutaneous suprapubic catheterization, either with or without image guidance, our patients remain apprehensive and reluctant about the procedure. They typically prefer catheter placement per urethra, and an SPC may not be appropriate in cases where hematuria and suspected bladder cancer are present[4].

Guidewire assisted cystoscopy has been performed with 32 patients with 16 months follow up. Out of 32 patients 13 had more than 4 dilations under anesthesia Twelve patients had undergone CIC postoperatively. No false passage or sepsis occurred with this approach. The study concludes that guide wire-assisted urethral dilatation helps avoid risks associated with blind dilatation techniques and appears to be a safe and simple alternative for management of urethral strictures in Pediatric Urology[5].

Buccal mucosa graft (BMG) has become an ideal urethral substitute because of ease of harvest, surgical handling characteristics, hairlessness, compatibility in a wet environment, and its early ingrowth and graft survival. Because of these unique characteristics, buccal mucosa has endeared itself to the realm of reconstructive urology. Standard bulbar urethroplasties using buccal grafts should have a lifetime success rate approaching 92%[6,7)].

Initially, endoscopically-performed urethrotomy was the primary management for urethral strictures, by incising the present scar tissue to increase the width of the urethral lumen which will allow secondary intention healing. Nevertheless, many reports found high recurrence rates among patients managed with this procedure, reaching up to 60% [8,9].

In later Urethroplasty is found to be the definitive management option for urethral strictures and has success rates ranging from 80% to 90%, depending on the complexity of the repairs done[10].

Conclusion

From the results of the case reports it was concluded that Guide wire–assisted urological procedures were found to be more safe and effective in supporting various urological procedures. Hence it is recommended using Guidewire of Biorad Medisys with close monitoring and follow-up for may help to avert problems in users.

Conflict of interest: The authors declare no conflict of interest.

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