

False Passage Urethral Anastomosis- an Avoidable Surgical Mishap- A Painful Story of Two Patients who suffered for More than a Decade

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Citation: Vaddi SP, Khetavath SM, Reddy KRVR, Prasad MD (2020) False Passage Urethral Anastomosis-an Avoidable Surgical Mishap-A Painful Story of Two Patients who suffered for More than a Decade. J Urol Ren Dis 05: 1208. DOI: 10.29011/2575-7903.001208

Received Date: 22 December, 2020; **Accepted Date:** 27 December, 2020; **Published Date:** 31 December, 2020

Abstract

Objective: To reiterate the importance of antegrade cystoscopy to confirm the bladder neck and posterior urethra during anastomotic urethroplasty for Pelvic Fracture Urethral Injury (PFUI) cases.

Patients & Methods:

Case 1: 32 year male with a PFUI following a Road Traffic Accident (RTA) 17 years ago underwent urethroplasty twice and he was on regular urethral dilatations. Patient was referred to us for further management. On evaluation the distal urethra was anastomosed to false passage.

Case 2: 42 year male with history of RTA and PFUI 12 years ago, which was operated 8 times (3 times urethroplasty, 3 times optical internal urethrotomy and Urethral stent placement twice) and presented to us with recurrent infections and poor stream. On evaluation false passage anastomosis was found.

Results: Progressive perineal urethroplasty was done for case 1, and combined abdomino-perineal urethroplasty was done for the case 2. Both patients recovered well and are catheter free. Patients are on follow Up Since 1 Year and Voiding Well.

Conclusion: False passage anastomosis to urethra is definitely an avoidable surgical mishap. Failing to do antegrade cystoscopy resulted in false passage urethral anastomosis and resulted in physical, emotional, psychological trauma to the patients for more than a decade.

Keywords: Antegrade cystoscopy; False passage, Pelvic fracture urethral injury; Urethroplasty

Abbreviations: PFUI: Pelvic Fracture Urethral Injury; RTA: Road Traffic Accident; RGU: Retrograde Urethrogram, VCUG: Voiding Cystourethrogram; SPC: Suprapubic Cystostomy; ED: Erectile Dysfunction; MRI: Magnetic Resonance Imaging

Introduction

The incidence of Posterior urethral injury in pelvic fracture cases varied from 3% to 25%, at an average of 9.9% [1,2]. The 'gold standard' treatment for Pelvic Fracture Urethral Injuries (PFUI) is bulboprosthetic anastomotic urethroplasty and has a high success rate in experienced hands [3]. If proper intraoperative precautions are not taken during end-to-end posterior urethroplasty, false passage anastomosis is a possibility and leading to surgical failure. The treatment of urethral false passage remains a major challenge for treating urologists [4]. We present painful story of two patients

who suffered for more than a decade because of false passage anastomotic Urethroplasty

Case Summary

CASE 1: A 32 year old male had PFUI following a Road Traffic Accident (RTA) 17 years ago. He was managed by Foley catheter insertion for 3 weeks. Soon after the catheter removal his flow decreased, and he was on regular metal dilatations of urethra for 2 years. Later he underwent anastomotic urethroplasty. His flow was good for few months and again slowly decreased. He was on regular metal dilatation for 15 years. Second urethroplasty was done 6 months later and the patient could not void after catheter removal. He was referred to us with SPC (suprapubic cystostomy) catheter in situ. He had nocturnal and stimulated erections. On evaluation RGU (Retrograde Urethrogram) showed cut-off at proximal bulbar urethra. On VCUG (Voiding Cystourethrogram) bladder neck was not opening during voiding (Figure 1A, 1B). On endoscopic assessment his urethra was anastomosed to false tract

created parallel to the true passage. The false tract was opening adjacent to the bladder neck. (Figure 1C,1D) (Figure 1E).

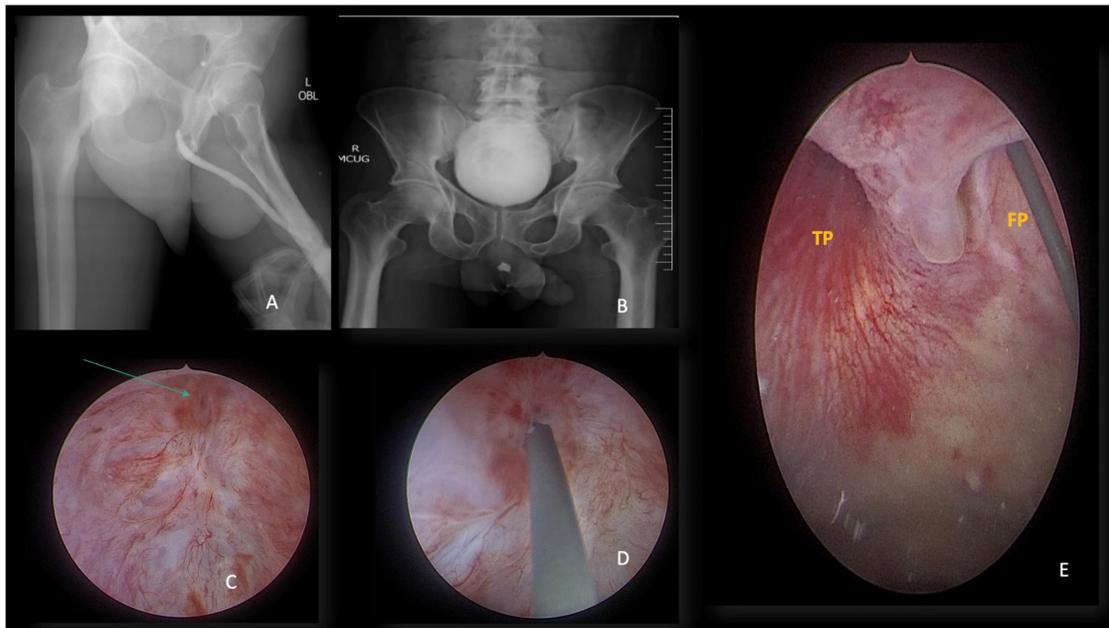


Figure 1: CASE 1 : **A)** RGU showing cut-off at proximal bulbar urethra. **B).**VCUG showing bladder neck not opening during voiding. **C).** Retrograde urethroscopy showing total obliteration with a pin hole opening(arrow) . **D).** Passage of guidewire through the opening. **E).** Antegrade cystoscopy showing the guidewire coming through the False Passage (FP),adjacent True Passage (TP) can be seen.

A redo- progressive perineal urethroplasty was done. After bulbar urethral mobilization urethra was transected at the level of total obliteration and the distal end was bleeding well. Corporal separation and deep inferior pubectomy were done. Antegrade cystoscope guided proximal urethral mobilization was done and all fibrous tissue was excised. An end to end mucosa to mucosa anastomosis was done with 4-0 polyglactin. False passage which was located ventral to true passage (Figure 2A-C) was obliterated with absorbable suture. Operating time was 4 hours. 14F silicon catheter was placed and removed 3 weeks later. Suprapubic catheter was removed after 1 week. Uroflowmetry done at postoperative month 1, and 3 showed maximum flow rate above 20ml/sec. Patient on follow up since 18 months and voiding well

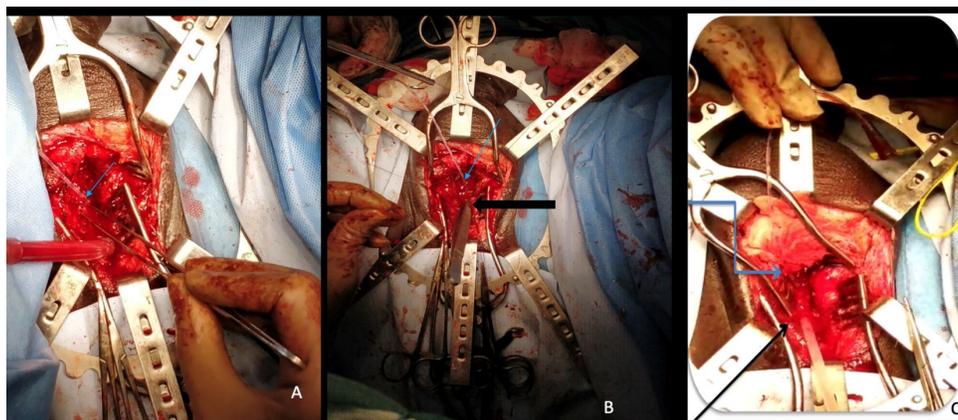


Figure 2: CASE 1: A,B,C - Illustrating true and false passage. False passage depicted in blue arrows and true passage on black arrows. False passage is located ventral to the true passage.

Case 2: A 42 year old male with PFUI following RTA 12 years ago, was operated 8 times (3 times urethroplasty, 3 times optical internal urethrotomy and Urethral stent placement twice) and was on intermittent urethral dilatation. Patient was referred to us with recurrent

infections and poor stream. Patient was married and fathered 2 children before the injury. At presentation to us patient was totally exhausted economically, physically, emotionally and he was separated from family 5 years ago. He was not sexually active and he was desperate to pass urine from his normal passage. He had occasional nocturnal erections. On evaluation with RGU and MCUG we could find a small passage parallel to Memokath (Figure 3A-C). MRI showed ill-defined contour of prostatic and bulbar urethra with urethral stent and irregular soft tissue thickening extending to anterior perineum. There were no pelvic /perineal collections/fistulas. False passage was confirmed on antegrade cystoscopy adjacent to the true bladder neck (Figure 3 D-G).

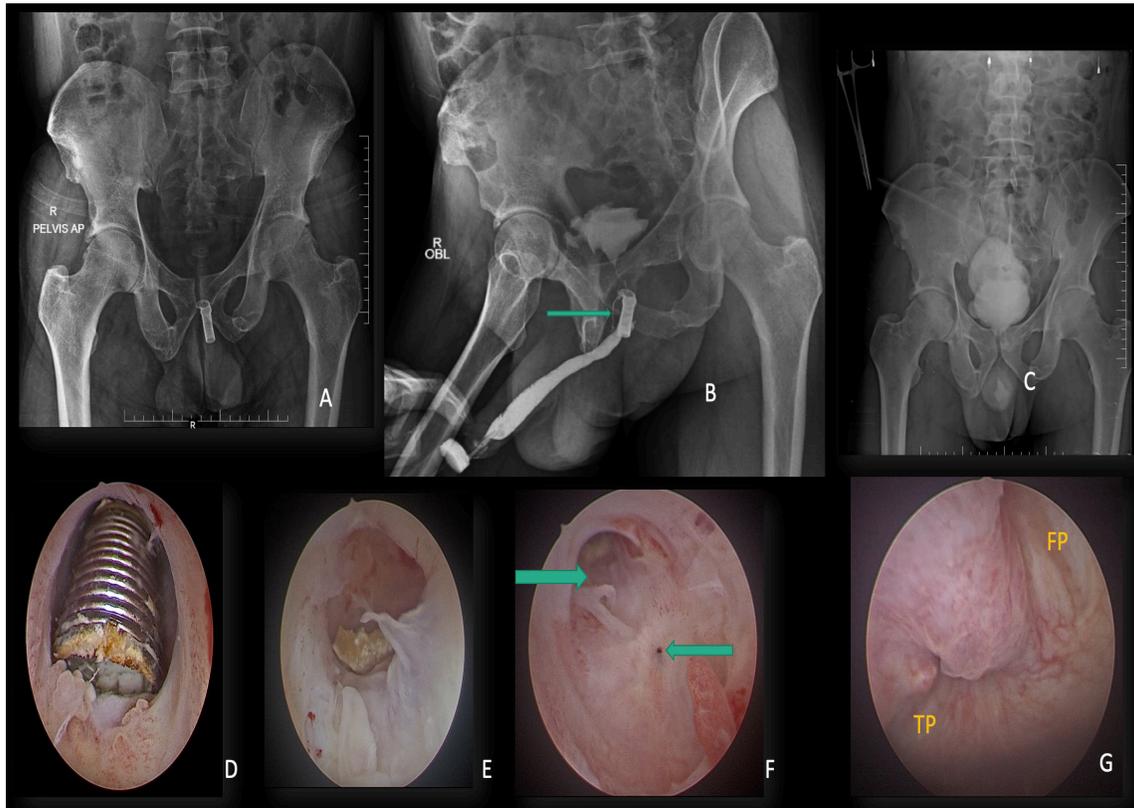


Figure 3: CASE 2 : **A).** Plain X ray KUB showing Memokath stent. **B).** RGU showing 2 passages, with thin stream of contrast entering in to irregularly outlined bladder. **C).** VCUG showing irregular bladder with right posterolateral diverticulum and poorly delineated posterior urethra. **D-F)** retrograde Urethroscopy showing Memokath at the level of proximal bulbar urethra with stone inside (**D**), passage after removing Memokath (**E**), two passages shown by arrows (**F**). **G).** antegrade cystoscopy showing True Passage (TP) and False Passage (FP).

In view of multiple interventions he we counselled for a redo urethroplasty. Distal urethra was transected at the level of total obliteration and mobilized till peno-scrotal junction (Figure 4A). In view of false passage we used rigid cystoscope to guide further dissection to identify bulbar urethra. Identifying the proximal urethra was difficult in this case even after ancillary maneuvers as described by Webster and Raman [5]. Then we proceeded with combined abdomino-perineal approach (Figure 4B). We excised segment of pubic symphysis with Gigli saw. Cystotomy was done false tract opening was seen and the false passage (Figure 4C) was dissected to identify the prostatic urethra (Figure 4D). Bulbar urethra was anastomosed to prostatic urethra. Omental wrapping was done around the abdominal segment of bulbar urethra and around the anastomosis (Figure 4E). 14 F silicon catheter was placed and suprapubic catheter continued for drainage. False passage was obliterated with absorbable suture plication. Retropubic drain was placed. Patient discharged on postoperative day five. Per urethral catheter was removed on day 21. Suprapubic catheter removed after 3 weeks. Patient voided well with peak flow rate of 18ml/sec at 1,3 months after surgery. RGU done at 3 months showing no abnormality (Figure 4F). Patient on 15 months follow up now and voiding well and extremely happy as he is voiding urine freely.

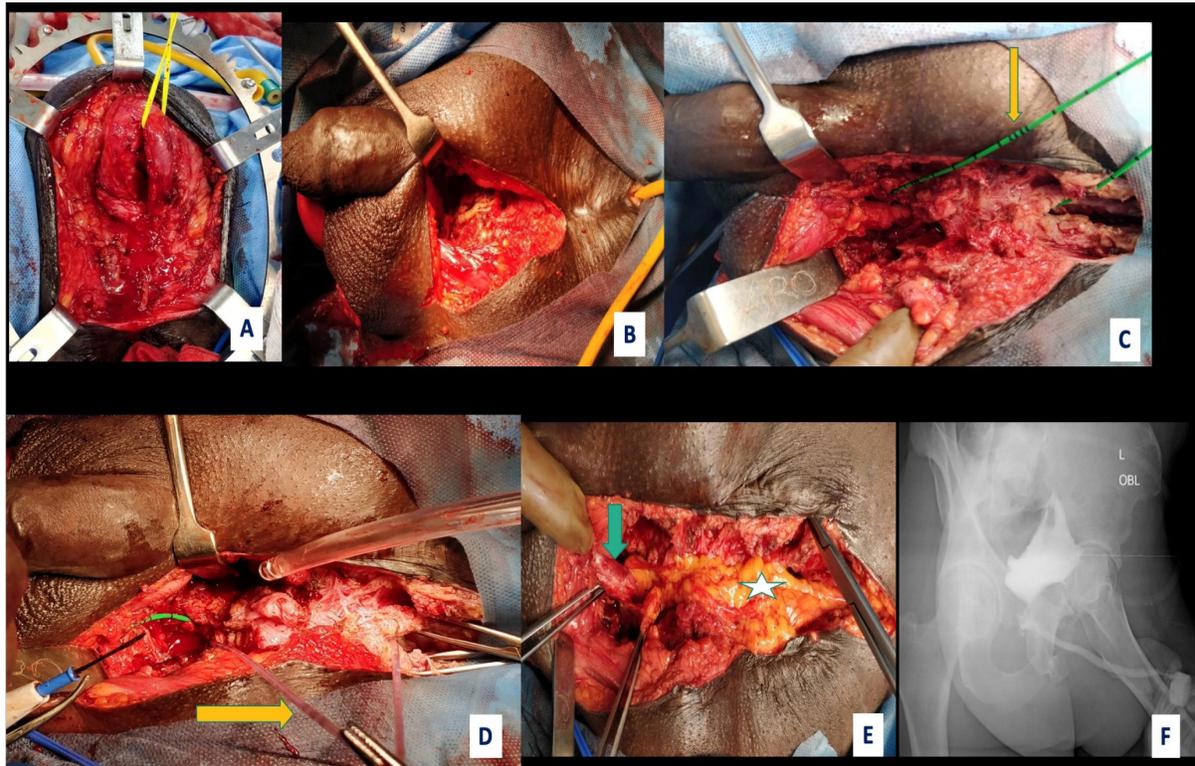


Figure 4: CASE 2 : Surgical steps showing bulbar urethral mobilization (A), Abdominal approach (B). Image (C) showing cystotomy and false passage delineation with ureteric catheter(arrow). (D). True passage (arrow). (E). Arrow showing urethra after anastomosis, Asterisk showing omental wrapping around the anastomosis. (F). postoperative RGU after 3 months showing patent urethra

Discussion

Pelvic Fracture Urethral Injury (PFUI) is a challenging problem in urology that can lead to disabling complications, including urinary incontinence and the inability to void [6]. Inherent problems in surgery for PFUI include , limited urethral length, surrounding fibrosis, and the small caliber of the bulbar urethra. Reported complications associated with anastomotic urethroplasty include urinary incontinence, Erectile Dysfunction (ED), rectal injury and false passage and recurrent stricture if not adhering to the surgical principles of urethroplasty [7-11]. False urethral passage refers to an abnormal communication between the urethra and the bladder. Blind usage of antegrade sound to identify proximal urethra may lead to false passage anastomosis as the sound may advance through false passage instead of prostatic urethra. Instrumentation can enter the bladder during catheterization or urethral dilatation via the false passage as it is connected to bladder and urethra. False passage can lead to recurrent infections, promote scar formation around the urethra, and increase the severity of strictures [10,12].

Usually the false passage can be diagnosed on urethrography(RGU and MCUG) [13]and MRI(Magnetic resonance imaging) [14] by detecting two parallel tracts but

discrimination between true passage and false passage may not be possible always on imaging. In such cases a correct anastomotic repair can be made by using suprapubic cysto-urethroscopy to recognize the prostatic urethra by identifying the verumontanum and bladder neck as guide[15]. Normal bladder neck is funnel shaped ,smooth ,more elastic ,and soft whereas false passage is vertically oriented with the bladder, pale mucosa as compared to normal, presence of rough granulation tissue, and circular stiff scar [16]. Both the above mentioned cases are complex PFUI cases as they are re redo-urethroplasty cases with false passage. [17,18] Following certain surgical principles could avoid complications during urethroplasty for PFUI cases.

Principles for Successful Bulboprostatic Urethroplasty

- Proper preoperative assessment with RGU and MCUG and utilizing MRI pelvis whenever needed [13,14].
- Delayed urethroplasty after 4-6 months depending on the severity of injury [10,11].
- Avoiding exaggerated lithotomy, and limiting the surgery for less than 5 hours, and adequate gel padding of lower limbs to avoid neuropraxia, rhabdomyolysis and even acute renal failure [19-21].

- Arrange required instruments well before surgery to decrease intraoperative waiting time.
 - Endoscopic assessment by antegrade and retrograde cystourethroscopy by rigid/flexible cystoscope [15].
 - Excising all the scarred, fibrotic tissue around obliterated end of proximal urethra [8,10].
 - Use cystotomy whenever in doubt to delineate bladder neck and urethra [22].
 - Inserting finger into the rectum while dissecting bulbar urethra from perineal body helps to guide in excising the scar tissue, avoids rectal injury [16].
 - Avoid lateral dissection around urethra to avoid neurovascular injury
 - Use ancillary maneuvers (corporal splitting, inferior pubectomy and supracrural urethral rerouting) described by Webster and Raman as the dissection is progressing [5].
 - Preserve at least one bulbar artery [23].
 - Use Hossieine technique in difficult cases to delineate obliterated end of posterior urethra [12].
 - Use wide inferior pubectomy before proceeding for trans pubic approach in difficult situations [24].
 - Preserve deep dorsal vessels and nerves whenever possible during inferior pubectomy and excision of fibrous scar around urethra [25].
 - Perform abdominoperineal approach when elaborated perineal procedure failed to delineate proximal urethral end [26,27].
 - Double check prostatic urethra, and bladder neck antegradely and retrogradely before anastomosis [12].
 - Confirm prostatic urethra by identifying verumontanum [12].
 - Avoid electrocautery whenever possible [24].
 - After identification of prostatic mucosa fix the mucosa to underlying prostatic edge as it has the tendency to retract and results in mucosal narrowing at anastomotic site [24].
 - Avoid spatulation of membranous urethra as it contain the sphincter [18].
 - Mucosa to mucosa, spatulated, anastomosis with absorbable suture [24].
 - When anastomosis is under tension use bulbar urethral fixation sutures to perineal fascia [8].
 - In case of trans pubic approach use omental wrapping to obliterate dead space and to decrease inflammatory response and infections, it will also facilitate urodynamic movement of bladder neck [10].
 - To have sufficient expertise to deal with any on table complication or additional complex procedures [28].
 - Following “Gold triad” of steps of Koraitim [8] (i). Complete excision of the fibrous tissue, (ii) Lateral fixation of the healthy mucosa of the 2 urethral ends and (iii) creating a tension free anastomosis.
 - Gentle tissue handling using fine instruments, use of surgical loops whenever required and minimizing electrocautery usage around urethra [10].
 - After urethroplasty use appropriate catheters 16F in adults, 8-12F in children [8].
 - Always keep SPC at the end of the procedure [8,10].
- ### Probable Reasons for False Passage Urethroplasty In These Two Patients
- Inexperience/ over confidence of the operating surgeon to omit antegrade cystoscopy [29].
 - Blind passage of dilators through SPC tract to delineate distal opening of posterior urethra [29].
 - Misdirected repeated optical internal urethrotomy, with subsequent metal dilatations will increase the false passage larger than the true one [10,17].
- ### How To Suspect False Passage
- When the distal end of proximal urethra located more ventrally - intraoperative finding [30].
 - In imaging (RGU/MCUG or MRI) when more than one tract are present [13,14].
 - When during retrograde cystoscopy if the verumontanum and bladder trigone leading to bladder neck cannot be found [12,15].
- ### Conclusion
- False passage urethral anastomotic stricture remains a challenge for treating urologists. These two cases re-emphasize the importance of doing antegrade cystoscopy (rigid/flexible), mandatorily in every case of anastomotic urethroplasty. Failing to do so can result in surgical mishaps like in above mentioned cases which are un acceptable, and can easily be avoided . A simple cystoscopy could have prevented physical, social, emotional, psychological trauma to these patients, which is in our opinion is a definite reminder to the treating surgeons/urologists.
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