



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

International Journal of Recent Scientific Research  
Vol. 6, Issue, 4, pp.3744-3746, April, 2015

International Journal  
of Recent Scientific  
Research

## RESEARCH ARTICLE

# APPENDICULAR SUBSTITUTION IN CASE OF PARTIAL DUPLICATION OF URETER WITH LONG MIDDLE 1/3 STRICTURE URETER

Thakur N, Mane D.A, Sabale V.P, Kankalia S.K, Mulay A.R, Satav V.P, Mhaske S.M and Kadyan B

Department of Urology, Padmashree Dr. D. Y. Patil Medical College, Pimpri, Pune, Maharashtra, India

### ARTICLE INFO

#### Article History:

Received 14<sup>th</sup>, March, 2015  
Received in revised form 23<sup>th</sup>,  
March, 2015  
Accepted 13<sup>th</sup>, April, 2015  
Published online 28<sup>th</sup>,  
April, 2015

#### Key words:

Ureteric stricture,  
Appendicular  
interposition, Appendicular  
substitution  
and appendix

### ABSTRACT

#### Introduction

Ureteric stricture is reasonably common clinical problem. Short and soft strictures are easy to treat but long strictures need planned reconstruction like Boari flap, Intestinal loop or Autotransplantation. In select situation Appendix can be easy and effective substitution.

#### Case Report

38 year female presented with episodes of right flank pain and recurrent attacks of UTI. History of LSCS 8 year back and left pyelolithotomy 7 year back. Clinical examination and basic investigation were normal. Urine showed plenty of pus cells. IVU revealed right moderate hydronephrosis, partial duplication with dilated double ureters upto L-5 level. On DTPA scan right kidney had 35.7% function with obstructive pattern. Right RGP revealed long mid ureteric stricture in common stem. On exploration through right modified Gibson's incision, evidence of dense periureteric fibrosis with 8 cm stricture segment overlying sacroiliac joint and bladder was thin walled. 7cm healthy appendix with adequate diameter was interposed from dilated ureters up to bladder.

#### Discussion

Middle ureteric stricture especially right sided; can be easily substituted with live appendicular interposition, if long healthy good calibre appendix is available. It is technically easy non morbid procedure. Additional advantages are minimal electrolyte disturbances and matching lumen size. Isoperistaltic or Antiperistaltic interposition should not matter. Insitu appendicular interposition has less risk of pedicle kink.

#### Conclusion

Appendix is valuable substitute in select cases for right ureteral stricture.

**Copyright** © Thakur N *et al.*, This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

## INTRODUCTION

Ureteral strictures are not uncommon in clinical urology. Ischemia, surgical or non surgical trauma, long standing calculi, periureteral fibrosis, and malignancy are common etiologies.<sup>1</sup> Ureteric stricture can be treated through several ways. However when the defect is extensive, substitution with bladder flap, an intestinal loop or renal autotransplantation are the available options.<sup>2</sup> Appendix which is another easy and effective substitution for ureter has not been popularized, and rarely used for ureteric substitution. Melinkoff was the first to use appendix as ureteral substitute in 1912.<sup>3</sup> We report a case of using the appendix to substitute the middle part of the right ureter.

### Case History

A 38 years female, with history of lower segment Caesarean section (LSCS) 8 years back and left open pyelolithotomy 7

years back, presented with prolong history of intermittent right flank pain, documented recurrent attacks of urinary tract infection. Clinical examination was unremarkable except scars of left pyelolithotomy and LSCS. Hematological and biochemical investigations were normal and urine analysis shows significant pus cells. KUB suggestive of right renal calculus. On USGKUB, right kidney appeared to have double moiety with moderate hydronephrosis. The intravenous urogram (IVU) revealed moderate hydronephrosis on both sides (figure 1). Right kidney shows partial duplication with dilatation of both the ureters up to L-5 level (moderate hydroureter). Renal scan shows, split function 35.7% on right while 64.3% on left. Right kidney shows delayed tracer extraction. The intra renal transit was prolonged and delayed images showed tracer retention. Renogram showed obstructive pattern.

\*Corresponding author: **Thakur N**

Department of Urology, Padmashree Dr. D. Y. Patil Medical College, Pimpri, Pune, Maharashtra, India

Cystoscopic examination of the urethra and bladder was normal. Ureteric catheter or even guide wire could not be negotiated beyond lower border of sacro-iliac joint on right side, inspite of under vision attempt of ureteroscopy. Right RGP revealed a long stenotic, non distensible stricture segment in middle 1/3 of right ureter extending from upper to lower sacro-iliac joint, proximally dilated double ureters with moderate hydronephrosis in both the moieties (figure 2). Left RGP revealed residual non obstructing moderate hydronephrosis.



**Figure 1** IVU S/O partial duplication with dilatation of both the ureters upto L-5 level on right side.



**Figure 2** Right RGP revealed a long stenotic and stricture segment in middle 1/3 of right ureter with proximal dilatation.

### Technique

Retroperitoneum was explored through right modified Gibson's incision. There was evidence of long length (8 cm) ureteric stricture with dense periureteric fibrosis overlying sacroiliac joint with dilated double ureters seen proximally (figure 3). During pelvic dissection, multiple adhesions due to previous LSCS were seen and bladder was thin walled. Hence Psoas

hitch / Casati-Boari bladder-flap options were not feasible. Hence possibility of appendix was evaluated for substitution. 7 cm long, healthy appendix with adequate calibre (10 F) was seen. The tip could reach to the bladder and hence appendicular substitution was considered. Appendix mobilised keeping mesoappendix intact, along with cecal cuff to match the double dilated ureters. The diseased ureter excised and sent for his to pathological examination (figure 4). Appendix irrigated, the base of the appendix was proximally anastomosed to the double ureter and the tip to the bladder distally on a previously inserted stent in both the moieties (figure 5). The stents were removed after six weeks. histopathological report showed chronic inflammation and fibromuscular hyperplasia. No evidence of TB was found.



**Figure 3** Intraoperatively diseased ureter mobilised and hooked up



**Figure 4** Excised specimen of stricture ureter



**Figure 5** Appendix anaastomosed to bridge large ureteral defect

## Follow up

Patient was followed up after 3 months with Renal scan and IVU which were suggestive of non obstructing system.

## DISCUSSION

Ureteral stricture is commonly due to ischemia, surgical or non surgical trauma, periureteral fibrosis, malignancy, calculus, infection, etc. Proper evaluation and treatment of it, is essential to preserve the renal function.<sup>1</sup> Several pathological conditions may require large ureteral resections, which can be corrected using different surgical techniques such as psoas hitching, Casati-Boari bladder-flap, transureteroureterostomy (TUU), ileal interposition, and renal autotransplantation. Substitution for the ureter is required, when the loss of the length is significant.<sup>4</sup>

Appendix is being used as a stoma for intermittent catheterisation for the bladder or urinary reservoirs (Mitrofanoff principle) is a well established technique, but it can also be used as a substitute for ureter in various pathological conditions.<sup>4</sup>

We believe that there are various advantages of using appendix as a ureteral substitute in large gap over ileal or colic segments.

Appendiceal substitution is technically easy and it can be easily mobilised with its dependable blood supply. Due to its small mucosal surface area, urine reabsorption is negligible minimising electrolyte disturbances. The lumen of appendix corresponds to the calibre of ureter allowing anastomosis with the ureter more feasibly and securely. Appendicular substitution in isoperistaltic fashion favours urine flow with its peristalsis as suggested by some authors, but in our experience antiperistaltic substitution had no immediate or late consequences on urine flow. It rather, reduces the risk of ischemia secondary to a kink or twist in the meso appendix during its rotation when isoperistaltic interposed.<sup>4,5</sup>

### How to cite this article:

Thakur N *et al.*, Appendicular Substitution In Case Of Partial Duplication Of Ureter With Long Middle 1/3 Stricture Ureter. *International Journal of Recent Scientific Research Vol. 6, Issue, 4, pp.3744-3746, April, 2015*

In our case, the site, length of the ureteral gap and retroperitoneal fibrosis of bladder due to previous surgery, the appendix substitution had given the easy, good and the valuable option for ureteral replacement.

## CONCLUSION

Appendix is a valuable substitute in select cases for right ureteral stricture with encouraging results. We anticipate that the appendix will be more commonly used in various reconstructive surgeries and every urologist should have it in his armamentarium.

## References

1. Antonelli A, Zani D, Dotti P, Tralce L, Simeone C, Cunico SC. Use of the appendix as ureteral substitute in a patient with a single kidney affected by relapsing upper urinary tract carcinoma. *Scientific World Journal*; 2005;5:276-9.
2. Naidu V, Abdel G.E.H., Munks. D, Sharef M.A., Berezky ZB. The appendix – still a useful conduit. *S Afr J Surg*. 2006 ;44 (4): 147
3. Nakada. S.Y, Thomas H.S. Management of Upper Urinary Tract Obstruction. *Campbell-Walsh Urology*. 10<sup>th</sup> ed. Saunders;2011. p – 1149
4. Yoon. B, Hong. C.G, Kim S, Ha.U.S, Chung.J.H,<sup>1</sup> Kim.S.W.*et al.* Ureteral Substitution Using Appendix for a Ureteral Defect Caused by a Retroperitoneal Rhabdomyosarcoma in a Child. *Korean J Urol*.2014;55(1):77-79
5. Zargar MA, Mirzazadeh M, Zargar K. The appendix, an acceptable substitute for all segments of both ureters: a report of two cases. *Med J Islam Repub Iran*. 2004; 18: 177-180.

\*\*\*\*\*