

## "Psoas Hitch" Procedure

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In 51-year-old patient urothelial carcinoma of the terminal left ureter was resected transurethrally. In the next phase, a distal part of the left ureter with a "cuff" of the bladder was removed, and ipsilateral percutaneous nephrostomy introduced. Better bladder capacity was achieved by transurethral resection of the prostate, and in the last phase left-sided "psoas hitch" procedure with ureteroneocystostomy was performed.

**Key words:** "psoas hitch" procedure, ureteral tumor

### INTRODUCTION

When preparing a patient for open repair of a ureteral defect, the location and length of the defect should be carefully assessed. As tension on the anastomosis nearly always leads to stricture formation, only short defects should be managed by ureteroureterostomy. Lower third ureteral defects are best managed by ureteroneocystostomy with or without a psoas hitch or Boari flap. Preoperatively, the ureteral defect should be characterized with intravenous urography, retrograde ureteropyelography or antegrade nephrostomography. Further assessment such as a nuclear medicine renogram to evaluate renal function and ureteroscopy, ureteral barbotage or brushing to rule out carcinoma should be individualized.

### CASE REPORT

A 51-year-old man with uneventful medical history was presented with two days painless macroscopic hematuria. Digital rectal examination showed enlarged and painless prostate. Creatinine was increased (1.6 mg/dl). A urine cytology, urine culture and PCR for TB was negative. Ultrasonography revealed left-sided moderate hydronephrosis, and CT scan showed tumor of the terminal left ureter. Transurethrally resected tumor of the left ureteral ostium revealed transitional cell carcinoma. In the second hospitalization the distal part of the left ureter with a "cuff" of the bladder have been removed by the open surgery. Resected tissue was tumor-free. Left-sided percutaneous nephrostomy was performed to preserve the kidney function. Transurethral resection of prostate was done in the third hospitalization because of a small capacity of the bladder and nocturia 5-6x. One month later urinary flow was improved with the maximal peak flow of 21.1 ml/s. The patient was admitted to the hospital for the fourth time because of fever up to 38.9°C, and increased values of serum leukocytes (20.0), C-reactive protein (26.9 mg/dl) and creatinine (1.47 mg/dl). The creatinine was reduced to the normal level (1.12 mg/dl). He became afebrile by the course of systemic antibiotics (Augmentin 2x2 g/day), and after stabilisation of his overall condition, left-sided "psoas hitch" procedure with ureteroneocystostomy was performed. Intraoperative histopathology of the ureteric left stump excluded the presence of the tumor. Postoperative period was burdened by a par-

alytic ileus, but the patient recovered well and was discharged on day 12.

### DISCUSSION

The psoas hitch is an effective means to bridge a defect of the lower third of the ureter (1). Indications include distal ureteral injury, ureteral fistulas secondary to pelvic surgery, failed ureteroneocystostomy and segmental resection of a distal ureteral tumor, as in our case (2,3,4). A psoas hitch can also be used in conjunction with a transureteroureterostomy in more complicated urinary tract reconstruction. A small, contracted bladder size and mobility may not be present. Ureteral defects proximal to the pelvic brim usually require more than a simple psoas hitch alone. Urodynamic studies may provide more information regarding detrusor capacity and compliance. Bladder outlet obstruction or neurogenic dysfunction should be treated preoperatively.

A Pfannenstiel or lower midline incision is usually employed. A urethral catheter is placed and 200 ml of sterile water instilled into the bladder. The space of Retzius is developed and the bladder mobilized by freeing its peritoneal attachment and dividing the vas deferens or round ligament. With traction on the ipsilateral dome, the bladder should be able to reach superior to the iliac vessels. Additional mobility is gained by dividing the contralateral superior vesical artery. The affected ureter is identified as it crosses the iliac vessels and divided just proximal to the diseased segment. A fine stay suture is placed on the normal proximal ureter and the ureter carefully mobilized. Manual displacement of the bladder toward the ipsilateral ureter may be facilitated by an anterior cystostomy. Although a vertical or oblique cystostomy is generally used, a horizontal incision, which is then closed vertically in a Heineke-Mikulicz fashion, is advocated by some.

The ureter is delivered into the bladder at the superolateral aspect of the dome and the anastomosis performed, with or without a submucosal tunnel. The ipsilateral bladder dome is fixed to the psoas minor tendon, if present, or the psoas major muscle using several absorbable sutures. Care should be taken to avoid injury to the genitofemoral nerve when placing these sutures.

TABLE 1.

Categorization of the usual length of ureteral defect that can be bridged with various surgical techniques for ureteral reconstruction

TABLICA 1

Kategorizacija uobičajene dužine uretralnog defekta koji se može premostiti različitim kirurškim tehnikama rekonstrukcije uretera

Procedure Postupak	Length of ureteral defect (cm) Dužina uretralnog defekta (cm)
Ureteroureterostomy Ureteroureterostomija	2-3
Ureteroneocystostomy alone Samo ureteroneocistostomija	4-5
Renal autotransplantation Autotransplantacija bubrega	5-8
Ureteroneocystostomy with psoas hitch Ureteroneocistostomija psoas hitch postupkom	6-10
Ureteroneocystostomy with Boari flap Ureteroneocistostomija Boari flap postupkom	12-15

Alternatively, psoas fixation may be performed before ureteral reimplantation. A double-J stent generally is placed and bladder closure performed with absorbable sutures.

A psoas hich can provade ad additional 5 cm of length as compared with ureterocystostomy alone (table 1.). Its advantages over a Boari flap include simplicity, improved vascularity, easy of endoscopic surveillance and minimal voiding difficulties. The success rate of ureteral reimplantation with a psoas hitch is over 85% (5). The most common compliations are urinary fistula and ureteral obstruction.

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#### "PSOAS HITCH" POSTUPAK

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#### SAŽETAK

U 51-godišnjega bolesnika učinjena je transuretralna resekcija urotelijalnoga karcinoma završnoga dijela lijevoga mokraćovoda. U sljedećoj fazi odstranjen je donji dio lijevoga mokraćovoda s pripadajućim dijelom mokraćnoga mjehura te je na toj strani postavljena perkutana nefrostoma. Radi postizanja boljega kapaciteta mokraćnoga mjehura, učinjena je transuretralna resekcija prostate i u posljednjoj fazi učinjen je "psoas hitch" postupak s ureteroneocistostomijom.

**Ključne riječi:** "psoas hitch" postupak, tumor mokraćovoda