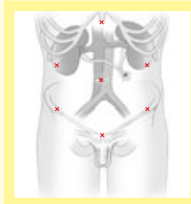


Surgery Illustrated



Surgical Atlas

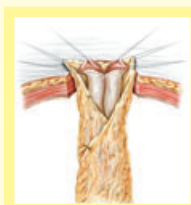
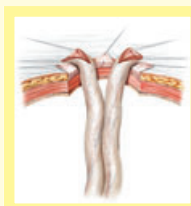
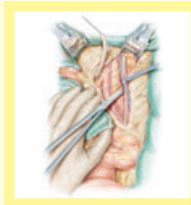
Cutaneous ureterostomy

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Accepted for publication 3 August 2005

ILLUSTRATIONS by STEPHAN SPITZER, www.spitzer-illustration.com



INTRODUCTION

Early complications after radical pelvic surgery are closely related to the type of urinary diversion. Delayed small bowel function and paralytic ileus were reported in up to 6% of >300 small bowel end-to-end anastomoses, with urinary fistula in 5.6% and digestive fistula in 2.5%, reaching a total major complication rate of 25.5% [1–3].

Ureterocutaneostomy is simple, with low morbidity and almost no mortality. It is accompanied frequently by stomal stenosis and ureteric obstruction. A modified technique, uretero-ureterocutaneostomy (UUCS) using the greater omentum, is described.

INDICATIONS, LIMITATIONS, RISKS AND CONTRAINDICATIONS

A permanent incontinent urinary diversion has been used to date only in high-risk patients with symptomatic bladder cancer, combined with palliative cystectomy. It is of limited use in obese patients and/or patients irradiated by external beam radiation, and contraindicated in patients with short ureteric stumps, poorly vascularized ureters, those torsion-free and where aspects of the stoma are questionable

PREPARATION OF THE PATIENT BEFORE SURGERY

Complete clinical staging for bladder cancer should be used to evaluate the

retroperitoneum and pelvis, along with the most common metastatic sites including the lungs, liver and bone. A chest X-ray, liver function tests and serum alkaline phosphatase assays should be obtained routinely; patients with an elevated serum alkaline phosphatase or with/with no complaints of bone pain should have a bone scan. CT of the chest is used when pulmonary metastases are suspected by history, or because of an abnormal chest X-ray. CT of the abdomen and pelvis is routine to evaluate the pelvis and retroperitoneum for any significant lymphadenopathy or local contiguous spread. This radiography should also be used in patients with suspected metastases, elevated liver functions tests, a bladder tumour associated with hydronephrosis, or in those with an extensive primary bladder tumour that is either not mobile or fixed, the results of which may affect the decision for neoadjuvant therapy. However, CT of the primary bladder is neither sensitive nor specific enough to evaluate the degree of bladder wall tumour invasion, or to accurately determine pelvic lymph node involvement with tumour [4,5].

Other requirements are:

- Complete blood count and chemistry;
- 'Type and screen' blood group;
- Stoma marks are placed bilaterally the day before surgery;
- Tight and high antithrombotic stockings;

- Subcutaneous prophylaxis for deep vein thrombosis started the evening before surgery;
- Osmotic bowel cleansing;
- Antibiotic treatment started on the day of surgery (cephalosporin);
- Patient counselling and consent (changing the decision to a conduit if there are short

ureters, risk of stomal stenosis with consequent revision, or stenting with J catheters to be changed every 4–6 months).
Anaesthesia: general and epidural block for pain treatment

Instruments and materials

- Ring retractor (Omnitract®, Aesculap);
- Standard instruments for cystectomy;
- Fine instruments for microsurgery;
- Magnifying loupe, $\times 2.5$;
- Suturing material: 5-0 and 6-0 glycolide;
- Bipolar coagulation.

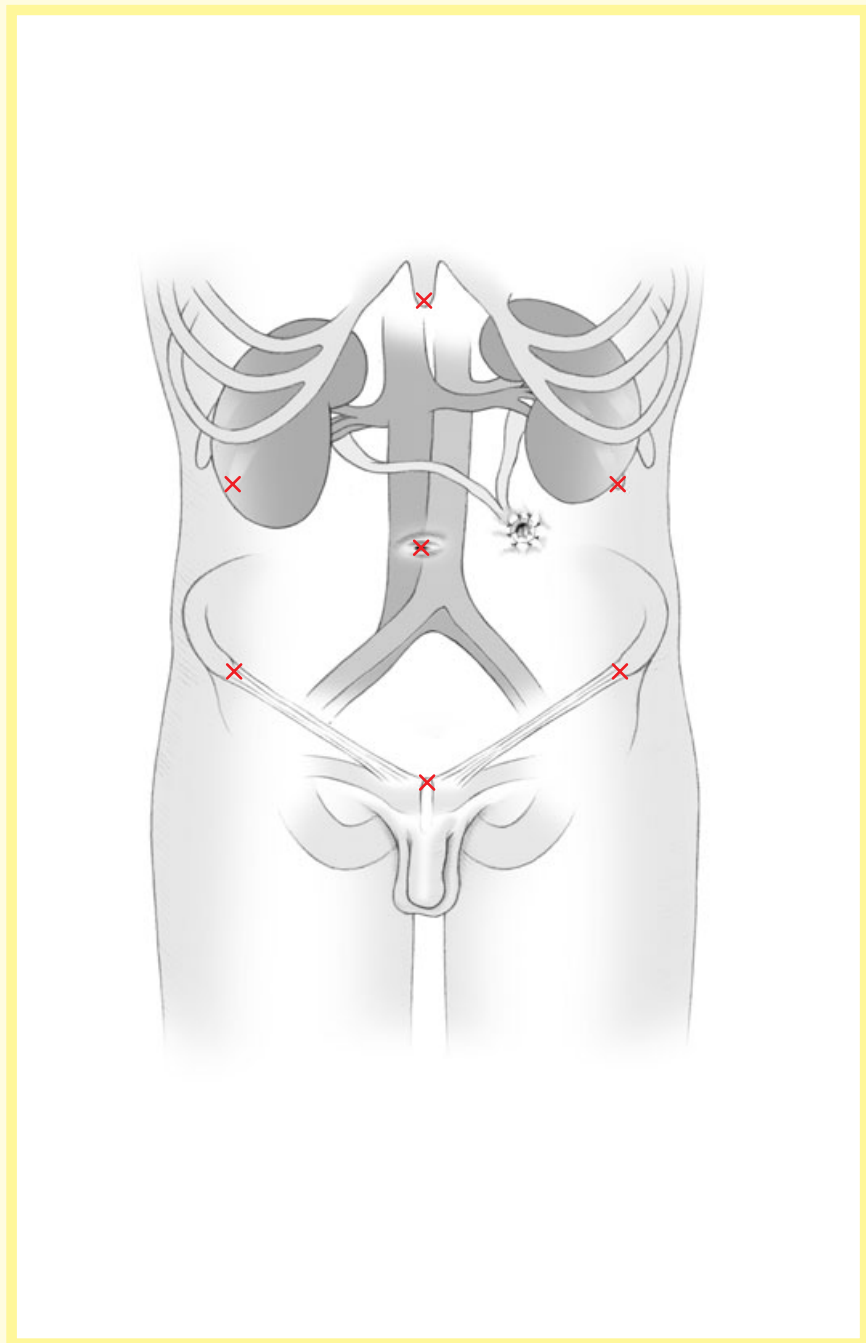
Figure 1

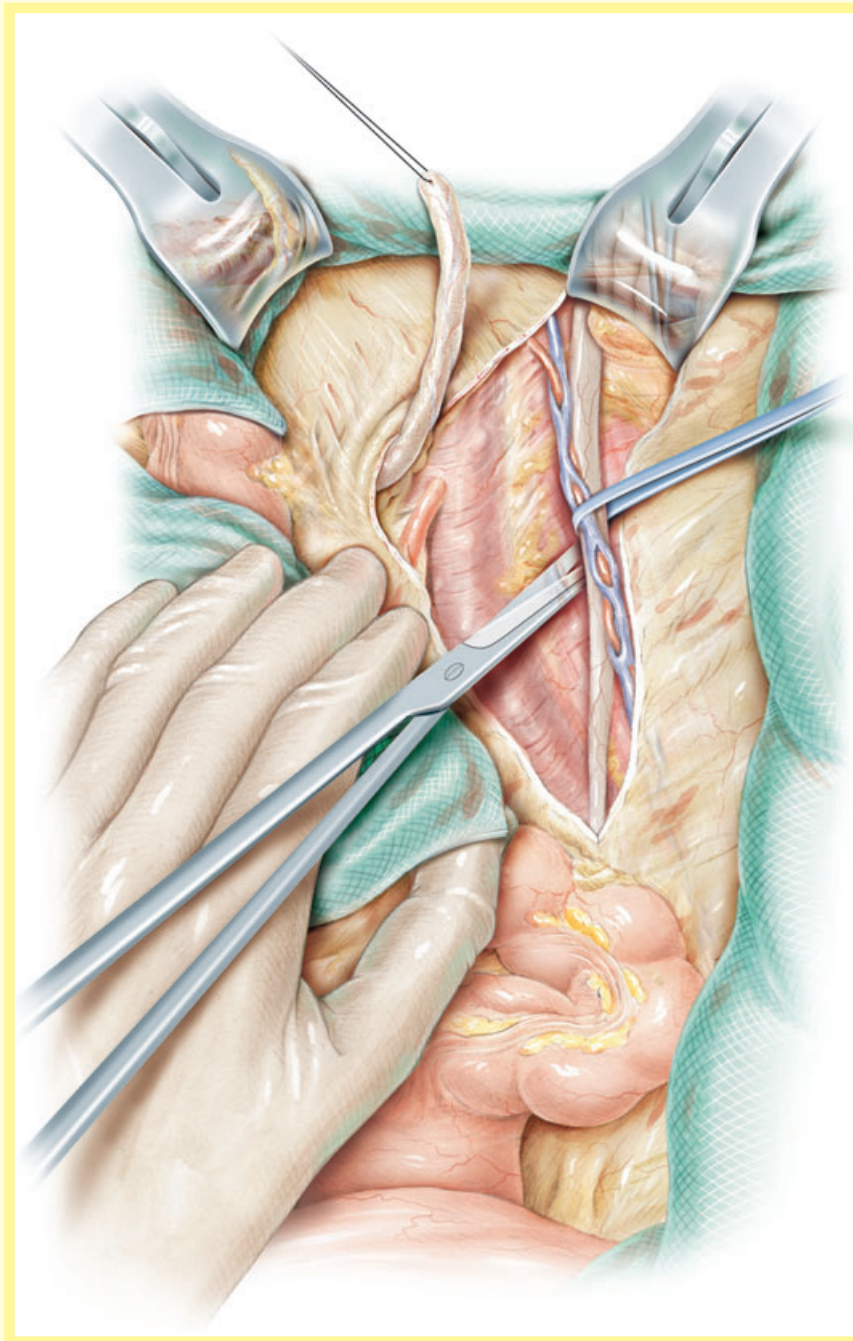
Cystectomy completed.

Landmarks are represented by:

- xyphoid;
- 12th rib;
- umbilicus;
- superior iliac spine;
- symphysis.

The stoma is marked between umbilicus and xyphoid, preferably pararectal on the left side.



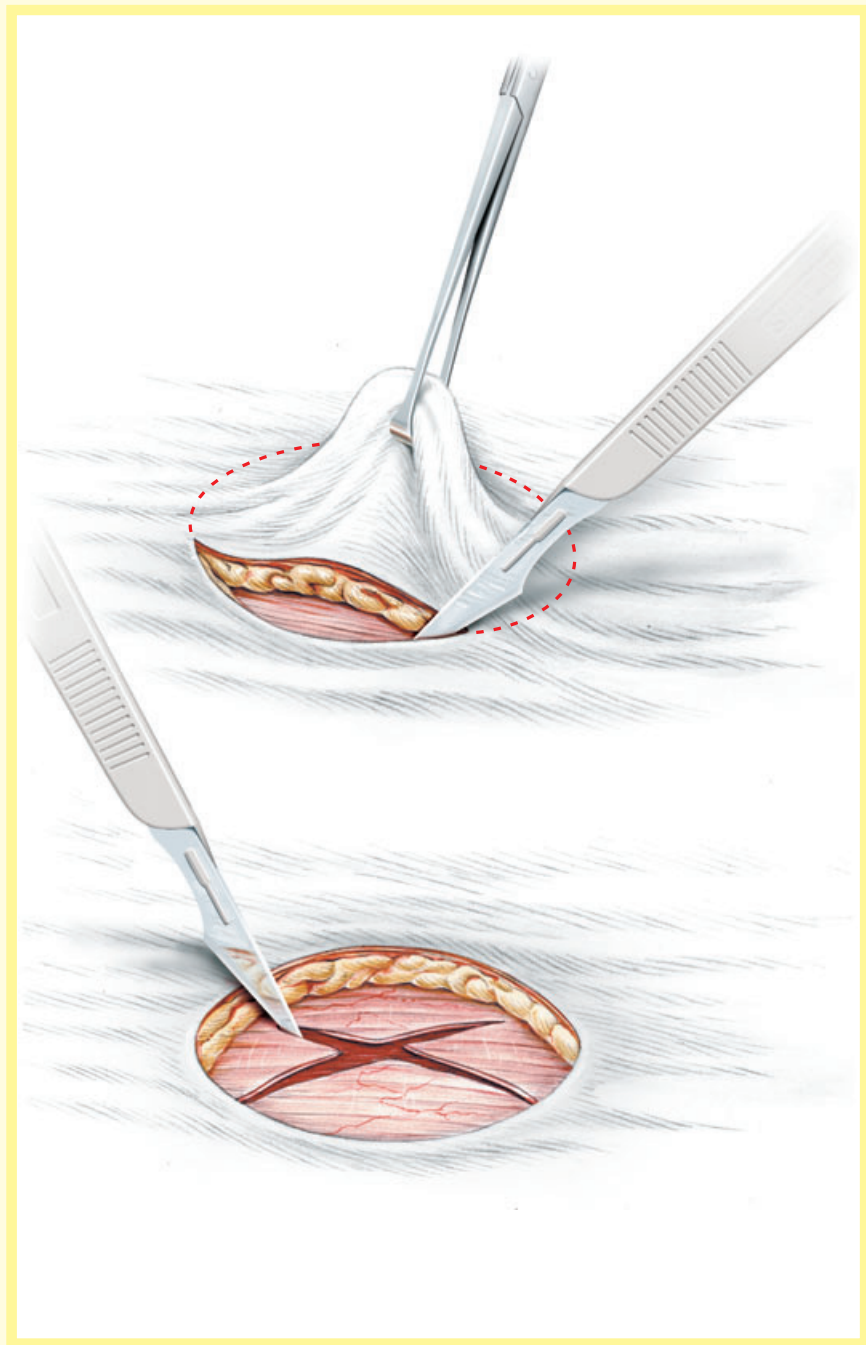
**Figure 2**

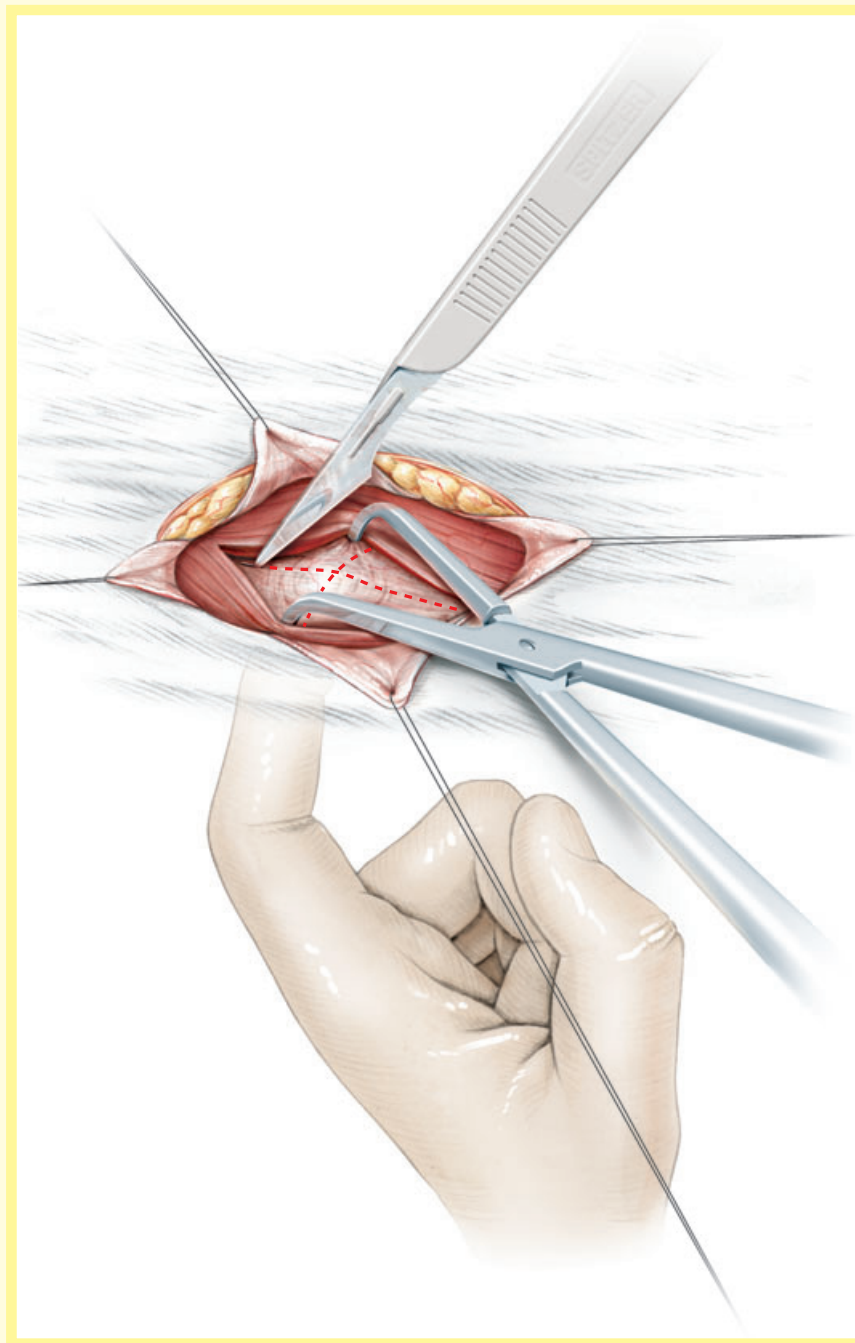
The lateral reflection of the peritoneum of the ascendant and descendent are already incised along the avascular/white line of Told during cystectomy. A bilateral and careful ureteric preparation by preserving the meso-ureter and the testicular artery is carried out until the PUJ, to avoid angulating the ureter.

Once both ureters have been mobilized the right ureter is crossed over to the left side. The right position is between Treitz ligament and the inferior mesenteric artery, looking for a wide vessel-free window of the mesentery behind the descending colon.

Figure 3

The skin incision to create the stoma is circular and its diameter is related to that of both ureters, usually 4.5–5 cm. The subcutaneous fat is excised and its place taken later by the greater omentum tissue. Once cleared of fatty tissue, the anterior rectus sheet is incised cross-like to obtain the minimum possible obstruction of the ureters by the fascia.

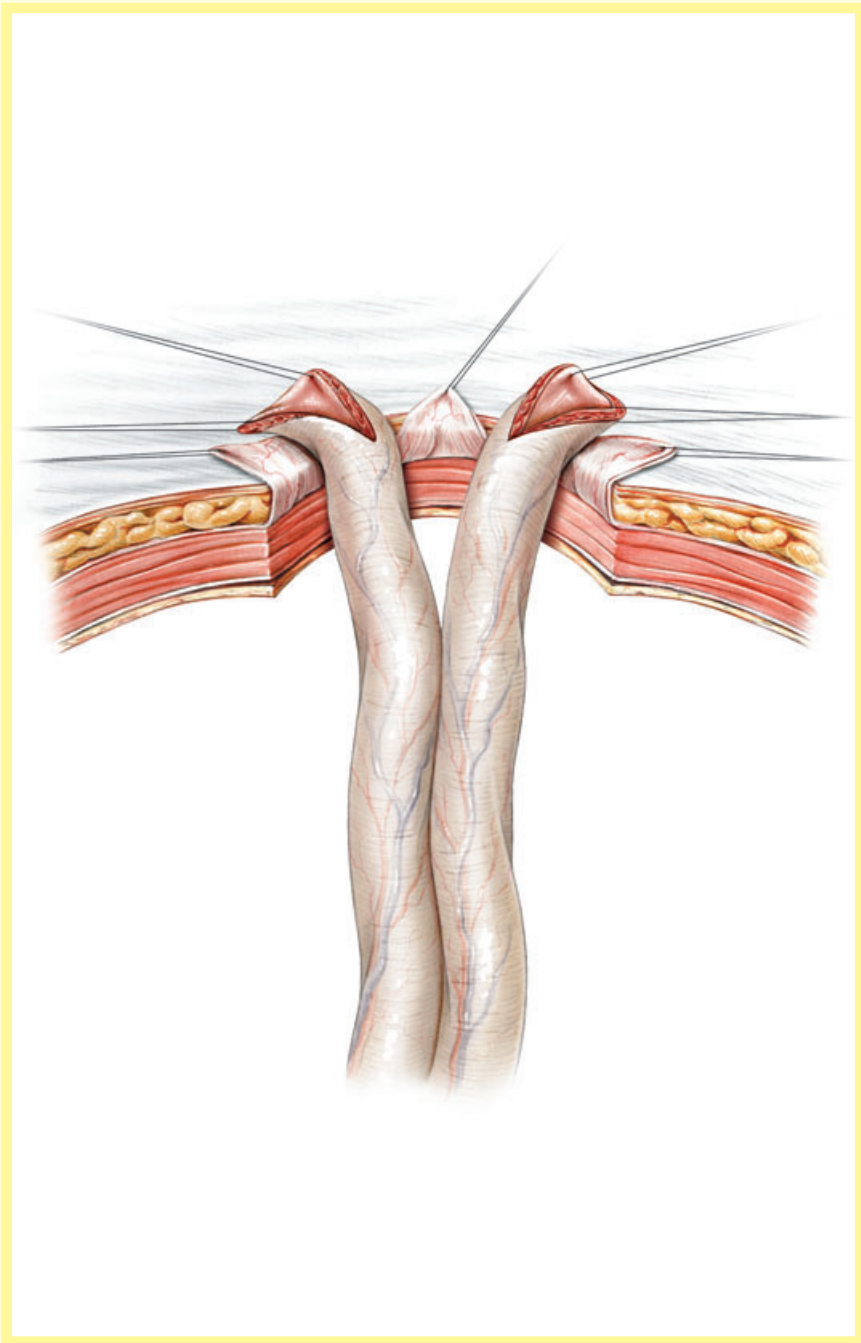


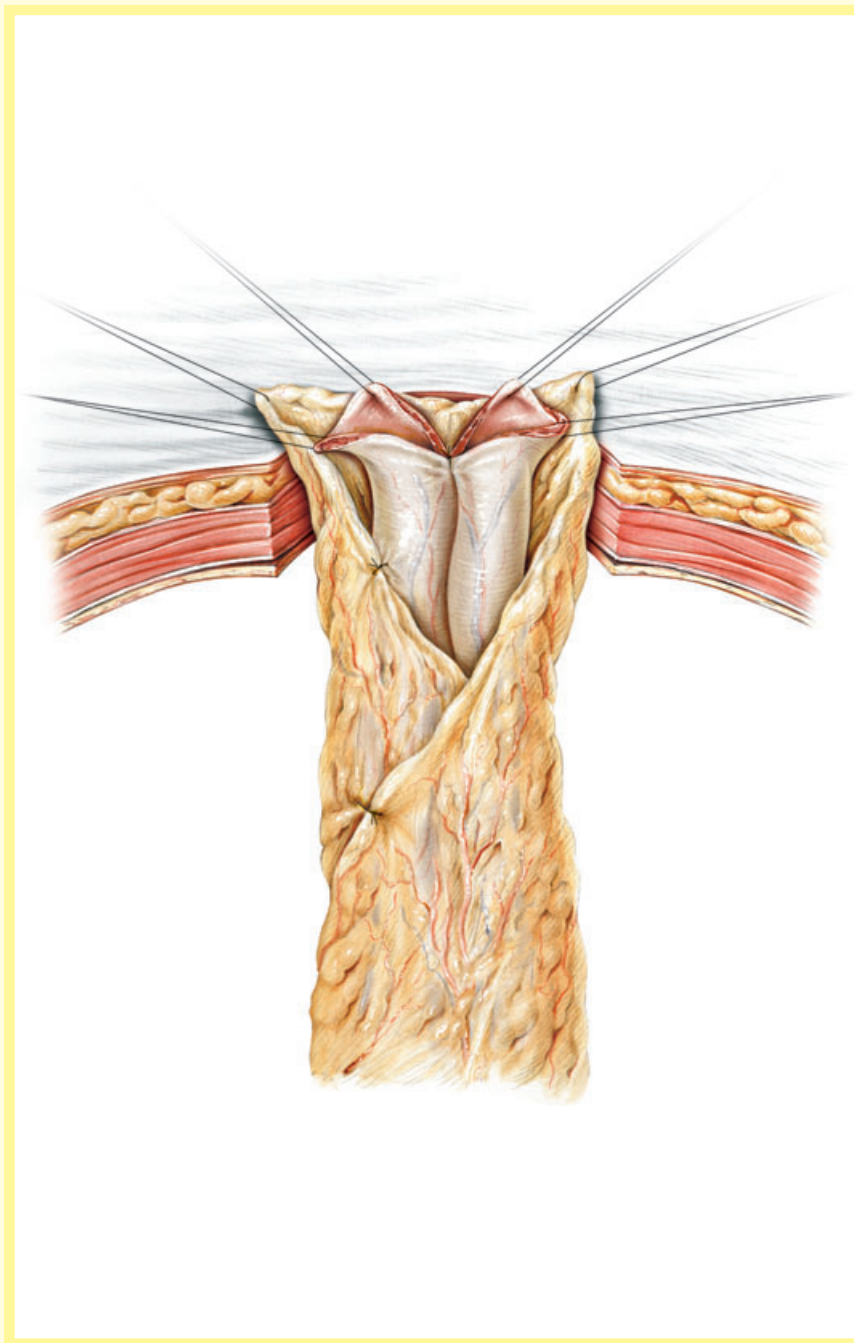
**Figure 4**

The rectus muscle is bluntly separated. A cross-like incision is made in the dorsal rectus sheet and the peritoneum on the tip of the underlying finger.

Figure 5

Both ureters are pulled through for at least 1.5 cm above skin level. Observe capillary bleeding from both ureter stumps and spontaneous urinary ejaculation. Both ureters are split medially, one at the 3 and the other at the 9 o'clock position for ≈ 1.5 cm. A 6-0 glycolide suture is placed to connect both ureters medially, thus creating a 'fish mouth' stoma.

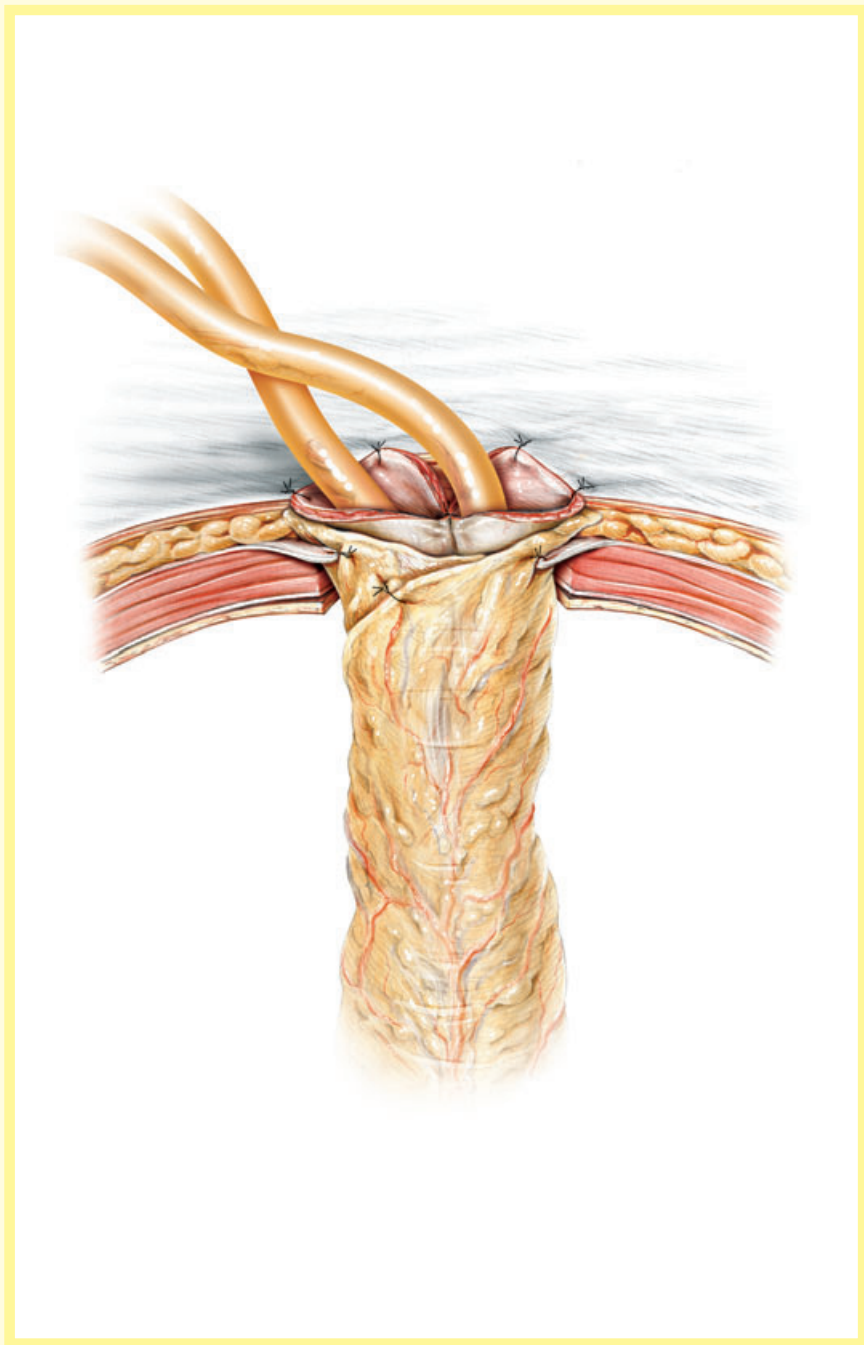


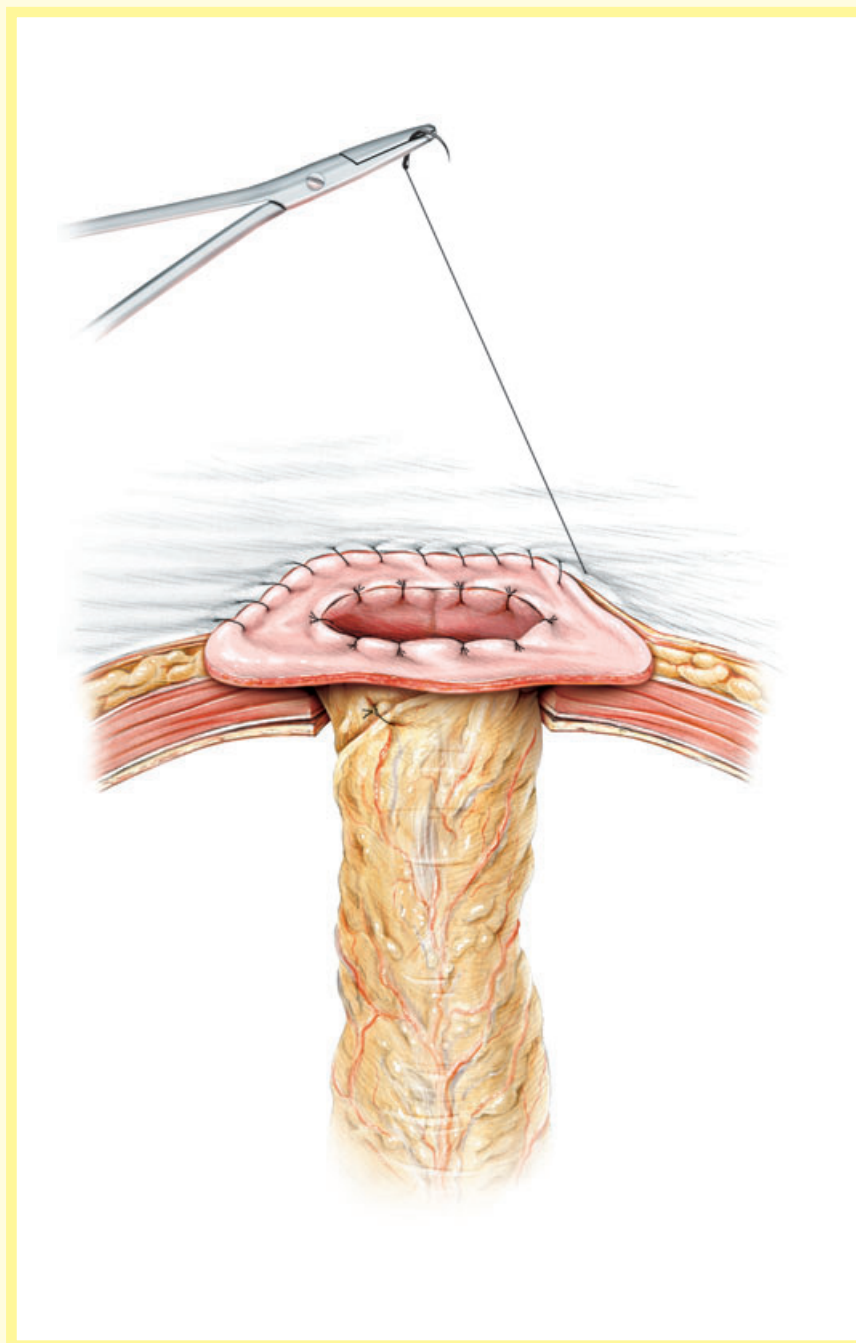
**Figure 6**

The thinnest part of the far end of the mobilized greater omentum is wrapped around both ureters like a sheet (with no constriction), placed and fixed subcutaneously. Again observe capillary bleeding from both ureteric stumps and spontaneous urinary ejaculation.

Figure 7

The 'fish mouth' ureter is fixed with interrupted 5-0 glycolide sutures to the epidermis. Two 6 or 8 F J catheters are inserted and fixed to the skin, and a stoma bag placed.



**Figure 8**

If there is stomal stenosis the scar tissue surrounding the ureteric orifices is excised and substituted by a buccal mucosal graft taken from the inner surface of the lip.

POSTOPERATIVE CARE

The day after surgery the patient is mobilized and oral nutrition started; then:

- Fluid balance and creatinine controls daily;
- Antibiotic treatment until removal of the stents;
- On day 6 the patient starts to learn the handling of the stoma bag;
- Removal of the J catheters at 21 days;
- After removing the J catheter, an IVU flush is used to document the upper urinary tract status;
- At weekly intervals monitoring of the upper urinary tract by ultrasonography for 3 months;
- Creatinine levels are assessed once monthly for the first 6 months.

COMPLICATIONS

If there is high and febrile upper tract dilatation, perform a percutaneous nephrostomy instead of retrograde manipulation. If local stomal revision becomes necessary, buccal mucosa may be helpful to substitute local skin-scar formation. If there is ureteric obstruction, convert into a colon conduit from a flank incision (supracostal XII).

RESULTS

Only a short-term follow-up is available for a few highly selected patients [6,7]. Prospective randomized studies are needed to compare UUCS with standard incontinent urinary diversion. The few complications recorded to date after surgery might increase with time. A

new method is only suitable if the complications which may occur can be resolved. The following techniques may be important.

SURGICAL TRICKS

It is important to carefully check the length of the ureters following the 'pull-through manoeuvre' to avoid suturing the ureters with tension to the skin, and possibly having angled ureters. If there is tension in one or both ureters after careful dissection, change immediately to a conduit.

The capillary bleeding of the ureters is a very important factor in the outcome of this surgery. Before inserting the J catheters check for spontaneous dripping of urine from both ureters to check any possible kinking of the ureter.

Generally only four sutures are needed to adapt the everted 'fish mouth' ureteric stoma to the skin. The more sutures the more likely there will be ischaemia of the ureters and possible stomal stenosis. The thinner the suturing material, the less chance there is of stomal stenosis developing. Immediately reinsert one or both J catheters after one or more of these complications.

SURGEON TO SURGEON

- The technique is limited by obesity, and in such cases use a conduit.
- Prepare the ureters to be as long as possible.
- Never try to connect short pale ureters under tension to the skin.

- Never use the technique in patients treated, even many years ago, by external beam irradiation of 45–65 Gy.

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