

RETROPERITONEAL FIBROSIS: INTERPOSITION OF PERITONEAL FLAP POSTERIOR TO URETER

To interpose peritoneum posterior to the ureter, we recommend creating two wide, large flaps of parietal peritoneum.

FIGS. 26-1 AND 26-2. Most surgical texts illustrate a neatly placed, slightly curved ureter lateral to the colon with the posterior parietal peritoneum interposed behind it. However, this procedure can actually be very difficult. The intraperitonealized ureters may be under such extreme stretch and tension with lateral deviation that there is potential for obstruction and ischemia.

Lysis of Fibrosis Around Ureter and Biopsy of Retroperitoneum

Cystoscopy for ureteral stent placement should be performed first. If not possible, the stents should be placed later when the ureter is exposed.

By dividing the lateral parietal peritoneum, the surgeon can locate the fibrosis around the ureter.

We prefer *not* to incise on the line of Toldt along the lateral border to the colon but to make an *exaggerated flap* from the anterior peritoneal surface all the way to the border of the colon. This technique is discussed later in this chapter because it facilitates flap interposition without excessive lateral stretching and angulation of the ureter.

The incision on the right side can be carried around the cecum

and along the root of the mesentery to the ligament of Treitz. This incision provides access to the retroperitoneum by reflecting the right colon and small bowel medially and superiorly.

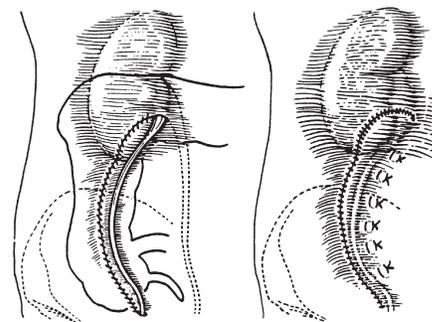
The surgeon should start the dissection in the area with the least fibrosis around the ureter and move toward the area of dense fibrosis.

Usually the most difficult area of dissection is the lower half of the ureter.

If the gonadal vessels are in the way of the dissection, they should be divided.

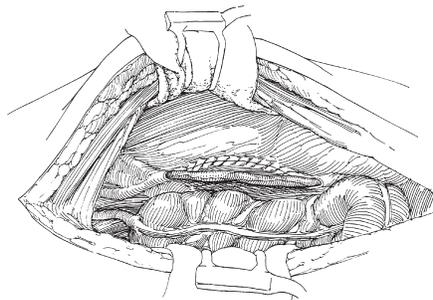
The fibrosis packs the great vessels and the ureter close together. Because of the density of the fibrosis, the surgeon may have difficulty estimating the depth of the great vessels.

The surgeon should be especially cautious during the biopsy of the retroperitoneum because inadvertent punctures of the vena cava and aorta can occur.



From Greenstein A, Smith MJV, Koontz WW Jr: Surgery of the ureter. In Walsh PC et al, editors: *Campbell's urology*, ed 6, Philadelphia, 1992, WB Saunders.

26-1



From Hinman F Jr, editor: *Atlas of urologic surgery*, Philadelphia, 1989, WB Saunders.

26-2

The surgeon should be mentally prepared to accept an indefinite diagnosis even after multiple biopsies and to proceed with surgery.

FIG. 26-3. We prefer to use a wide peritoneal flap of *anterior and posterior parietal peritoneum*. The cross-sectional view shows the incision of the anterior parietal peritoneum for the flap.

On the *right side*, the incision should extend from slightly below the level of the cecum up to the hepatic flexure of the transverse colon.

On the *left side*, the incision should extend from the level of the sigmoid colon up to the level of the splenic flexure.

This flap of anterior and posterior parietal peritoneum should be wider on the two ends since ureteral angulation is most prominent in the upper and lower segments.

When creating these two lateral flaps, the surgeon should maintain the full thickness of the peri-

toneum by preserving the adventitial tissue on the peritoneum.

It is better to take too much rather than too little of the anterior peritoneum for the flap.

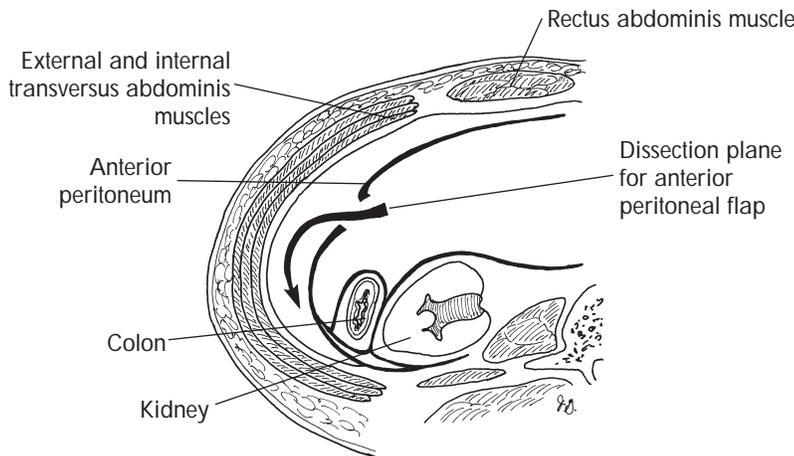
As the surgeon places the peritoneal flap behind the ureters, it will become obvious that the maximal angulation and lateral deviation are at the uppermost and lowermost ureteral segments.

FIG. 26-4. With these wide peritoneal flaps, the surgeon can intraperitonealize the ureters without stretching them.

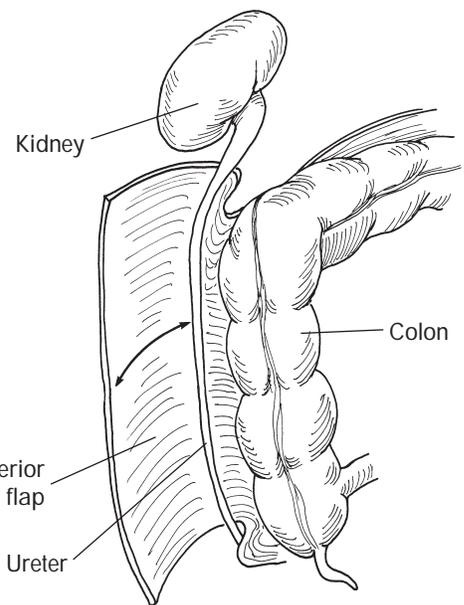
The ureter will be positioned toward the midline and even slightly behind the lateral border of the colon. With this maneuver one would still see residual lateral deviation on radiologic examination but without physiologic obstruction.

The incised parietal peritoneum from the cecum to the ligament of Treitz should be reapproximated, and the omentum should be placed anteriorly to cover the denuded peritoneal surface.

Cross-sectional View of Abdomen and Peritoneum



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26-4

KEY POINTS

- An anterior flap incision is made in the parietal peritoneum.
- The fibrosis around the ureters is lysed and the ureters are mobilized as much as possible.
- If in the way, the gonadal vessels are divided.
- A biopsy of the retroperitoneum is obtained away from the vena cava.
- A flap or tongue of parietal peritoneum is placed posterior to the ureters as an interposition flap.
- The lowermost and uppermost parts of the ureter require the most redundancy of the flap in order to avoid severe angulation or lateral deviation of the ureter.
- Double-J stents or diversionary stents are placed in the ureters.

POTENTIAL PROBLEMS

- *Ureteral tear*: Place stents in the ureter and drain around the area
- *Vena cava puncture during biopsy of retroperitoneum*: Perform manual compression → apply Surgicel with Avitene sandwich and wait → use the Teflon felt pledget sandwiching technique (see p. 25)
- *Parietal peritoneal flap is insufficient in size, causing severe ureteral angulation*: Use alternative method of omental wrap around the ureter

VASOVASOSTOMY

The vas deferens is isolated and delivered out of the wound, and the obstruction site is identified and excised.

The surgeon must transect the healthy vas deferens in one smooth motion rather than a “sawing” motion, which results in a shingled surface. As much healthy vas deferens as possible is preserved.

We express fluid from the cut distal end of the vas deferens to check for patency. Since there are rarely any sperm at the proximal end, we do not perform a sperm analysis.

Probing the lumen only ensures patency and is not used for dilatation. The surgeon can usually pass the probe several centimeters into the distal end but only a few millimeters into the proximal end. Further proximal probing may increase the risk of injury due to the convolutions of the vas deferens and of perforation through the lumen.

Vas Deferens Anastomosis

Key is the use of one-layer, full-thickness, interrupted stitches (double-arm 7-0 ophthalmic polyglycolic acid sutures). Each needle is placed in the lumen and brought out the vas deferens no more than 1 mm from the cut edge. All stitches are tied with a double-throw surgeon’s knot as the first throw. We place a total of 12 to 16 stitches.

For better visualization of the vas deferens lumen, the surgeon will find 2.0× to 4.5× magnification lenses to be helpful.

The free ends of the vas deferens are initially held by the surgeon’s fingers rather than vas clamps. After the initial stitches are placed and tied, it may be convenient to rest the vas deferens on small felt arrowhead sponges. Fluid from the proximal vas deferens is carefully repeatedly blotted from the wound. No drains or reinforcing sutures are needed. Patients are sent home the same day, and sex is permitted after release from the hospital.

FIG. 26-5. The most important maneuver is for the stitch needle to enter the luminal side through the muscularis and exit only 1 mm from the edge of the cut surface. The first six stitches are placed as closely as possible. After the first few stitches are tied, the lumen of the vas deferens actually opens wider for the subsequent stitches until approximately half of the closure is completed.

Surgeon's knots are used and tied on the adventitial side. The first six stitches are tied as they are placed, and the rest of the stitches are placed but left untied and tagged with small bulldog clamps.

After the seventh to the twelfth stitches are placed, the surgeon ties all sutures circumferentially.

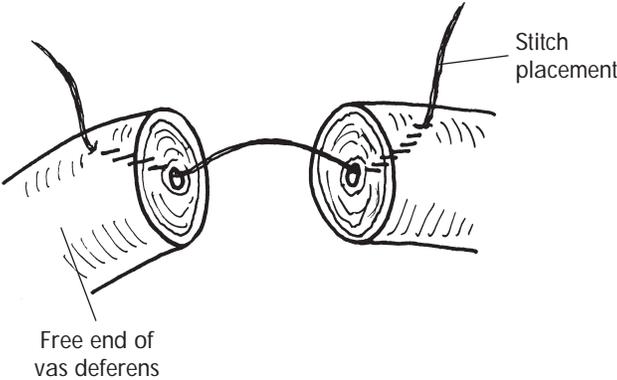
- The vas deferens anastomosis opens up after one or two sutures are placed and tied. The opening then starts to narrow after about half of the stitches have been placed and tied.
- Before visualization of the vas deferens walls and lumen is lost due to narrowing of the vas deferens opening, the remaining sutures are placed, tagged with small bulldog clamps, and then tied after all have been positioned.
- No reinforcing sutures or drains are needed. The procedure is performed as outpatient surgery. The patient is informed that sex is permitted after release from the hospital.

KEY POINTS

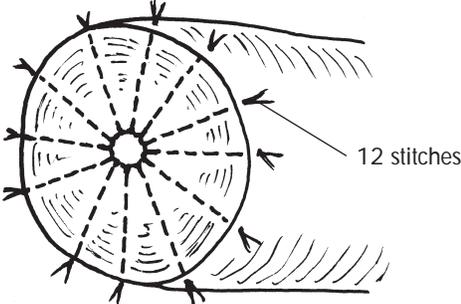
- Double-armed (needle on each end) 7-0 ophthalmic polyglycolic acid sutures are placed.
- For each stitch a double-throw surgeon's knot is used on the first throw.
- Vas clamps are not used because they injure the wall of the vas deferens.
- Each stitch is placed by passing the needle into the lumen and then rotating the needle out through the musculature no more than 1 mm away from the cut edge. The needle on the other end of the same stitch is passed into and through the other segment of the vas deferens in an identical fashion.

POTENTIAL PROBLEMS

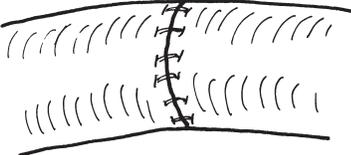
- *Difficulty finding vasa deferentia:* Deliver the testis out of the wound
- *Gap between two ends is too wide:* Mobilize the testis to shorten the gap
- *Torn edges on suture line:* Recut for fresh, clean vas edges and restart the stitch placement
- *Crossed-up stitches:* Restart stitch placement after removing crossed stitches
- *Anastomosis closes too much and obscures rest of stitch placement:* Cut a few stitches out and replace without tying them until stitch placement is completed

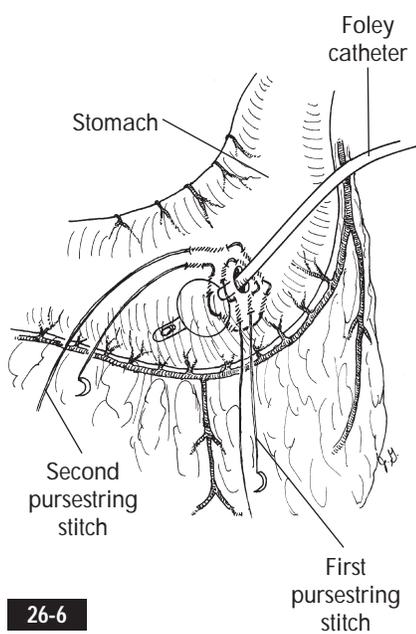


Cross Section of Completed Anastomosis



External View at Completion





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GASTROSTOMY TUBE PLACEMENT

Gastrostomy tube placement postoperatively is extremely useful for patients who have undergone extensive urologic surgery such as ileoneobladder or continent pouch with cystectomy. During the postoperative period of bowel ileus, the patients not only are more comfortable but also can perform pulmonary toilet more vigorously without a nasogastric tube.

The simplest technique is to pass a Foley catheter or Malecot catheter (22 to 24 Fr) from the desired skin position via a separate stab wound into the peritoneal cavity.

Two Babcock clamps are placed on the stomach, and a puncture is made in between for catheter insertion.

FIG. 26-6. The two rows of pursestring sutures (0 silk) are placed around the catheter and Babcock clamps. The clamps are removed and the pursestring sutures are tied with the needles left in place.

When the stomach is positioned close to the abdominal wall, the surgeon uses the same two stitches for fixation against the abdominal wall.

On the skin, another fixation stitch (0 silk) is placed adjacent to the catheter.

A nasogastric tube should be inserted and left in place for the first 24 hours postoperatively because the gastrostomy tube does not function well in the immediate postoperative period.

BLADDER DIVERTICULECTOMY

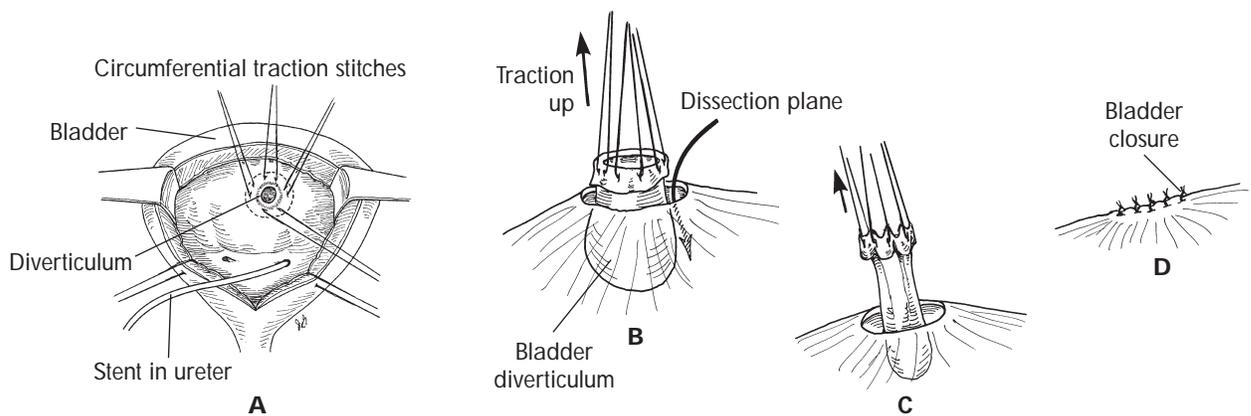
No matter how large the diverticulum, the intravesical approach for bladder diverticulectomy is the simplest and easiest approach.

FIG. 26-7. After the bladder is opened, traction sutures (0 silk) are placed around the lateral and inferior margins of the cystotomy (A).

Placement of a self-retaining retractor will keep the bladder incision wide open.

Four stitches (2-0 silk) are placed around the mouth of the diverticulum. These stitches should be well secured and be positioned 1 cm from the mouth.

With cephalad traction, an incision is made lateral to the traction sutures. With forceps countertraction by the assistant, the surgeon can now cut and spread the tissues to define the correct plane for the diverticulum.



26-7

Once this plane is established, the use of blunt and sharp dissection with Kitners (tonsil clamp with ball of gauze) and scissors should easily separate the adventitia from the diverticulum (**B** and **C**).

If excising a Hutch diverticulum adjacent to the ureter, the surgeon can place a ureteral stent and palpate it as the dissection progresses.

After the diverticulum is completely excised and removed, reapproximation should be performed in two layers even if the wall is thin (**D**). Most of the time, it is difficult to find the muscularis layer around the edges of the diverticular mouth. However, by undermining the bladder wall, the surgeon will locate the muscularis for the two layers of closure. If the diverticulum is a Hutch diverticulum, the surgeon must not incorporate the ureter in the closure.

A Malecot catheter (22 Fr) is used as a suprapubic catheter and is brought out through a separate stab wound. A drain is left in the perivesical spaces.

With the patient in a supine position, dependent urine in the bladder may not be properly drained on the first postoperative night. Therefore a Foley catheter is left in place for 24 hours postoperatively.

KEY POINTS

- Exposure of the bladder is obtained with the placement of traction stitches and a Balfour retractor blade.
- Traction stitches are placed around the mouth of the diverticulum.
- In the case of a Hutch diverticulum, a stent is placed in the ipsilateral ureter.
- A circumferential incision is made lateral to the traction sutures.
- The dissection plane is defined with scissors (using more of a spreading than a cutting motion) while countertraction is applied on the bladder side.
- Once a dissection plane is established adjacent to the diverticulum, blunt dissection using Kitners is performed along the plane.
- The defect is closed in two layers.
- A suprapubic tube, drain, and Foley catheter are placed.

POTENTIAL PROBLEMS

- *Diverticular tear occurs during excision of diverticulum:* Place more traction stitches or apply an Allis clamp along the torn wall

INTRAVESICAL OR EXTRAVESICAL URETERAL DISSECTION

FIG. 26-8. Excellent exposure for ureteral dissection is obtained with the placement of a malleable blade fixed to a Balfour retractor cephalad over four sponges positioned within the bladder.

As for ureteral reimplantation for vesicoureteral reflux, the surgeon frees the ureter from the vesical wall. With a red rubber catheter (6 Fr) inserted 10 cm up into the ureter, the surgeon anchors the ureteral meatus to the catheter. The catheter will be used to apply traction cephalad.

FIG. 26-9. A 1 cm circumferential incision is made around the ureteral orifice (A), and the surgeon uses sharp dissection to define a plane between the ureter and the bladder wall.

With forceps countertraction applied by the assistant, the surgeon can circumferentially free the ureter (B). In a medial position to the ureter, the peritoneal reflection should be swept off using gentle blunt dissection with the Kitners (C).

Once the hiatus of the vesical wall is dissected from the ureter, the ureter can be passed external to the bladder wall.

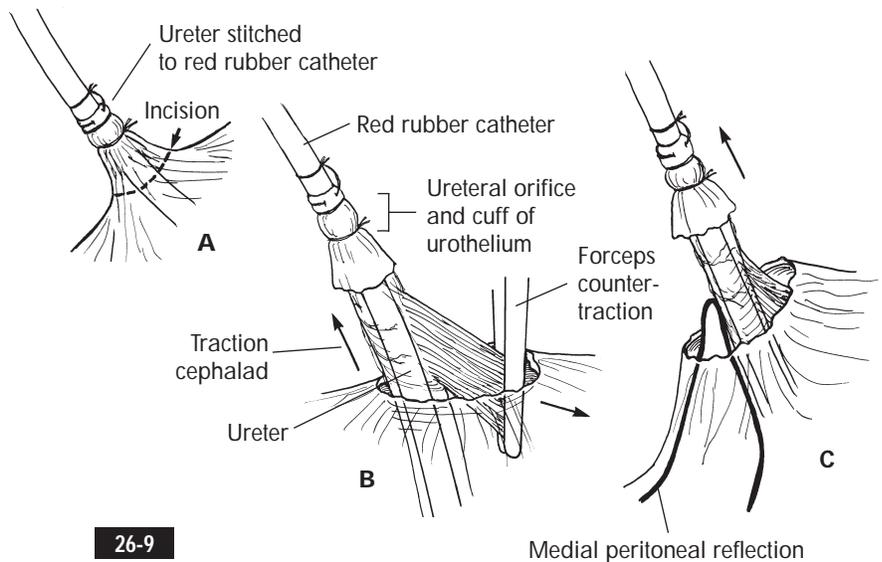
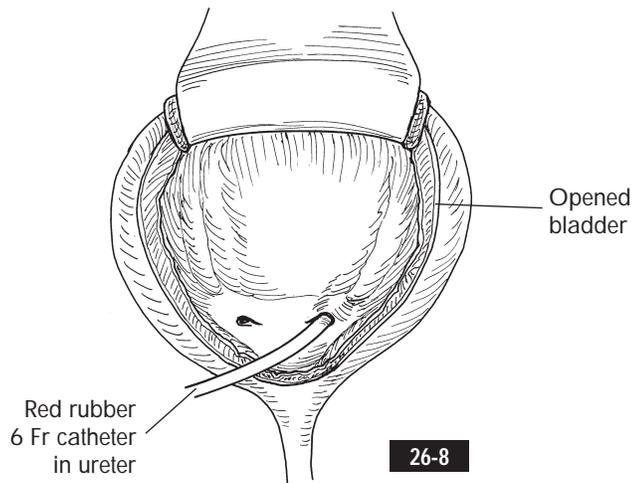


FIG. 26-10. The bladder defect is closed in the standard two-layer fashion with 2-0 absorbable stitches.

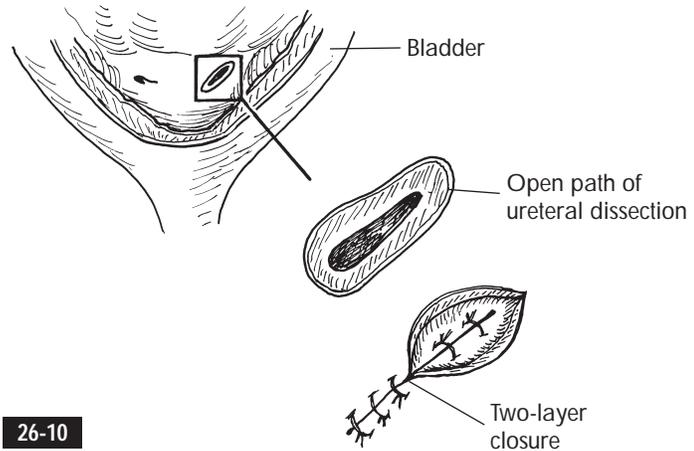
FIG. 26-11. Via the retroperitoneal pocket, the proximal ureter is isolated for the complete ureteral excision.

A web of tissues containing the complex of the obliterated umbilical artery and superior vesical artery separates the proximal ureter from the freed distal ureteral orifice.

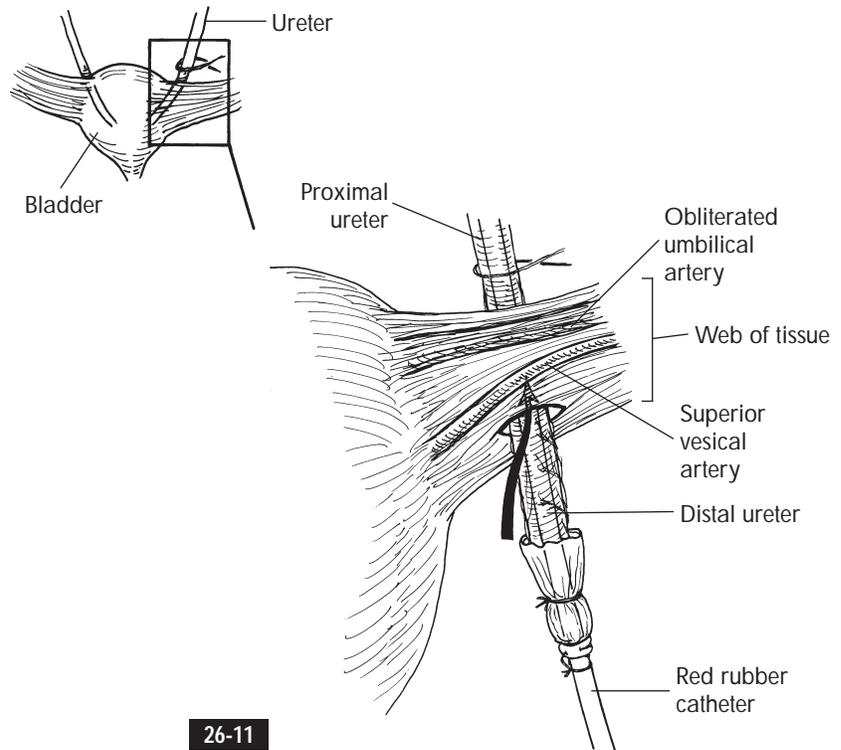
Using sharp fine scissors, the surgeon can feel the red rubber catheter within the ureter and can dissect a plane to free the ureter all the way through the web of tissues. If the dissection is difficult, the surgeon can ligate and divide this web of tissues without the risk of additional complications.

SUGGESTED READINGS

Greenstein A, Smith MJV, Koontz WW: Surgery of the ureter. In Walsh PC et al, editors: *Campbell's urology*, vol 3, ed 6, Philadelphia, WB Saunders, 1992, pp 2556-2557.
 Hinman F Jr: Ureterolysis. In *Atlas of urologic surgery*, Philadelphia, WB Saunders, 1989, pp 677-678.



26-10



26-11