RECTAL INJURY IN UROLOGIC SURGERY

27

Inadvertent rectal injury from a urologic procedure is often subtle but has serious postoperative consequences.

With good mechanical bowel preparation plus antibiotic and intravenous antibiotic administration, the surgeon now has better success in primary closure of rectal lacerations without the need for a colostomy for fecal diversion.

During radical perineal or radical retropubic prostatectomy and radical cystectomy, there are certain maneuvers that are associated with a high risk for rectal injury.

RADICAL PERINEAL PROSTATECTOMY

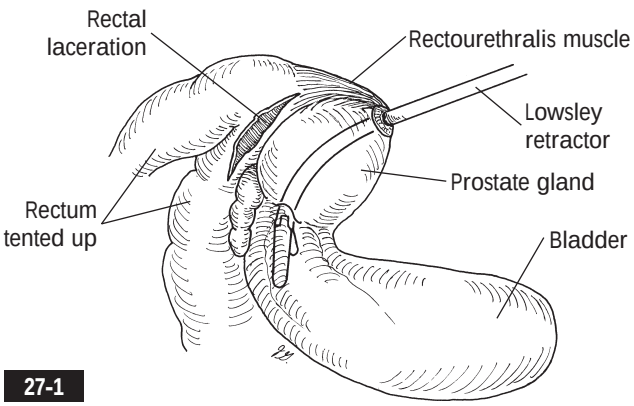
After division of the central tendon, the surgeon divides the rectourethralis muscle.

FIG. 27-1. With manipulation of the Lowsley retractor, the assistant pushes the prostate gland toward the operative field and almost in a horizontal position. The rectourethralis muscle tethers the "tented-up" rectum and inserts into the region of the prostatic apex (see p. 190).

Even when the surgeon performs gentle blunt dissection using two index fingers approaching from the lateral edges of the rectourethralis muscle to meet in the midline, there is potential for rectal injury (see p. 191).

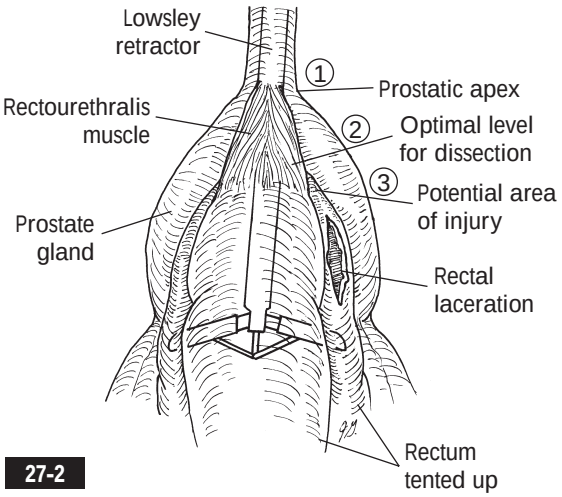
FIG. 27-2. The surgeon palpates the junction of the prostatic apex and the Lowsley retractor within the urethra *(1)*, slides the finger slightly more proximally, and performs blunt finger dissection on the midportion of the posterior prostate gland *(2)*. Because the rectourethralis muscle inserts on the distal portion of the posterior prostate gland *(3)*, manipulations of this area can rarely lead to rectal tears. If rectal injury occurs, it is because the nail of the surgeon's index finger is not firmly on the

Dissection of Rectourethralis Muscle in Radical Perineal Prostatectomy



27-1

Radical Perineal Prostatectomy



27-2

prostate surface but is instead penetrating soft tissue away from the prostate surface.

If there is a rectal tear, the surgeon places the finger through the anus, defines the location and extent of the tear, and then performs a two-layer closure with a running stitch (2-0 absorbable) and interrupted mattress stitch (2-0 Vicryl).

A later interposition of the adjacent anal sphincter between the injured rectum and the new bladder neck as well as a watertight vesicourethral anastomosis are critical maneuvers to avoid a fistula.[1] The collection of fluid in the dead space and contact of the suture lines predispose to fistulous tract formation.

Antibiotic solution irrigation should be liberal in this area, and broad-spectrum intravenous antibiotics should be administered.

RADICAL RETROPUBIC PROSTATECTOMY

After division of the dorsal venous complex, while the surgeon isolates the distal urethra, the risk for rectal injury exists.

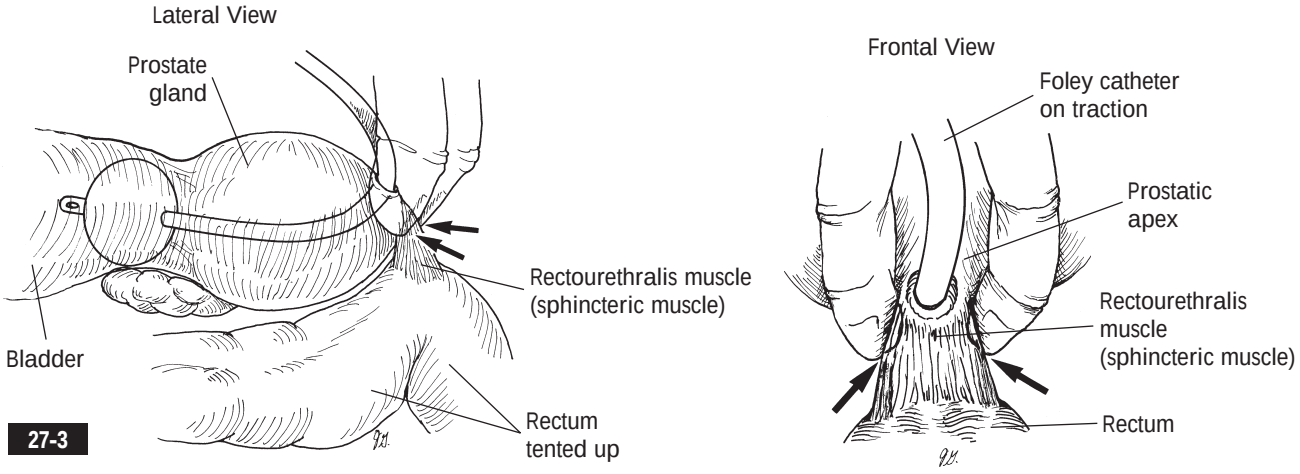
Instead of puncturing the rectourethralis muscle with a right-angle clamp, we first thin out the rectourethralis muscle by gently pinching the tissues with the left index and middle fingers. This finger-pinching maneuver thins out the tissues around the urethra and prostatic apex (see p. 176). The right-angle clamp is then used to puncture the residual attachments of the rectourethralis muscle. We have found that this maneuver not only is safer and easier but also ensures a full-thickness distal urethral stump.

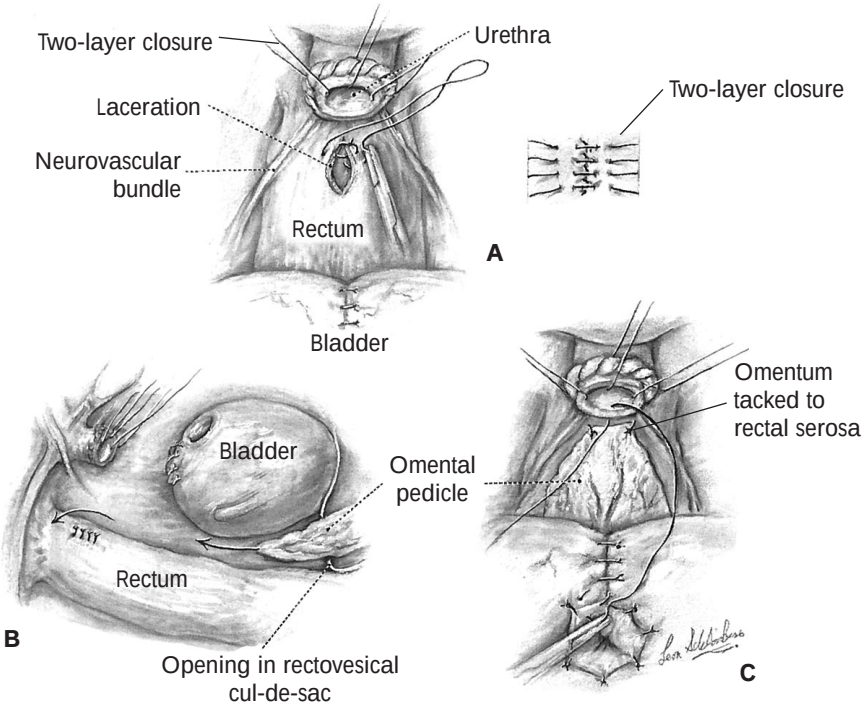
Another common maneuver with which there is a potential risk for rectal injury is the division of the residual rectourethralis muscle and the striated sphincter muscle after urethral division.

FIG. 27-3. The Foley catheter is divided and placed under cephalad traction, thus applying cephalad traction to the rectourethralis muscle.

By placing the left index and middle fingers slightly behind the rectourethralis muscle and over the prostatic apex, the surgeon can *first spread the muscle fibers vertically or parallel to* the muscle before cutting across on the prostate side. The surgeon must "hug" the prostate gland with the scissors when cutting across the muscle. The two lateral pillars are also divided (see p. 180).

Dissection of Rectourethralis Muscle (Sphincteric Muscle) in Radical Retropubic Prostatectomy





From Borland RN, Walsh PC: *J Urol* 147:905, 1992.

27-4

FIG. 27-4. When a rectal injury occurs, it may be partial (serosa and adventitia only) or complete. When it is a complete tear, a two-layer closure with a running stitch (2-0 absorbable) and an interrupted horizontal mattress stitch (2-0 Vicryl) is sufficient. The assistant's fingers in the rectum will better define the margins of the injury for repair.

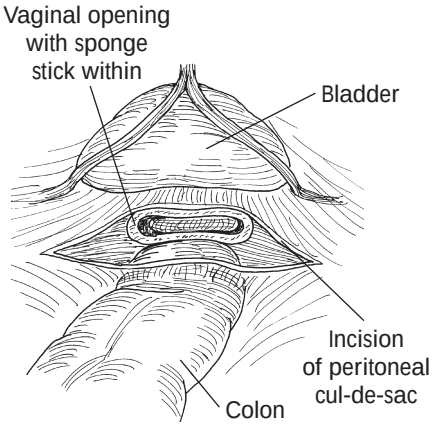
Fat or omental interposition near the completion of the surgery should be helpful.[2]

The use of local antibiotic irrigation and intravenous antibiotic administration are important.

RADICAL CYSTECTOMY IN THE FEMALE PATIENT

In both men and women, after the incision in the peritoneal cul-de-sac, the surgeon can easily define a plane anterior to the rectum.

Posthysterectomy Retrovesical Dissection (Top View)



27-5

FIG. 27-5. However, in the woman who has previously undergone hysterectomy, fibrosis around the proximal vaginal cuff and the rectum can obliterate any definable planes (see p. 103). This is the region where rectal injuries can occur.

It is best to divide the peritoneal cul-de-sac and perform as little blunt dissection as possible. By having the assistant push a sponge stick up the vagina, the surgeon can divide the most cephalad part of the vagina cuff while constantly palpating the sponge stick. Once the area is opened, the surgeon can more easily define the lateral planes of dissection with the rectum lying posteriorly.

RADICAL CYSTECTOMY IN THE MALE PATIENT

FIG. 27-6. After the peritoneal culde-sac has been divided and a dissection plane has been established between the bladder/prostate gland and the rectum, the easiest approach is to start the distal anterior dissection as is performed for radical retropubic prostatectomy. By joining the two dissections from above and below, the surgeon is left with only the two leaves of the posterior bladder pedicles.

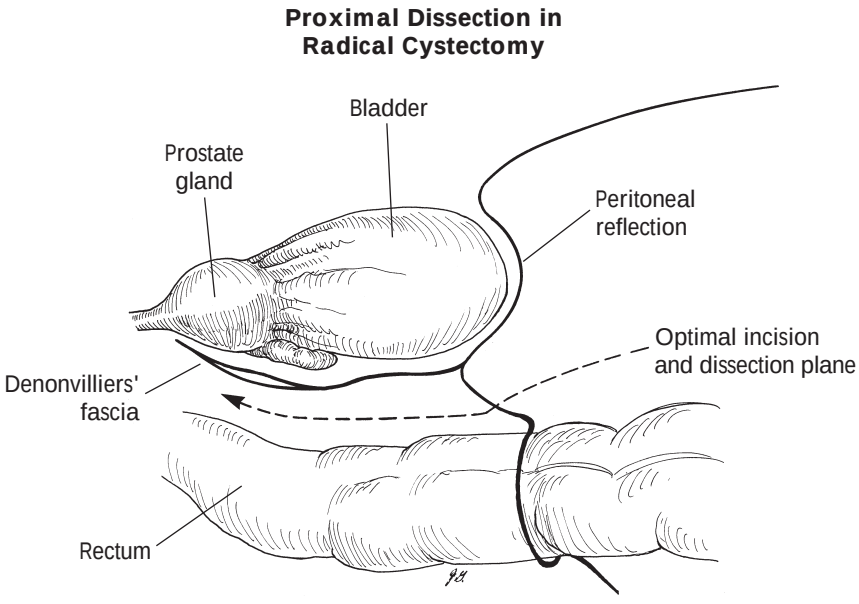
FIG. 27-7. The potential for rectal injury occurs when the surgeon connects the distal dissection to the proximal dissection from above. There is usually a web of tissue between the two dissections and the surgeon must divide this web *as close to the bladder and prostate gland* as possible. This maneuver avoids lacerating the tented-up rectum in the web.

If a rectal tear occurs, the surgeon must consider the following factors when choosing either primary closure and/or colostomy:

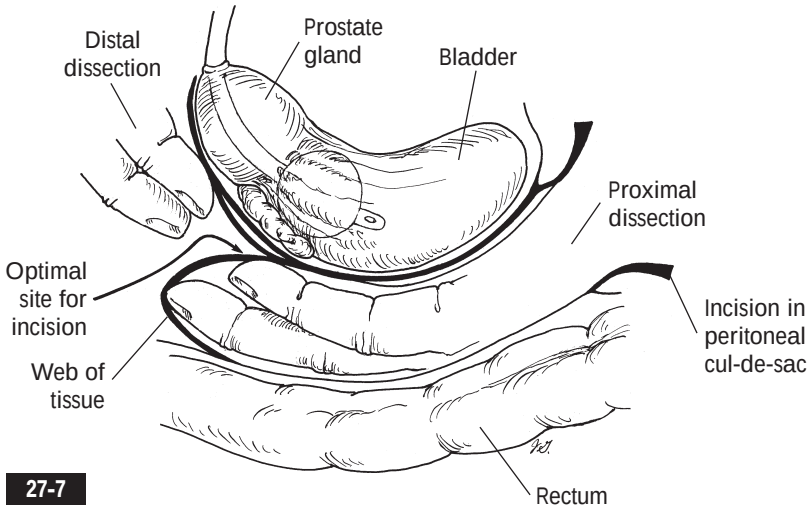
1. Patient prognosis
2. Patient's nutritional status (influence on postoperative healing)
3. Presence of diabetes mellitus (associated with poor healing)
4. Difficulty of the procedure thus far
5. Type of urinary diversion planned:
   - **a** Ileal conduit
   - **b** Continent pouch
   - **c** Ileoneobladder with omental interposition

In complicated cases with the potential for poor healing, we prefer to perform ileal loop conduit, which is the simplest urinary diversion.[3]

FIG. 27-8. Loop colostomy or knuckle colostomy of the transverse or descending colon is easy to perform with minimal bowel manipulations.[4]

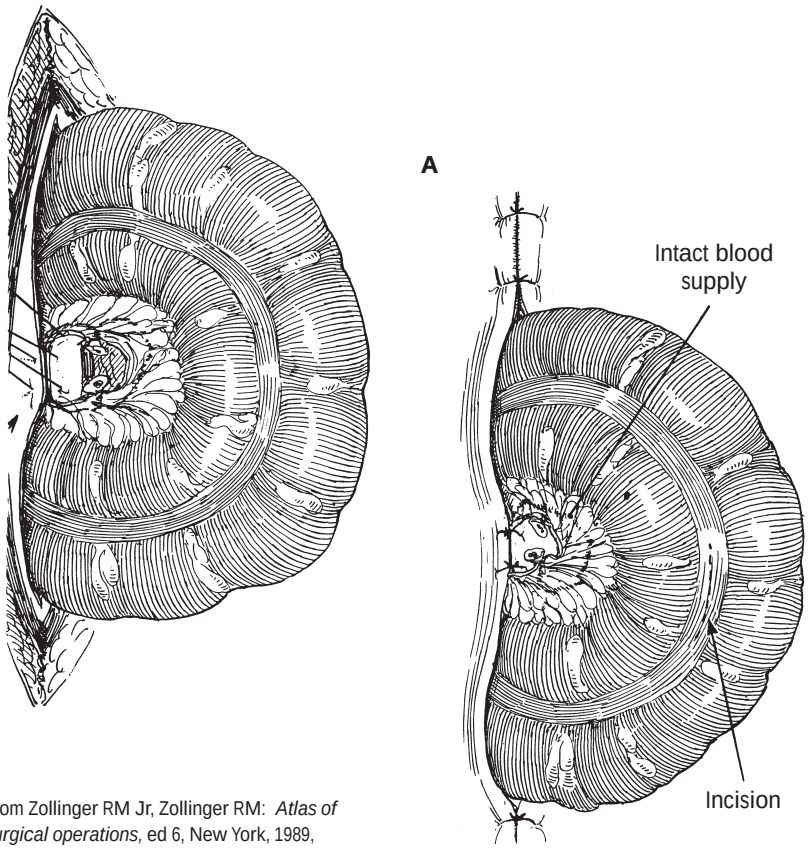


Establishing Continuity Between Proximal and Distal Dissections

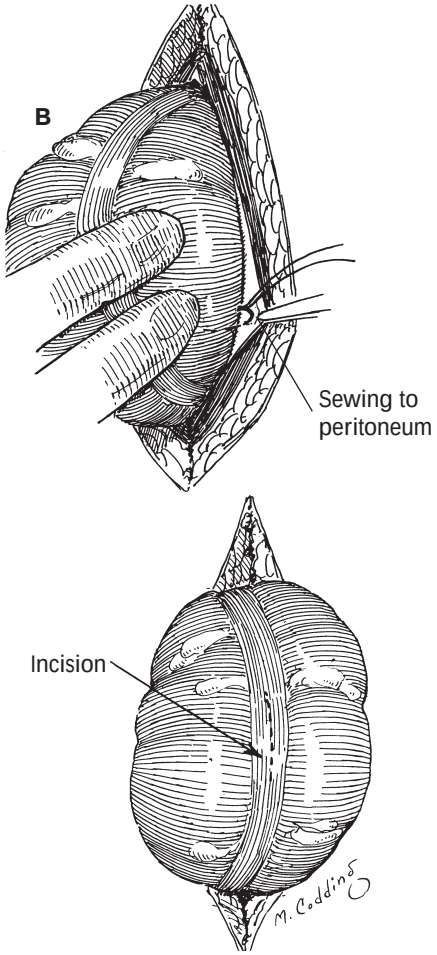


27-7

Loop Colostomy



Knuckle Colostomy



From Zollinger RM Jr, Zollinger RM: *Atlas of surgical operations,* ed 6, New York, 1989, Macmillan.

27-8

REFERENCES

1 Resnick M (Case Western Reserve University): Personal communication, December 1995.

2 Borland RN, Walsh PC: The management of rectal injury during radical retropubic prostatectomy, *J Urol* 147:905, 1992.

3 Fletchner SM, Spaulding JT: Management of rectal injury during cystectomy, *J Urol* 19:143, 1982.

4 Zollinger RM Jr, Zollinger RM: Loop colostomy. In *Atlas of surgical operations,* ed 6, New York, 1989, Macmillan.

SUGGESTED READING

Pister LL, Wajsman Z: A simple test for the detection of intraoperative rectal injury in major urological pelvic surgery, *J Urol* 148:354, 1992.