

ANTERIOR TRANSANAL, TRANSSPHINCTERIC SAGITTAL APPROACH FOR FISTULA REPAIR SECONDARY TO LAPAROSCOPIC RADICAL PROSTATECTOMY: A SIMPLE AND EFFECTIVE TECHNIQUE

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ABSTRACT

Introduction. To report our experience with the anterior, transanal, transsphincteric, sagittal approach in the correction of rectourinary fistula secondary to laparoscopic radical prostatectomy.

Technical Considerations. Of the first 110 laparoscopic extraperitoneal radical prostatectomies performed from December 2001 to February 2004, 9 (8%) were complicated by rectal injury. Of the nine rectal lesions, seven were diagnosed intraoperatively and the rectal defects closed laparoscopically. Primary repair failed in 1 of the 7 patients. In 2 other patients, the rectal injuries were missed intraoperatively, and a rectourinary fistula later developed. Rectourinary fistula was confirmed in these 3 patients by cystoscopy and digital rectal examination. The procedure chosen for repair was the anterior sagittal transrectal anal approach. The time from diagnosis to fistula repair was 1 to 3 months. Fistula repair was successful in all patients. The mean follow-up was 12 to 24 months. No patient presented with fecal incontinence or anal strictures. Postprostatectomy urinary continence was not affected by the procedure.

Conclusions. The transsphincteric transanal surgical approach provides many advantages for the repair of acquired urethrorectal fistulas after laparoscopic radical prostatectomy. It allows for good surgical exposure and fistula tract identification and ensures good access to well-vascularized tissue. This surgical technique is simple, effective, reproducible, and associated with minimal morbidity.

Rectal injury is a potential complication of radical prostatectomy, with a reported incidence of 0% to 9%.^{1,2} In the largest series of laparoscopic radical prostatectomy, this injury was reported to have an incidence of 1% to 2.7%.³ McLaren *et al.*⁴ reported a 1.2% incidence of rectal injury during radical retropubic prostatectomy, with a 15% incidence of delayed rectourethral fistula. Harpster *et al.*² described a 1.5% incidence of rectal lesions during radical perineal and retropubic prostatec-

tomy, with a 25% incidence of delayed rectourethral fistula. This dreaded potential complication of laparoscopic radical prostatectomy increases the risk of sepsis, wound infection, pelvic abscesses, peritonitis, and even death. A number of diverse strategies can be used in the management of rectal lesions during laparoscopic radical prostatectomy, ranging from primary closure to diverting colostomy. Both a missed intraoperative rectal injury and a failed primary repair can develop into a rectourethral fistula. Conservative management for up to 3 months has been reported in cases in which sepsis was not diagnosed.¹ However, spontaneous closure is rare, and most patients with urinary fistula will require surgical management.⁵ Abdominal, perineal, and posterior sagittal approaches can be used for fistula correction.⁶ However, a consensus has not been reached on the best surgical technique for fistula repair. At our institution, we prefer the anterior, transanal, transsphincteric, sagit-

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tal approach (ASTRA). This simple and effective surgical technique allows for good surgical exposure and fistula tract identification.

We present our experience in the management of urethrorectal fistula secondary to laparoscopic radical prostatectomy.

MATERIAL AND METHODS

PATIENTS

Of the first 110 laparoscopic extraperitoneal radical prostatectomies performed from December 2001 to February 2004, 9 (8%) were complicated by intraoperative rectal injury. Of the nine injuries, seven were diagnosed and repaired laparoscopically. All but 1 patient healed primarily; in that case, rectourethral fistula was diagnosed postoperatively. In the 2 patients in whom the rectal injury was missed intraoperatively, the diagnosis was made after the development of a rectourethral fistula. We report the operative management used for these 3 patients.

CASE 1

A 52-year-old man underwent laparoscopic radical prostatectomy for Stage T2cNxM0 prostate cancer. The patient had a prostate-specific antigen level at diagnosis of 8.93 ng/dL, Gleason score of 6, body mass index of 29.8 kg/m², and American Society of Anesthesiology class I. The operative time was 135 minutes, and the prostate pedicles were controlled with Ligasure. The operative blood loss was estimated at 600 mL, and a vesicourethral anastomosis was created with nine interrupted 2-0 polyglactin sutures. On postoperative day 4, the urethral catheter balloon protruded through the anus after the patient performed a Valsalva maneuver. Conservative management was attempted with continuous bladder drainage for 10 days, but a 2.5-cm anterior rectal wall defect was noted during rectal examination and cystoscopy. Exploration on postoperative day 21 was done, and a Hartmann-type colostomy with rectal defect repair was performed. On follow-up, a 2-cm persistent rectourethral fistula was diagnosed. The ASTRA surgical approach was used to repair the fistula 3 months after it was first diagnosed. The operative time was 75 minutes. The patient was discharged on postoperative day 2, and the urethral catheter was withdrawn on day 10. Three months later, the colostomy was closed.

CASE 2

A 68-year-old man underwent laparoscopic radical prostatectomy for Stage T3cNxM0 prostate cancer. The patient had clinical Stage T2a disease and was diagnosed with a prostate-specific antigen level of 37.4 ng/mL and Gleason score of 7. The American Society of Anesthesiology classification was II, and the body mass index was 32.7 kg/m². He underwent 6 months of hormonal therapy before surgery. The operative time was 240 minutes. Prostate pedicle control was achieved using the Ligasure device. The operative blood loss was estimated to be 800 mL, and the vesicourethral anastomosis was created with nine interrupted 2-0 polyglactin sutures. During apex dissection, a 2-cm rectal injury became evident and was repaired laparoscopically in two layers. The urethral catheter remained in place until postoperative day 10. Three weeks after surgery, the patient reported fecaluria, and a 2-cm rectal defect was evident on rectal examination. Conservative management with continuous bladder drainage for 30 days was attempted. The rectourethral fistula persisted, and an ASTRA approach was used to repair the fistula 2 months after it was first diagnosed. Preoperative bowel preparation was done with oral laxatives, and a diverting colostomy was not needed. The

operative time was 75 minutes. The patient was discharged 6 hours after surgery, and the urethral catheter was withdrawn on day 10.

CASE 3

A 63-year-old man underwent laparoscopic radical prostatectomy for Stage T2aNxM0 prostate cancer. The clinical stage was T1c and the prostate-specific antigen level and Gleason score was 7.84 ng/mL and 6, respectively. The American Society of Anesthesiology class was I, and the body mass index was 27.7 kg/m². The total operative time was less than 150 minutes, during which prostate pedicle control was achieved using the Hem-o-Lok. The operative blood loss during the procedure was approximately 600 mL, and the vesicourethral anastomosis was created with seven interrupted 2-0 polyglactin sutures. The patient was discharged on postoperative day 2, and the urethral catheter withdrawn on day 5. The patient had to be readmitted because of anuria and sepsis. Bowel perforation was diagnosed, and open laparotomy was performed, draining a great quantity of fecaloid liquid from the abdominal cavity. An associated collection on the right pararectal space was also drained, yet no intestinal fistula was identified. The patient was left with an open laparostomy, and the abdominal cavity was washed on three occasions before closing the laparostomy. The patient was later discharged home totally recovered. However, during follow-up, the patient reported pneumaturia. A 1-cm rectal defect was evident on rectal and cystoscopic examinations. The ASTRA surgical approach was used to repair the fistula 45 days after the laparoscopic radical prostatectomy had been performed. The operative time was 60 minutes. The patient was discharged on postoperative day 2, and the urethral catheter was withdrawn on day 7.

SURGICAL TECHNIQUE

On the day before surgery, the patient was given a clear liquid diet, and a phosphosoda enema was administered the night before the intervention. Intravenous antibiotic prophylaxis with 1 g ceftriaxone and 500 mg metronidazole was given during anesthetic induction and maintained until postoperative day 7.

The patient was placed prone in a jackknife position, with the buttocks strapped apart (Fig. 1). A perineal incision was made, extending from the scrotum to the anal verge. The external and internal sphincters were divided, and the incision was deepened through all structures until excision of the fistula was performed (Fig. 2). The layers were developed on the urinary and rectal sides of the fistula, closure of bladder was done with interrupted 2-0 polyglactin sutures, and the rectal submucosa was also closed with interrupted 2-0 polyglactin sutures. In a similar manner, the rectal mucosa was closed with a running 2-0 polyglactin suture. After the sphincters were closed with an interrupted 2-0 polyglactin suture, the perineal incision was closed. No tissue grafts were used, and no drainage tubes were left. Oral liquids were started 6 hours after surgery, and the urethral catheter was withdrawn between postoperative day 7 and 10.

RESULTS

Of the 110 patients who underwent laparoscopic extraperitoneal radical prostatectomy at our institution, 3 developed a rectourinary fistula. In the 3 patients, two inadvertent rectal injuries were diagnosed postoperatively and one was diagnosed intraoperatively but primary laparoscopic repair failed. The two inadvertent rectal injuries occurred



FIGURE 1. Patient placed prone in jackknife position with buttocks strapped apart.

during the first 25 cases of laparoscopic radical prostatectomy.

All patients with rectal fistula were primarily treated with different surgical techniques before the ASTRA was used for successful definite repair. The follow-up period was 24, 21, and 12 months for the 3 patients. In the 2 patients in whom no septic complications were evident, conservative management with an indwelling urethral catheter was attempted, with negative results. In the patient who had received neoadjuvant hormonal therapy, the rectal lesion was diagnosed and repaired intraoperatively. On postoperative day 10, a rectourethral fistula was evident, but conservative management with an indwelling urethral catheter for 30 days proved ineffective. In the other patient with a terminal colostomy, the abdominal fistula repair was unsuccessful. In 1 patient, peritonitis was diagnosed on day 4, requiring laparotomy with abundant abdominal cavity saline irrigation. No fistula was evident at that point. After 2 weeks, the patient was discharged, but 15 days later started complaining of pneumaturia. Rectal urine leakage and a 1.5-cm rectourinary fistula were evident at examination. The patient underwent anterior transsphincteric, transanal fistula repair without the need for a diverting colostomy.

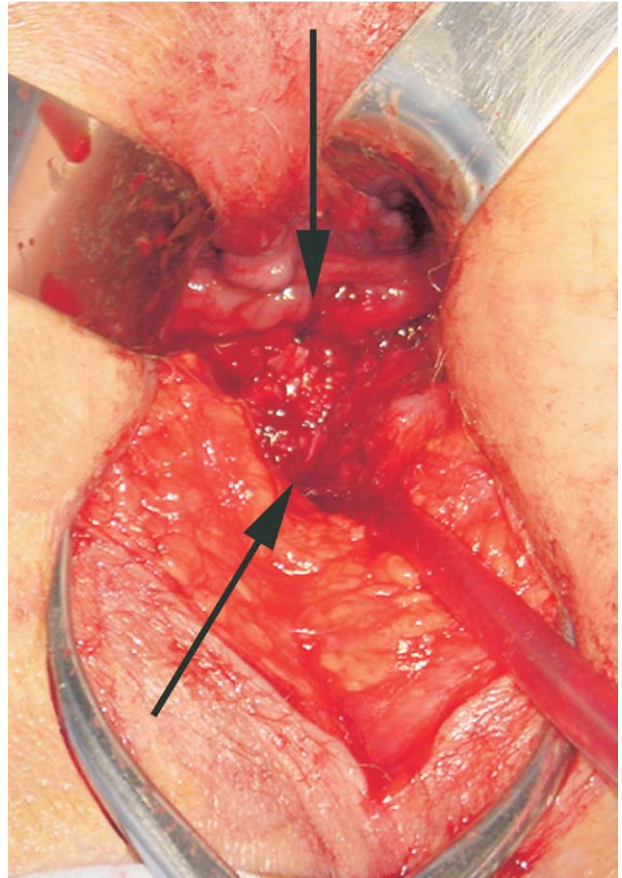


FIGURE 2. External and internal sphincters divided and incision deepened through all structures until excision of fistula (arrows).

The fistula size was 2, 2, and 1 cm. No patient presented with fecal incontinence or anal strictures after this procedure. Of the 3 patients, 2 had total urinary continence and 1 had stress incontinence secondary to laparoscopic radical prostatectomy. The mean operative time was less than 75 minutes. Urethral catheter withdrawal ranged from postoperative day 7 to 10. Two patients were discharged after 48 hours and one was sent home on the same day.

COMMENT

Rectourinary fistula is a potential complication during the learning curve of laparoscopic radical prostatectomy. Most rectourethral fistulas occur after prostate surgery; however, fistulas can be associated with traumatic, oncologic, and inflammatory pathologic features. In our experience, the rectal lesions occurred at the beginning of the learning curve and were always associated with the rectourethral muscle. The injuries could have been avoided by accessing the plane of the rectourethral muscle from a posterolateral aspect and dividing it using cold scissors. This is currently our practice.

Because rectourethral fistulas are so infrequent, most urologists are not familiar with the surgical techniques used for its repair.⁶ Rectourinary fistula management is complex; most fistulas will not heal spontaneously and will require surgical repair. Some patients undergo hormonal therapy before surgery. In these patients, the flaps are poorly vascularized, and special care must be taken to avoid relapse.³ A vast array of surgical techniques are available for fistula repair. Multiple approaches, such as abdominal, vesical, sagittal, and perineal, can be used.⁷⁻¹¹ We report on the ASTRA approach used at our institution for the repair of rectourethral fistulas. This approach was first described by Gecelter¹² in 1973, but to our knowledge, it has never been reported for the treatment of urinary fistulas secondary to laparoscopic radical prostatectomy. The original position described by Gecelter is an exaggerated lithotomy position with a sandbag placed under the sacrum. In our report, the jackknife position with the buttocks strapped apart was used, which allowed for good surgical exposure and fistula tract identification. Most approaches described in published reports have used the forced lithotomy position; however, difficult fistula tract identification has been reported. With the ASTRA approach, a perineal incision is made that extends from the scrotum to the anal verge, and the sphincters are divided, permitting good surgical exposure. Basic fistula repair principles are met: complete excision of fistula tract; separated sutures; and the use of well-vascularized tissue.

Patients with inadvertent rectal injury developed a rectourethral fistula despite conservative management attempted with an indwelling urethral catheter. In 2 patients, abdominal repair was attempted but proved ineffective. The abdominal approach is tricky and sometimes the fistula tract can be missed. Also the operative time and hospital stay are longer, and greater morbidity has been reported.¹³

The York-Mason repair of rectourinary fistulas (posterior sagittal, transanal, and transrectal) is an excellent approach that provides nice exposure through unscarred tissue and allows adequate closure. However, ASTRA is a simpler method that

provides outstanding results with the advantage of being reproducible in inexperienced hands.

CONCLUSIONS

Rectourinary fistula management is challenging. This uncommon complication is usually seen during the laparoscopic radical prostatectomy learning curve. We believe the ASTRA approach to be a superb and feasible approach, because it permits excellent exposure and enables approximation of well-vascularized tissue independent of the urinary and gastrointestinal tracts.

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