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Totally extraperitoneal inguinal hernia repair during extraperitoneal laparoscopic radical prostatectomy: Report of a case



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ABSTRACT

INTRODUCTION: The incidence of prostate cancer is increasing, and inguinal hernias are common in the age group of men with prostate cancer. Furthermore, inguinal hernias are now considered to be one of the long-term complications of radical prostatectomy. In this report, we present our experience with the performance of totally extraperitoneal inguinal hernia repair (TEP) along with extraperitoneal laparoscopic radical prostatectomy (ELRP).

PRESENTATION OF CASE: A 66-year-old man with prostate cancer and bilateral inguinal hernias was admitted to our hospital for surgery. He had a history of right inguinal hernioplasty without mesh placement and ascending colon diverticulitis. With a diagnosis of prostate cancer and bilateral inguinal hernia, concomitant TEP after ELRP was safely performed.

DISCUSSION: TEP combined with ELRP appears to be a rational procedure and easy to perform. The incidence of complications related to either TEP or ELRP might not be increased. TEP combined with ELRP might be safely performed for recurrent inguinal hernia after non-mesh hernioplasty.

CONCLUSION: TEP combined with ELRP might be of use in prostate cancer patients with inguinal hernias.

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1. Introduction

The incidence of prostate cancer is increasing, and inguinal hernias are common in the age group of men with prostate cancer. Furthermore, inguinal hernias are now considered to be one of the long-term complications of radical prostatectomy.^{1,2}

Laparoscopic inguinal hernia surgery for patients previously having undergone prostatectomy is relatively difficult because both operative procedures require wide dissection of the preperitoneal space, and the possibility of preperitoneal adhesions may lead to a prolonged operative time.³ Similarly, previous totally extraperitoneal (TEP) hernia repair with mesh placement has been considered a relative contraindication to laparoscopic surgery or a reason for conversion to open hernia surgery in order to perform extraperitoneal laparoscopic radical prostatectomy (ELRP), because severe adhesions may lead to a prolonged operative time and insufficient lymph node dissection.⁴ In this report, we present our experience with the performance of TEP inguinal hernia repair along with ELRP.

2. Presentation of case

A 66-year-old man was admitted to our hospital for surgery for prostate cancer and bilateral inguinal hernias. The tumor marker prostate specific antigen (PSA) level (5.6 ng/mL) was increased. A prostate biopsy revealed adenocarcinoma. The Gleason score for the biopsy was 4+3. He had a history of non-mesh hernioplasty of a right inguinal hernia at 38 years of age and ascending colon diverticulitis at 58 years of age. With a diagnosis of prostate cancer and bilateral inguinal hernia, ELRP and bilateral TEP repair were performed. After balloon dissection of the preperitoneal space, five trocars were placed in the hypogastrium (Fig. 1). The bilateral obturator lymph nodes were dissected. After the superficial branch of the dorsal veins was cut, incisions on both sides of the lateral endopelvic fascia were made, followed by separation between the prostate and the levator ani fascia into the urethra. The puboprostatic ligaments were incised. After a transverse incision was made at the bladder neck, the urethra was developed with sharp dissection (Fig. 2). The bladder neck was completely transected. The bilateral vasa deferentia were cut, and the seminal vesicles were morbilized. At the midline of the posterior prostate, Denonvillier's fascia was transected. Bilateral prostatic pedicles were resected. Nerve sparing was not performed. After the dorsal vein complex was sectioned, the urethra was cut, and a lump of both prostate

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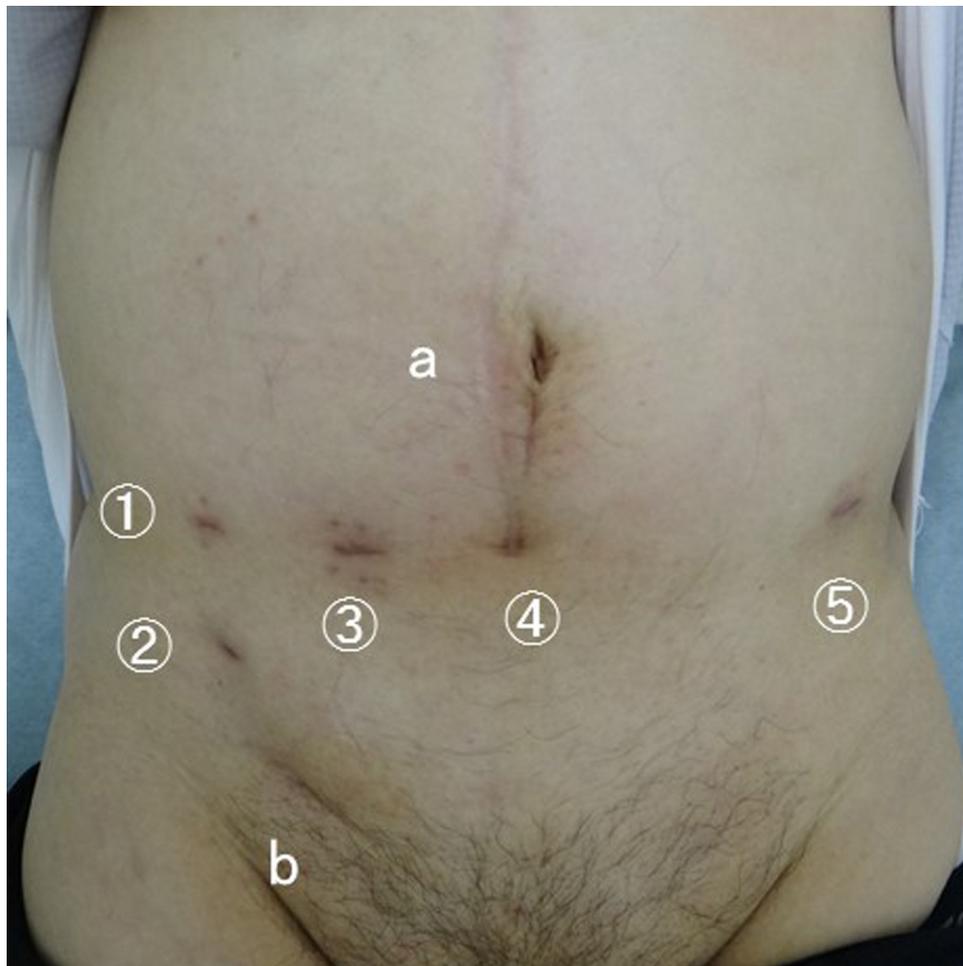


Fig. 1. Trocar site and postoperative scar. 5-mm trocars (1 and 2) for the assistant. 12-mm trocars (3–5) for the surgeon and the scopist. Previous colon diverticulitis operative scar (a) and right inguinal hernia operative scar (b).

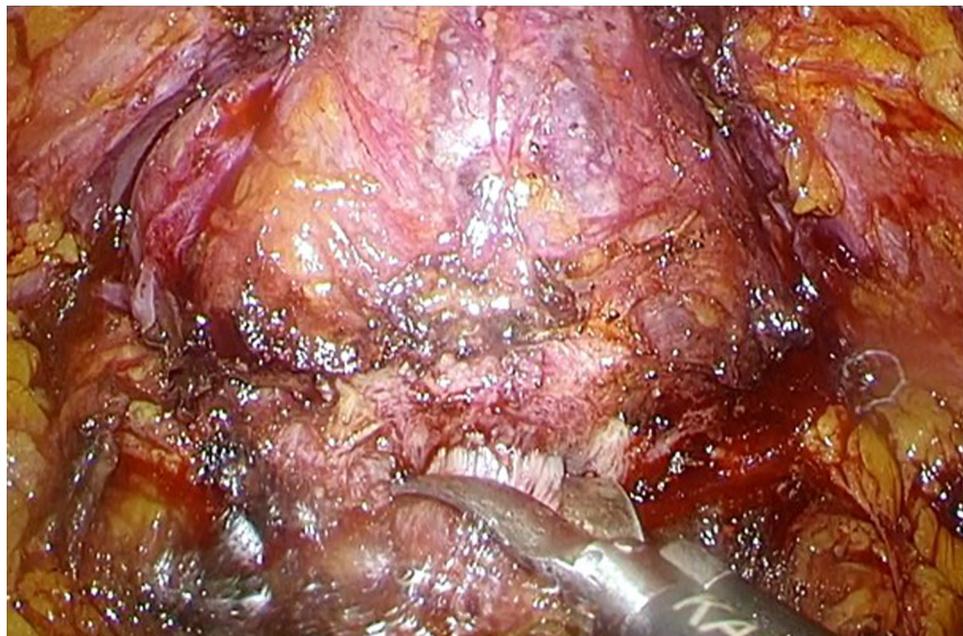


Fig. 2. The urethra is about to be sharply dissected.

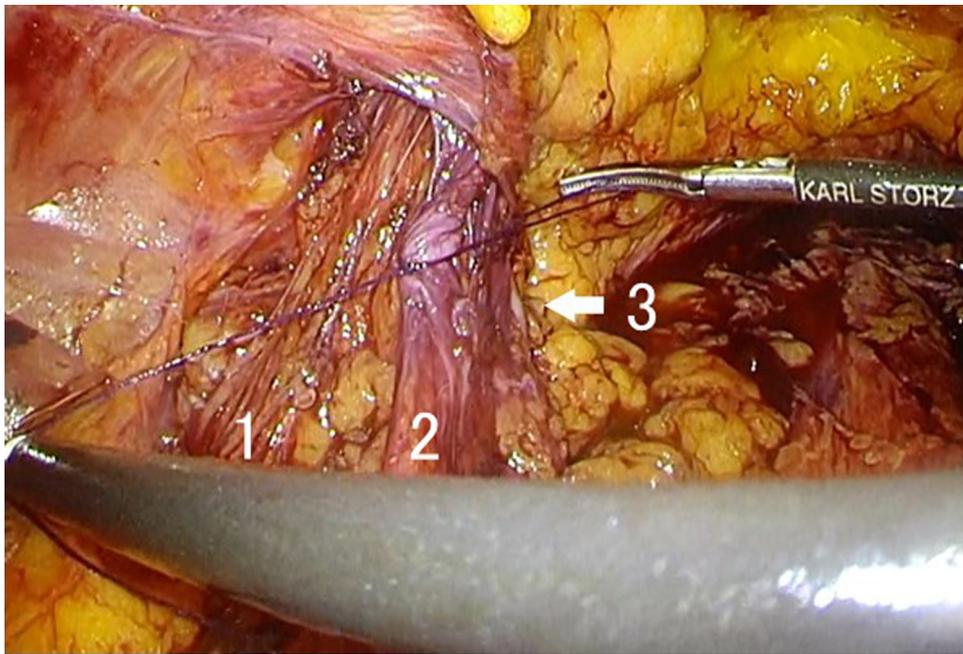


Fig. 3. An indirect hernia on the left side is ligated and dissected. (1) Spermatic artery and vein, (2) indirect hernia sac and (3) spermatic cord.

and seminal vesicles was isolated. After the urethrovesical anastomosis was completed, the prostate was removed via an extraction bag. The hernia of the left side was an indirect hernia. The hernia sac was dissected from the spermatic cord, artery and vein, and then ligated. The hernia of the right side was a direct type of recurrent hernia. It was easy to dissect the preperitoneal space to place the mesh on the recurrent side (Fig. 3). A 13.4-cm × 7.9-cm polypropylene mesh (3D Max Light; CR Bard, Murray Hill, NJ, USA) was placed in this preperitoneal space and fixed with the application of three absorbable tacks (AbsorbaTack; Covidien, Dublin, Ireland) at the pubic bone, at Cooper's ligament, and above the iliopubic tract. The preperitoneal space was deflated with care to avoid

displacing the mesh (Fig. 4). The operative time was 340 min, and the blood loss was 300 mL (containing urine). The patients were given 2 g cefazolin sodium hydrate intravenously on the operative day, and cefcapene pivoxil 300 mg/day orally for three days from the first postoperative day. A histopathological examination of the prostate cancer showed adenocarcinoma (pT2bN0M0 according to the TNM classification). The Gleason score for prostatectomy was 3+4. The surgical margin was negative. The postoperative course was uneventful, and the patient was discharged nine days after surgery. During the 11-month follow-up, the patient had stress incontinence without prostate cancer recurrence or inguinal hernia recurrence. The PSA remained <0.01 ng/mL.

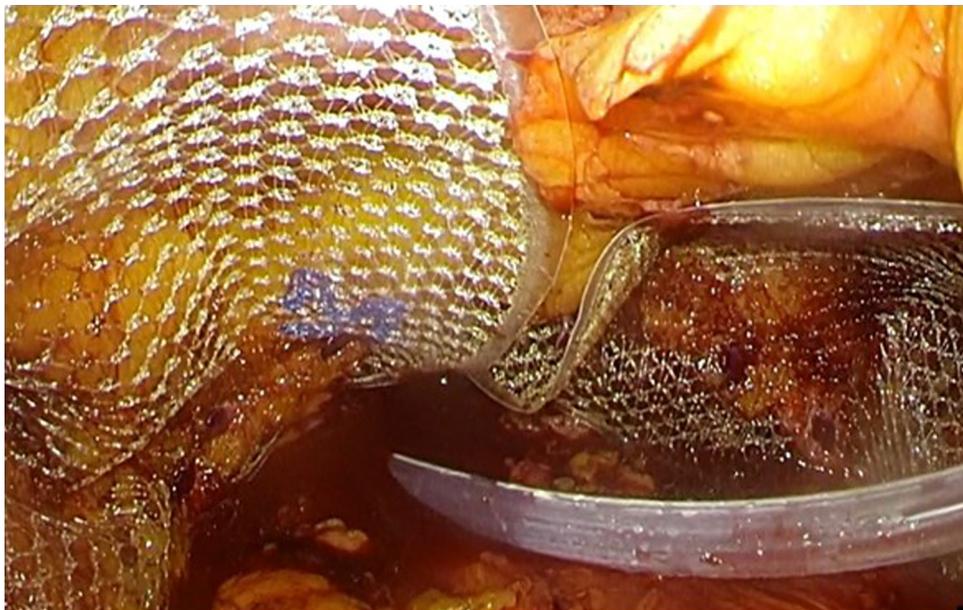


Fig. 4. The mesh covers the inguinal floor bilaterally. The drainage is also in place, and the removal of the gas is about to take place.

3. Discussion

The clinical course of this patient suggested three important clinical issues. First, TEP combined with ELRP appears to be a rational procedure and easy to perform. Second, the incidence of complications related to either TEP or ELRP might not be increased. Third, TEP combined with ELRP might be safely performed for recurrent inguinal hernia after non-mesh hernioplasty.

Concerning the rationality and ease of TEP combined with ELRP, TEP repair in patients previously having undergone prostatectomy is typically difficult because the extraperitoneal plane has been dissected around the midline inferiorly, and the incisional inflammatory changes make it difficult to separate the layers in the preperitoneal space. This may lead to prolonged operative time or conversion to open hernia surgery. It is generally accepted that an anterior approach seems to be the best choice after previous preperitoneal surgery. In Japan, mesh plug (MP) repair is preferred for post-prostatectomy patients.⁵ MP repair requires less dissection of the preperitoneal space than other anterior approaches using the Prolene Hernia System (PHS; Ethicon, West Somerville, NJ, USA) or MK hernia patch (Bard Davol, Inc., Warwick, RI, USA). Another advantage of MP repair is that the spermatic cord requires less care than in non-radical prostatectomy cases because it was already transected. Le Page et al.⁶ reported that, in experienced hands, TEP repair for patients previously having undergone prostatectomy is safe and feasible and has equivalent outcomes to patients not having undergone prostatectomy, though slightly longer operative times may be required. In the present case, bilateral TEP repair was easily performed in the same surgical field after the completion of the prostatectomy and lymphadenectomy because the preperitoneal space around the midline inferiorly was already dissected during ELRP.

Second, regarding the incidence of complications related to either TEP or ELRP, an infected prosthetic graft could have serious complications, though the performance of TEP alone has a very low incidence of infection. According to previous reports,^{7,8} the incidence of complications related to ELRP, such as infections, symptomatic lymphoceles and bladder neck stenosis, does not seem to be influenced by TEP repair. The present patient did not have infected urine before surgery. Additionally, prophylactic antibiotic treatment could sterilize the urine and contribute to no mesh infection.

Third, concerning the safe performance of TEP combined with ELRP for recurrent inguinal hernia after non-mesh hernioplasty, a number of studies have demonstrated that TEP repair of recurrent inguinal hernia is a viable technique that can be done with low re-recurrence and low morbidity. Re-recurrence rates after recurrent repair by TEP ranged from 0 to 20%, but most studies show a comparable or improved recurrence rate compared with the open re-repair.^{9,10} Ramshaw's large, single institution study had a re-recurrence rate of 0.3% after TEP.¹¹ Importantly, the posterior approach of the TEP repair not only provides the mechanical advantage of an underlay repair, but also provides the technical advantage of operating through virgin tissue when performed after prior anterior repair. In our case, the patient seemed to receive prior anterior hernia repair without mesh. It was easy to dissect the preperitoneal space of the midline of the lower abdomen and the right recurrent side and to place the mesh in the inguinal floor after the completion of LRP, though mesh hernioplasty could cause much more severe adhesions after surgery than non-mesh hernioplasty.

In conclusion, TEP repair combined with ELRP appears to be a rational procedure and easy to perform. The incidence of complications related to either TEP or ELRP might not be increased. TEP combined with ELRP might be safely performed for recurrent inguinal hernia after non-mesh hernioplasty. This procedure might contribute to the management of the prostate cancer patient with inguinal hernias.

Conflict of interest

The authors declare no potential conflict of interest.

Funding

None.

Ethical approval

Written informed consent was obtained from the patients for the information to be included in our manuscript. His information has been de-identified to the best of our ability to protect his privacy.

Authors' contribution

Each author participated in writing the manuscript and all agreed to accept equal responsibility for the accuracy of the content of the paper.

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