

Case Report

Laparoscopic Radical Prostatectomy in a Cadaveric Renal Transplant Patient: First Case in Thailand and the Authors First Experience - A Case Report

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Objective: To report the authors' experience in laparoscopic radical prostatectomy for the treatment of localized prostate carcinoma in a cadaveric renal transplant recipient.

Material and Method: A 64-year-old man with chronic renal failure unknown cause had a transplant cadaveric donor kidney about nine years ago. Creatinine clearance was estimated about 68.61 ml/min. He was presented with lower urinary tract symptoms in 2008. He was diagnosed and was treated as benign prostatic hyperplasia. Digital rectal examination was normal and prostate specific antigen (PSA) was 10.84 ng/ml when he was followed-up in 2010. The authors did a prostate gland biopsy, one of four cores from right lobe of prostate gland revealed prostatic adenoma with Gleason score of 6 (3+3). Bone scan did not show any sign of metastases. The authors performed a Laparoscopic radical prostatectomy, extraperitoneal technique.

Results: The patient underwent successful laparoscopic radical prostatectomy without any complications. The operative time was 210 minutes, the estimated blood loss of 300 ml. Pathological analyses revealed negative surgical margins with focal extraprostatic extension, and no seminal vesical, lymphatic, and perineural invasion. The patient tolerated the procedure well and was discharged on day 4. At fourth months, the patient was continent, PSA was 0.003, and renal function stable. At one year, PSA was 0.011 ng/ml and the creatinine was 1.15 mg/dl.

Conclusion: The authors experience suggests that extraperitoneal laparoscopic radical prostatectomy is a technically feasible and safe treatment of localized prostate cancer in renal transplant recipients.

Keywords: Laparoscopic radical prostatectomy, Cadaveric renal

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Tumors associated with prostate cancer are more frequent than any other type of cancer in men. Therapeutic outcomes are much better for cancers diagnosed early. In kidney transplant patients, a laparoscopic approach is usually not performed because of too many adhesions⁽¹⁾ and the presence of the graft in the iliac fossa, both of which make the procedure difficult.

Ramathibodi Hospital has the kidney transplantation more than one thousand cases and the outcomes are doing well. The authors found three kidney transplant patients who had localized prostate cancer. All of them had good condition of transplanted

kidney and long life expectancy. Two of them were performed open radical prostatectomy, and one patient was performed Laparoscopic radical prostatectomy. This paper only focuses on the patient who underwent the laparoscopic radical prostatectomy.

Case Report

The patient was a 64-year-old male with chronic renal failure of unknown cause who had received a cadaveric donor kidney transplant in the right iliac fossa about nine years earlier. The creatinine clearance was estimated to be approximately 68.61 ml/min. The patient had presented with lower urinary tract symptoms in November 2008. He was diagnosed and was treated for benign prostatic hyperplasia. A digital rectal examination was negative for palpable nodules. The prostate specific antigen (PSA) level was 10.84 ng/ml at follow-up in January 2010. A transurethral ultrasound (TRUS)-guided

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needle biopsy of the prostate gland revealed a prostatic adenoma with a Gleason score of 6 (3+3) in one of four cores from the right lobe of the prostate gland. A bone scan did not show any sign of metastases. The authors performed a laparoscopic radical prostatectomy (LRP) using the extraperitoneal technique.

Operative procedure

The first port incision was made at the subumbilicus. The space of Retzius was created with a blunt finger dissection anterior to the peritoneal space. A trocar-mounted balloon dilator device was inserted into the preperitoneal space. Air was inflated to expand the space of Retzius. Four trocas were inserted as shown in Fig. 1: A Veress needle (in place of a dilator), this port was used for the camera port; a 5 mm troca (in the left iliac fossa); and two 10 mm trocas (one in the left iliac fossa and one in the right iliac fossa). The port in the right iliac fossa, which was near the graft, was inserted carefully to avoid injury to the renal transplant graft.

The fat overlying the anterior prostate was removed using sharp dissection and electrocautery as needed. Visible landmarks included the anterior aspect of the bladder and the prostate, the puboprostatic ligaments, the endopelvic fascia, and the pubis. The endopelvic fascia and the puboprostatic ligaments were sharply divided. The deep dorsal venous plexus was ligated, and the neck of the bladder was incised. The seminal vesicles and the vasa deferentia were grasped and brought through the opening that had been created between the neck of the bladder and the prostate. The prostatic pedicle was dissected, and the deep dorsal venous complex was divided. The prostatic apical was also dissected, and the urethra was divided.

Vesicourethral anastomosis was performed. The authors used a running continuous suture with a single knot. The authors performed pelvic lymph node dissection on the left side but not on the right side because it was difficult to dissect. A closed suction drain was left in the prevesical space. The specimen

was extracted through a subumbilical incision using a laparoscopic bag.

Follow-up

The laparoscopic radical prostatectomy was successful, and the patient experienced no complications. The operative time was 210 minutes. The estimated blood loss was 300 ml. Pathological analyses revealed an adenocarcinoma Gleason 6 (3+3), negative surgical margins with focal extraprostatic extension, no seminal vesical invasion, and no lymphatic and perineural invasion.

The patient tolerated the procedure well and was discharged on postoperative day 4.

At four months, the patient was continent, his PSA was 0.003 ng/ml, and his renal function was stable.

At one year, the PSA was 0.011 ng/ml, and the creatinine was 1.15 mg/dl.

Discussion

Genitourinary (GU) malignancies have been reported to be the second most common malignancies in the renal transplant recipients (RTRs) in the United States⁽²⁾. RTR are at risk for early occurrence⁽³⁾, but the role in the occurrence of prostate cancer is unclear⁽⁴⁾. There are many technical challenges associated with laparoscopic radical prostatectomy in kidney transplant recipients. For example, the operating fields are reduced by the graft necessitating the identification of vascular structures, graft, ureter, and bladder. Adhesions in the Retzius space can also make the procedure difficult. In addition, risks associated with immunosuppressive drugs, such as infections and delayed wound healing, must be taken into account⁽⁵⁾. Laparoscopic prostatectomy has been recognized as an alternative to open surgery, with similar functional and oncological outcomes⁽⁶⁾. However, special care must be taken to avoid rectal injury. The rectal injury rate has been reported to be significantly higher in renal transplant recipients than in other patients⁽⁷⁾.

The authors used the extraperitoneal technique, which was first introduced by Raboy et al in 1997. The advantages of extraperitoneal approach are excellent visualization of the structures, avoidance of the adhesions, less risk to the graft, tension-free vesicourethral anastomosis, greater control of blood loss, and a shorter hospital stay. The authors used a trocar-mounted balloon dilator device to create the preperitoneal space. Four trocas were inserted as shown in Fig. 1. The port in the right iliac fossa, which was near the graft, was inserted carefully to avoid injury to

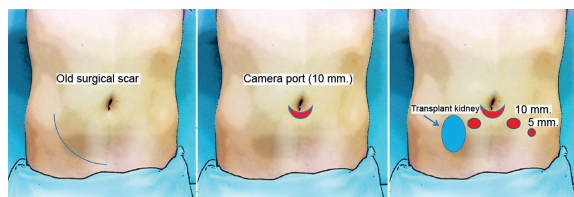


Fig. 1 Location of four ports for laparoscopic radical prostatectomy in renal transplant recipient.

the renal transplant graft. The lymph node dissection was not performed on the right side because it was difficult to dissect.

Recently, robot-assisted laparoscopic radical prostatectomy in a renal transplant recipient has been reported⁽⁶⁾. Radiotherapy has also been shown to be efficient in treating localized prostate cancer; however, it is not the treatment of choice for transplant patients⁽⁹⁻¹²⁾. Moreover, reports of radiotherapy as a primary therapy for localized prostate cancer in renal transplant patients are based on a single limited study⁽¹³⁾.

In conclusion, due to the good long-term outcome of both cadaveric and living kidney transplantation in Thailand, the patients who have localized prostate cancer are candidates for surgery. Extraperitoneal LRP in the carefully selected renal transplant recipient is feasible and safe with technical modifications to avoid injuring the renal allograft, transplanted ureter, and ureteroneocystostomy. Although it should be performed by an experienced laparoscopic team, operative time, recovery period, functional, and oncological outcomes are comparable to non-transplanted patients. The authors think LRP can offer all the minimally invasive benefits to a renal graft recipient that it confers to other RP candidates.

Potential conflicts of interest

None.

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การผ่าตัดมะเร็งต่อมลูกหมากผ่านกล้องในผู้ป่วยที่เคยปลูกถ่ายอวัยวะไต

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วัตถุประสงค์: เพื่อนำเสนอผลการทำผ่าตัดมะเร็งต่อมลูกหมากผ่านกล้องในผู้ป่วยไตวายที่ได้รับการปลูกถ่ายอวัยวะไตมาแล้ว
วัสดุและวิธีการ: ผู้ป่วยชายไตวายเรื้อรังอายุ 64 ปี ได้รับการผ่าตัดปลูกถ่ายอวัยวะไต (*transplant cadaveric donor kidney*) ประมาณ 9 ปีก่อน ค่า *creatinine clearance* ประมาณ 68.61 มิลลิลิตร/นาที ผู้ป่วยมาตรวจด้วยอาการรบกวนระบบปัสสาวะส่วนล่าง (*lower urinary tract symptoms*) ในปี พ.ศ. 2551 และได้รับการรักษาแบบอาการต่อมลูกหมากโต ปี พ.ศ. 2552 ผลการตรวจทางทวารหนัก (*digital rectal examination*) ปกติและค่า *prostate specific antigen (PSA)* เท่ากับ 10.84 นาโนกรัม/มิลลิลิตร ผู้ป่วยได้รับการตรวจชิ้นเนื้อต่อมลูกหมาก (*prostate gland biopsy*) พบว่า 1 ใน 4 *cores* ของต่อมลูกหมากด้านขวาเป็นมะเร็งต่อมลูกหมาก (*prostatic adenoma with Gleason score of 6 (3+3)*) ผลตรวจทางนิวเคลียร์กระดูก (*bone scan*) ไม่พบการกระจายของมะเร็งไปที่กระดูก คณะผู้ทำการรักษาจึงให้การรักษาผ่าตัดต่อมลูกหมากผ่านกล้อง (*laparoscopic radical prostatectomy, extraperitoneal technique*)

ผลการศึกษา: ผู้ป่วยได้รับการผ่าตัดมะเร็งต่อมลูกหมากผ่านกล้องและไม่มีภาวะแทรกซ้อน, ใช้เวลาในการผ่าตัดทั้งสิ้น (*operative time*) 210 นาที, ประมาณการเสียเลือด (*estimated blood loss*) 300 มิลลิลิตร ผลตรวจทางพยาธิวิทยาเป็น (*pathological analyses*) *negative surgical margins with focal extraprostatic extension, no seminal vesical, lymphatic and perineural invasion* ผู้ป่วยสามารถกลับบ้านได้ในวันที่ 4 หลังการผ่าตัด เมื่อติดตามอาการที่ 4 เดือน ผู้ป่วยสามารถกลับปัสสาวะได้ดี, ค่า *PSA* เท่ากับ 0.003 เมื่อติดตามอาการที่ 1 ปี, *PSA* เท่ากับ 0.011 นาโนกรัม/มิลลิลิตร และ *creatinine* 1.15 มิลลิกรัม/เดซิลิตร

สรุป: คณะผู้นิพนธ์มีความเห็นว่าการทำผ่าตัดมะเร็งต่อมลูกหมากผ่านกล้อง (*extraperitoneal laparoscopic radical prostatectomy*) เป็นการผ่าตัดที่สามารถทำได้ผลดีและมีความปลอดภัยสำหรับผู้ป่วยมะเร็งต่อมลูกหมากที่เคยได้รับการผ่าตัดปลูกถ่ายอวัยวะไตมาแล้ว
