Robot Assisted Radical Prostatectomy in A Patient with Previous Abdominoperineal Resection and Pelvic External Beam Radiation Therapy

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Though previous major abdominal surgery and pelvic irradiation may be a significant drawback of subsequent laparoscopic procedure, technological advances such as better visualization and more controlled finer movements of robotic arms allowing better dissection in robotic-assisted laparoscopic surgery may reduce some of these challenges. However, limited data are available on the effect and safety of robotic surgery in these patients. The aim of this case report is to present efficacy and safety of robot assisted radical prostatectomy in a patient who has rectal and concurrent prostate cancer with the history of abdominoperineal resection, pelvic irradiation and adjuvant chemotherapy.

INTRODUCTION

Robotic assisted radical prostatectomy (RARP) has been recently introduced for the treatment of localized prostate cancer and rapidly gained acceptance in worldwide. Many reports have been established that robotic surgery is not inferior when compared with other conventional approaches in terms of surgical, functional and oncologic outcomes[1-2]. As with open radical prostatectomy, there are no anatomic contraindications for RARP. However, there are preoperatively identified factors considered as potentially challenging that have been described in the literature[3-5]. The most important factors among these are previous pelvic external beam radiation therapy [EBRT] and major abdominal surgery. These factors can significantly affect operative outcomes because of severe adhesions and obliterated tissue plans. The aim of this case report is to present the advantages of RARP in patient with rectal and concurrent prostate cancer with the history of abdominoperineal resection (APR), EBRT and adjuvant chemotherapy.

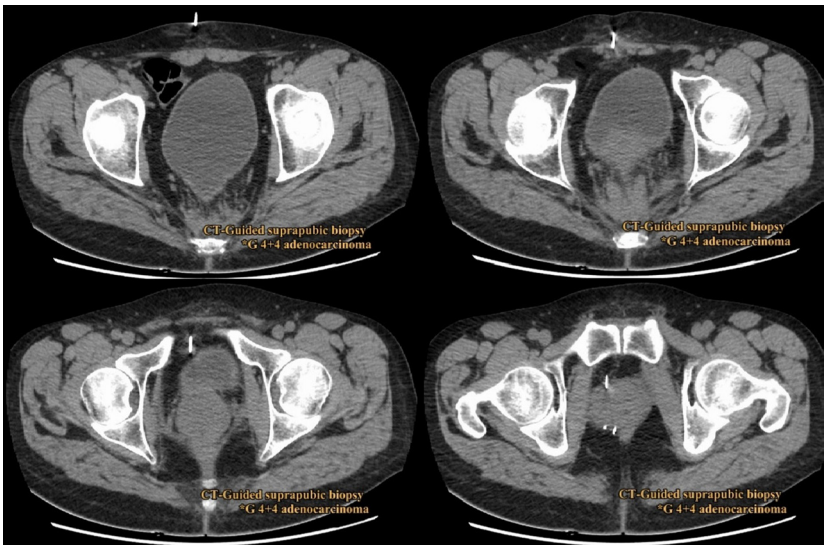

Figure 1. CT-Guided suprapubic biopsy was done due to closed anal verge secondary to previous surgery.

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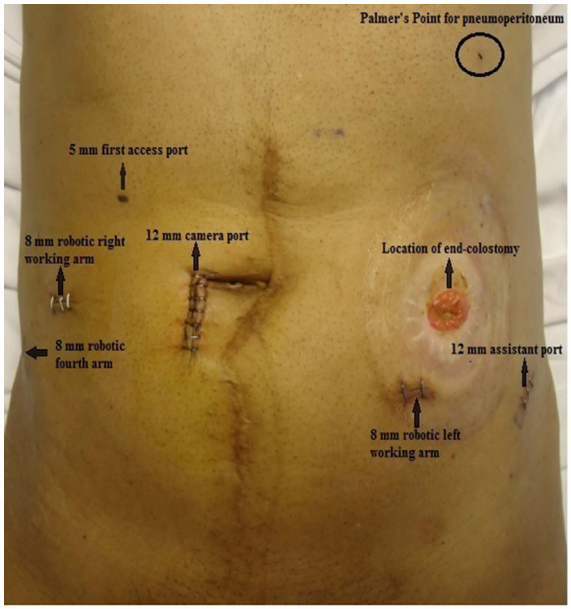

Figure 2. Postoperative aspect of port placements.

CASE REPORT

A 74-year-old male patient admitted to our hospital with elevated PSA at 4.85ng/mL. In his past history, the patient had received APR, EBRT and adjuvant chemotherapy for rectal cancer at 2013. There were no findings suggestive of local recurrence and distance metastases of rectal cancer according to 18 FDG PET/CT imaging at the last follow up. A multiparametric magnetic resonance imaging showed multiple PI-RADS 4 lesions involving both lobes of prostate but digital rectal examination and TRUS guided biopsy were not possible due to closed anal verge secondary to prior surgical resection. Computerized tomography guided suprapubic biopsy revealed prostate adenocarcinoma with a Gleason score of 4+4 (**Figure 1**). Definitive surgical treatment with robotic assistance was desired by the patient. Therefore, we obtained informed consent in order to perform RARP.

Bowel preparation was done day before surgery and colostomy site was covered with lobanTM film (3M, St, Paul, MN) to prevent contamination. A 2 mm transvers skin incision was made 3 cm below from the left costal margin on the midclavicular line as the primary puncture site, known as Palmer's point. Through this incision, a Veress needle was inserted to create pneumoperitoneum. Since high probability of the bowel injury due to intraperitoneal adhesions, first 5 mm trocar was inserted at the 3 cm below from the right costal margin on the midclavicular line. Extensive intraperitoneal adhesions were completely removed from the surgical field and colostomy site by using with 4 mm laparoscopic scissor. Afterwards, one 12 mm and three 8 mm trocars were inserted under direct vision. Left 8 mm trocar was placed on 3 cm below and medial from the normal location due to end-colostomy and only one 12 mm assistant port was used since there was not enough space for other trocar (**Figure 2**).

Total operation time and console time including bilateral lymph node dissection were measured as 181 and 135 minutes, respectively. Blood loss was 150 ml. and no intraoperative complication was noted. However, length of stay was 8 days due to postoperative subileus-that resolved spontaneously. Total urinary control was achieved at postoperative 3rd months. Severe erectile dysfunction was observed since neurovascular bundles were not spared. PSA values were measured at 3 and 6th months as < 0, 01 ng/ml and surgical margins were emphasized as negative.

DISCUSSION

Previous major abdominal surgery and radiation therapy are not an absolute contraindication for RARP. However, these factors cause severe intestinal adhesions which may complicate port placement and require extensive surgical adhesiolysis. Furthermore, radiation induced tissue adhesion can make the identification of the plans challenging especially during seminal vesicle and endopelvic fascia dissection. First radical retropubic prostatectomy series in the setting of previous pelvic radiation therapy for non-prostate malignancies was reported by Materson et al. They were successful in doing RP in their 9 patients but higher rates of incontinence, voiding difficulty, bladder neck contracture and erectile dysfunction were reported[6]. In addition to this, Yang et al. compared surgical, oncologic and functional outcomes of laparoscopic radical prostatectomy (LRP) in patients with and without transurethral resection of prostate (TUR-P). The authors concluded that LRP is feasible but challenging after TUR-P with greater blood loss, longer operation times, higher complication rates and worst short term continence outcomes[7]. Robotic systems have several advantages over conventional laparoscopy in order to overcome some of these challenges. The advantages of robotic surgery like three-dimensional visualization, seven degree of freedom in movement and avoiding physiologic tremor can facilitate urethrovesical anastomosis and provide conveniences especially in the posterior dissection in the narrow small pelvis[8].

During RARP in patients with previous major abdominal surgery, it is crucial to carried out a wide laparoscopic adhesiolysis before docking the robot since the position of the trocar sites cannot be changed without undocking the robot. Boylu et al. reported a novel technique to lyse adhesions by using a teaching laparoscope with an offset eye piece and working channel to allow visualization of the operative field with concomitant passage of laparoscopic scissor[9]. On the other hand, Rajih et al. described a mini-laparotomy technique in order to lyse extensive peritoneal adhesions which facilitates subsequent minimally invasive surgery where laparoscopic adhesiolysis is difficult and unsafe. In this technique, a midline infraumblical incision was performed through a 7-10 cm and then, adhesions were divided sharply under direct vision[10]. In the present case, we encountered severe and dense peritoneal adhesions due to previous APR with supra and infraumblical incision and EBRT. Primarily, we chose Palmer's point in order to provide pneumoperitoneum because an abdominopelvic CT demonstrated no evidence of suspicious bowel adhesions on the left upper quadrant[11]. Classic closed technique with Veress needle was used in order to create pneumoperitoneum. Afterwards, meticulous adhesiolysis was performed by using laparoscopic scissor via a 5 mm additional trocar inserted on the right

upper quadrant to subsequently allow safe placement of additional robotic trocars.

The main challenge for RARP in patient with prior APR is the port site limitations due to the end-colostomy. Robotic left working arm had to be placed 3 cm caudally and medially from the colostomy in order to keep enough distance between camera port and 12 mm assistant port. Care should be taken not to injure bowel segments at this stage. Therefore, peritoneal adhesions should be completely removed around the colostomy site so as to provide safe change of the robotic instruments, if needed. To the best of our knowledge, this is the second case report related to RARP in patient with the history of APR, EBRT and adjuvant chemotherapy. First case was reported at 2009 by Ham et al.[12] Yet, the authors distinctly used Hasson technique to create pnömoperitoneum and fourth robotic arm was not placed due to inadequate surgical space. They also did not perform LND because of severe adhesions secondary to prior surgery. On the final pathology of their case, surgical margin was negative and total urinary control was achieved at the first postoperative month. Finally, the authors concluded that history of APR and EBRT are not contraindication for RARP although there is a technical difficulty.

CONCLUSIONS

Although it is seen as a challenging procedure due to severe adhesions, prior APR and EBRT should not be considered as a contraindication for RARP since robotic surgery provides many advantages to the surgeon such as tremor reduction and magnified three-dimensional visualization that affect directly to surgical outcomes.

CONFLICT OF INTEREST

The authors report no conflict of interest.

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