Case Report

Robotic radical prostatectomy in patients with cerebrovascular disease history: safe but epilepsy

Bahri Gok[1], Abdullah Erdem Canda[2], Erem Asil[3]
[1]Yildirim Beyazit University, School of Medicine affiliated with Department of Urology, Ankara Ataturk Training and Research Hospital, Ankara, Turkey
[2]Department of Urology, Koc University, School of Medicine, Istanbul, Turkey
[3]Department of Urology, Ankara Ataturk Training and ResearchHospital, Ankara, Turkey

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ABSTRACT

Among 1250 robotic radical prostatectomy procedures that were performed at our department, we identified three patients with previous cerebrovascular disease history. Of those, postoperative follow-up was uneventful for two patients. One patient who had a history of cranial meningioma developed urge urinary incontinence and trigerring of epilepsy in the perioperative follow-up, two months after the robot-assisted laparoscopic radical prostatectomy procedure. Medical management resolved the symptoms.

KEY WORDS: epilepsy, robotic radical prostatectomy, Trendelenburg

INTRODUCTION

Radical prostatectomy provides long-term cancer control in patients with localized prostate cancer (PCa)[1]. Robot-assisted laparoscopic radical prostatectomy (RARP) has increasingly become a preferred treatment of choice both by patients and urologists since its introduction in 2001[2].

We previously published our surgical technique of RARP[3]. We use a transperitoneal approach patient in the steep (30°) Trendelenburg position. A total of 5 ports are placed, including four ports for the robotic arms and camera and a 12-mm port for bedside assistance.

Safety of a RARP procedure in patients with previous known cerebrovascular disease is not certain yet. It was reported before that prolongation of steep (30°) Trendelenburg position may lead to serious hemodynamic, respiratory and cerebrovascular adverse effects[4]. Intracranial pressure (ICP) was suggested to increase depending on the increase of venous pressure as a result of continuation of Trendelenburg position[5]. Therefore, increase in ICP might have a significant impact on the patients with previous central nervous system (CNS) comorbidity.

Between February 2009 and October 2017, 1250 RARP procedures were performed at our department. Among them, three patients were identified who had a history of CNS comorbidity and who underwent RARP procedure at our department. In the present study, we presented the characteristics, outcome and follow-up of these three patients.

CASE REPORT

Case 1:

A 68-year-old male patient was referred for a RARP procedure. He had a serum prostate specific antigen (PSA) of 7 ng/mL and a transrectal ultrasound guided prostate biopsies (TRUS-Bx) revealed PCa in three cores with Gleason score 4+4. Patient did not have any co-morbidity. He had a history of head trauma on the right side due to a car accident 30 years ago that healed with conservative management. He did not have any neurologic symptoms or sequels. He did not use any anti-coagulant agent.

Address correspondence to:
Bahri Gok, Department of Urology, Yildirim Beyazit University, School of Medicine, Ankara Ataturk Training and Research Hospital, Bilkent, Ankara 06800, Turkey. Tel: +90 5062856839; Fax: +90 3122912715; E-mail: drbahrigok@gmail.com

Contrast enhanced abdomino-pelvic computerized tomography (CT) was within normal limits. A Ga-68 PSMA positron emission tomography scan was carried out that showed increased expression in the prostate suggesting prostate cancer and increased expression in right cranial area suggesting metastasis. A neurosurgery consultation was carried out and a cranial magnetic resonance imaging (MRI) was requested in order to demonstrate the right cranial lesion that showed a large calcified meningioma located in the right fronto-parietal area involving the dura that opacify following iv Gad injection (Figure 1).



Fig 1: Cranial MRI showing a calcified meningioma located in the right fronto-parietal area involving the dura.

A RARP procedure with bilateral extended pelvic lymph node dissection was performed. Operation time was 2.5 hours. Estimated blood loss was 150 cc. Intra-operative and post-operative follow-up was uneventful and patient was discharged on post-operative day 3. On postoperative 2nd month follow-up, his serum PSA was 0.0001 and he was using 1 safety pad/day with almost no urinary incontinence (only few drops of urine leakage during coughing).

Following the 2nd month follow-up, a temporary speech disorder with left hemiparesis occured and neurology consultation suggested a transient ischemic attack that resolved spontaneously. Patient was discharged using clopidogrel and acetyl salicylic acid. One month after epileptic attacks started to occur, MRI and electroencephalography tests suggested new onset epileptic activity triggered due to right parietal meningioma. During the epileptic attacts, urinary incontinence mainly as urge urinary incontinence developed. Patient's symptoms resolved following initiation of antiepileptic drugs, including urge urinary incontinence.

Case 2:

A 68-year-old male patient was referred for a RARP procedure who had serum PSA of 6.6 ng/ml and who underwent TRUS-Bx. PCa, Gleason 3+3 in six cores were detected. Abdomino-pelvic CT was within normal limits. He had diabetes mellitus that was controlled with oral anti-diabetic drugs and was a cigarette smoker (20 packs/year). He had a cerebrovascular accident seven years before and did not have any neurologic sequelea. Preoperative cranial MRI demonstrated an infarct area on the left occipital and parietal areas. Patient was consulted with neurology department and had approval for the RARP procedure. Preoperatively, patient was using acetyl salicilic acid 100 mg/day. A RARP procedure was performed and console time was 125 minutes and estimated blood loss was 50 cc. Postoperative follow-up was uneventful and patient was discharged on postoperative day 2. On postoperative 5-year follow-up, he did not have any additional neurologic complaint or complication.

Case 3:

A 66-year-old male patient was referred for a RARP procedure who had serum PSA of 17 ng/ml and who underwent TRUS-Bx. PCa, Gleason 3+3 in one core was detected. Abdomino-pelvic CT and nuclear bone scan were within normal limits. He had diabetes mellitus that was controlled with oral anti-diabetic drugs. He had a cerebrovascular accident two years before and did not have any neurologic sequelea. Preoperative cranial MRI showed a 3.5 mm sized infarct area involving pons and left paramedial areas. Patient was consulted with neurology department and had approval for the RARP procedure. Preoperatively, patient was using acetyl salicilic acid 100 mg/day. A RARP procedure with bilateral extended pelvic lymph node dissection was performed and console time was 180 minutes with an estimated blood loss of 100 cc. Postoperative follow-up was uneventful and patient was discharged on postoperative day 2. On postoperative 1-year follow-up, he did not have any additional neurologic complaint or complication.

DISCUSSION

RARP is increasingly being applied in the surgical management of localized PCa. However, transperitoneal RARP requires steep (30°) Trendelenburg patient position in order to obtain a clear and accessible surgical open window for the operating console surgeon. Prolongation of this position contributes to increase in perioperative CNS complications depending on changes in ICP[4,6,7].

Published literature on the impact of steep (30°) Trendelenburg patient position on cardiovascular and neurophysiological systems of the patients suggested

that it may lead to ICP increase and this may contribute to CNS-related complications[6,8]. Increased ICP and increased ultrasonographic measurement of optic nerve sheath diameter in patients who underwent RARP was shown by Kim *et al*[5]. It was also shown that middle ear pressure significantly increased in patients who underwent RARP and the authors stated that this may cause problems in patients with pre-existing ear disease[9].

Chalmers *et al* had a series of 1868 patients who underwent RARP[6]. Of those, 40 (2.1%) had retinal or CNS-related comorbidities, of which 15 had a history of retinal surgery and 24 had a history of cerebrovascular accident, aneurysm and/or neurosurgery. Blood loss and surgical duration were similar in both groups. In their series, no retinal or CNS complications occurred in either group and they concluded that retinal and CNS pathology present no greater risk of suffering from perioperative complications following RARP[6].

In our series of three patients with known preoperative CNS comorbidity, operation time was 2.5 hours, 2 hours and 3 hours, respectively. Although no postoperative neurologic complication developed in two of the patients who had sufficient postoperative follow-up, an unexpected epilepsy occurred in patient number 1 due to the presence of the meningioma located in the right fronto-parietal area involving the dura. To the best of our knowledge, this neurologic complication is reported for the first time in the literature that developed in the perioperative period following the RARP procedure. The degree of the Trendelenburg position and operation time might be factors that have an impact on ICP.

In case 2, preoperative cranial MRI showed an infarct area on the left occipital and parietal areas. In case 2, cranial MRI showed a 3.5 mm sized infarct area involving pons and left paramedial areas. Although no neurologic problems developed in the postoperative period in both patients, close follow-up is mandatory. As no large data is available about this issue in the published literature, no strict conclusion could be made. There are few reports that state no problems in postoperative follow-up[10,11].

CONCLUSION

Although RARP can be safely performed in patients with CNS-related comorbidities, post-operative epilepsy development due to the presence of an existing meningioma might occur in the postoperative follow-up.

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Author Contribution

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Writing – review&editing: Abdullah Erdem Canda
Language correction: Erem Asil

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