Available online at www.sciencedirect.com

ScienceDirect

EJSO 41 (2015) 837–843

EJSO the Journal of Cancer Surgery

www.ejso.com

Age stratified comparative analysis of perioperative, functional and oncologic outcomes in patients after robot assisted radical prostatectomy – A propensity score matched study☆

A. Kumar*, S. Samavedi, A.S. Bates, Camilo A. Giedelman Cuevas, R.F. Coelho, B. Rocco, K. Palmer, V.R. Patel

Department of Urology, University of Central Florida College of Medicine and Global Robotics Institute, Florida Hospital-Celebration Health, FL, USA

Accepted 8 April 2015
Available online 25 April 2015

Abstract

Introduction and objectives: Our goal was to evaluate the perioperative, functional and intermediate term oncological outcomes of robot assisted radical prostatectomy (RARP) in patients ≥70 years.
Materials and methods: The study population (N = 3241) consisted of consecutive patients who underwent RARP for localized prostate cancer by a single surgeon (VP) from January 2008 through February 2012. A query of our Institutional Review Board approved registry identified 400 men ≥70 years of age, with good functional status (Charlson co-morbidity index <3). These patients were propensity score matched to younger patients. Perioperative and postoperative functional and oncologic outcomes for the two groups were compared.
Results: Full nerve sparing as well as the ease of nerve sparing were similar in 2 groups. Intra-operative complications were comparable. Postoperative complication occurrence rates were similar. At mean follow up of 34.1 months and 37.2 months respectively in younger and older patients, the continence rate was comparable in 2 groups (91.3% and 87.3%).Average time to continence and potency were similar in 2 groups. A greater proportion of younger patients became potent than elderly (52.3% vs 33.5%,p < 0.001).The biochemical recurrence (BCR) rate was comparable in 2 groups (7.8% vs 8.3%; p = 0.79). The mean time to BCR was also comparable in 2 groups (16 months vs 22.6 months; p = 0.07).
Conclusions: In appropriately selected patients (minimal comorbidities with CCI ≤2, life expectancy >10 years, localized prostate cancer) RARP is a reasonable option in patients ≥70 years and provides comparable perioperative, functional and intermediate term oncologic outcomes as compared to younger patients.

Keywords: Prostatectomy; Robot assisted radical prostatectomy; Age stratified analysis; Oncological outcomes; Potency; Urinary incontinence

Introduction

In the United States of America (USA) prostate cancer is the most common non-cutaneous malignancy affecting men and the second most common cause of death in men.[1]

Cancer of the prostate is a disease which mostly affects men over 65 years old, with over 50% cases in this group, and 25% in men over 75 years.[1,2] The life expectancy of males in the USA has risen due to advances in medical care, public health policies and lifestyle modifications.[3] Men ≥70 years can now expect to live for over 13 years and the population ≥70 years is projected to increase between 2010 and 2030. By the year 2030, 19.6% of the total population will be >70 years.[1,3,4] Due to the incidence of prostate cancer within this demographic, a greater disease burden is expected in the future.[1]

☆ **Presentation at a meeting:** AUA annual meeting 2014, Orlando, USA.

* Corresponding author. Department of Urology, Global Robotics Institute, Florida Hospital-Celebration Health, FL, USA. Tel.: +1 407 701 0365.
E-mail address: anup_14k@yahoo.com (A. Kumar).

http://dx.doi.org/10.1016/j.ejso.2015.04.006
0748-7983/

To the present there are no guidelines regarding the management of cancer prostate in men above 70 years of age, despite their propensity to carry disease which is comparatively higher risk, being more aggressive in nature with a higher mortality compared to younger patients.[4,5] However, this elderly population also has potential issues of poor functional status, co-morbidities which lead to poor functional outcomes and also affecting recovery from definitive extirpative treatment for prostate cancer. Moreover, possibility of life expectancy <10 years in this population can minimise the survival benefits of radical prostatectomy (RP), due to death from other causes.[6] The debate continues with respect to men ≥70 years with good functional status, low co morbidities and localised disease whether to proceed to potentially curative RP as primary treatment.

Conventionally men aged over 70 with localised prostate cancer are not offered curative therapy like radical prostatectomy (RP) without considering issues. The current options available for men over 70 years include radical prostatectomy, radiotherapy, androgen deprivation therapy (ADT), watchful waiting and active surveillance.[4] Studies have demonstrated that in elderly cohorts of patients, definitive treatment in the form of radical prostatectomy offers superior disease specific survival than watchful waiting.[7–9] Only taking chronological age into account can result in potential under-treatment in elderly cohort of patients who could have benefitted from definitive treatment like RP[4,10].

Robot-assisted radical prostatectomy (RARP) has become popular for the treatment of localized prostate cancer due to enhanced recovery, reduced blood loss, improved favourable functional and oncological outcomes.[11,12]With advances in robotic techniques and the increasing experience using the robotic platform, RARP has shown good functional and oncological outcomes in the elderly population in very few recently published series.[13–15] We present the first propensity score matched study evaluating the perioperative, functional and intermediate term oncological outcomes of RARP in patients ≥70 years. To our knowledge this study brings the largest cohort group and longest follow up of RARP in this subset of patients to the literature so far, and seeks to provide evidence as to whether men ≥70 years can expect similar outcomes following RARP compared to men <70 years.

Materials and methods

Study population

From January 2008 through February 2012, there were 3241 consecutive patients who underwent RARP for localized prostate cancer by a single surgeon (VP) at our institution, a tertiary referral center. All procedures were performed using the transperitoneal, six-port technique previously described.[12] Patients who received prior radiation, focal therapy for prostate cancer, androgen deprivation therapy or classified as salvage were excluded from the study. A query of our Institutional Review Board approved registry identified 400 men 70 years of age and over, with good functional status (Charlson co-morbidity index < 3). These patients were computer-matched in a 1:1 ratio to younger patients (<70 years of age) using an optimal matching algorithm in a multivariate design. The final two study cohorts were young men; Group A (n = 400) and elderly men; Group B (n = 400), constituting the patients for this comparative study.

Data collection and management

Perioperative data were collected retrospectively and entered into our institutions IRB-approved Integrated Robotic Assisted Urological Surgery Outcomes Database. Follow-up information was obtained through comprehensive self administered validated questionnaires (EPIC-Expanded Prostate Cancer Index Composite questionnaire for continence and SHIM questionnaire for potency) filled out by patients during the visit and by telephone interviews and entered into the follow-up component of the database. Follow-up data were collected at 6 weeks, 3 months, 6 months, 9 months, 12 months, 18 months and 1 year intervals to assess functional and oncologic outcomes. Postoperative complications were classified using the Dindo modification of the Clavien Grading System Biochemical recurrence was defined as a prostate specific antigen (PSA) level ≥ 0.2 ng/ml postoperatively with a confirmatory value.

Continence was defined as the use of no pads and no urine leakage based on responses to these 2 EPIC questions (In the last 4 weeks, how many have you leaked urine? How many pads or adult diapers per day did you usually use to control leakage during the last 4 weeks?).

Potency was defined as ability to achieve and maintain satisfactory erections firm enough for sexual intercourse for >50% of times, with or without the use of oral phosphodiesterase 5 (PDE5) inhibitors (SHIM score ≥4 on questions 2,3 and 5 of SHIM questionnaire).Patients having intercourse dependent on penile injection, vaccum erection device (VED)or transurethral alprostadil were not considered potent.All patients were advised penile rehabilitation-regular PDE5 inhibitors after RARP, at least 3 times a week, until recovery of sexual function. The VED was advised once a day starting 6 weeks after RARP.

Statistical analysis

Demographic and clinical data are presented as frequency distribution and simple percentages. Values of continuous variables are expressed as mean ± the standard deviation and median. Univariate analysis of selected perioperative discrete variables was accomplished by the chi-square test with the appropriate degrees of freedom or the Fisher's Exact test to assess the equality of proportions. Two-sample t-tests were used to test for the equality of means in continuous variables.