

UROLOGIC ONCOLOGY

Urologic Oncology: Seminars and Original Investigations 000 (2018) 1-9

Original article Robotic versus open partial nephrectomy for highly complex renal masses: Comparison of perioperative, functional, and oncological outcomes

Juan Garisto, MD, Riccardo Bertolo, MD, Julien Dagenais, MD, Daniel Sagalovich, MD, Khaled Fareed, MD, Amr Fergany, MD, Robert Stein, MD, Jihad Kaouk, M.D.*

Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH

Received 25 February 2018; received in revised form 20 June 2018; accepted 27 June 2018

Abstract

Introduction: We aimed to compare perioperative, functional and oncological outcomes between robot-assisted partial nephrectomy (RAPN) and open partial nephrectomy (OPN) for highly complex renal tumors (R.E.N.A.L. nephrometry Score > 9).

Methods: A retrospective review of 1,497 patients who consecutively underwent partial nephrectomy at a **single** academic tertiary center between 2008 and 2016 was performed to get data about patients who underwent RAPN and OPN for renal masses with RENAL score > 9. Baseline, perioperative, functional, and oncological outcomes were compared.

Results: Two hundred and three RAPN and 76 OPN were extracted. Patients' demographics and tumors' characteristics were comparable between the groups. Blood loss (200 vs. 300 cc, P < 0.0001), intraoperative transfusion rates (3% vs. 15.8%, P < 0.001), and length of stay (3 vs. 5 days, P < 0.01) were lower for RAPN. A significant decrease in estimated glomerular filtration rate was observed from preoperative to postoperative period, regardless the approach (OPN, P = 0.026 vs. RAPN, P = 0.014). Conversion to radical nephrectomy was 7.8% and 5.9% for OPN and RAPN, respectively. At multivariable regression, open approach was predictive of intraoperative transfusion and reoperation. Overall actuarial rate of recurrence or metastasis was 4.3%, with 3 cancer-related deaths occurring after a median follow-up of 25 months. No differences were found between the groups.

Conclusion: In our large single-institutional series of patients who underwent partial nephrectomy for highly complex renal tumors, robotic approach appeared to be a valuable alternative to OPN, with the advantages of reduced blood loss, ischemia time, transfusions rate, and length of stay. © 2018 Elsevier Inc. All rights reserved.

Keywords: Robotics; Partial nephrectomy; Renal cell carcinoma; RENAL nephrometry score

1. Introduction

Considerable evidence suggests that partial nephrectomy (PN) for localized renal cell carcinoma has equivalent oncological outcomes when compared to radical nephrectomy [1,2]. Another unique feature of PN over radical nephrectomy relates to better renal functional preservation, which may confer a lower risk of cardiovascular disease, translating into better overall survival [3]. Various surgical approaches for PN have been described, including open

*Corresponding author. Tel.: (216) 444-2976.

https://doi.org/10.1016/j.urolonc.2018.06.012 1078-1439/© 2018 Elsevier Inc. All rights reserved. (OPN) and minimally invasive techniques, namely laparoscopic (LPN) and the robot-assisted (RAPN). The adoption of minimally invasive approaches has achieved broad acceptance with favorable outcomes. An initial comparison of 1,800 LPN and OPN for single renal tumors showed functional (3 months renal functional outcomes were 97.9% and 99.6% of renal units retaining function, respectively) and early oncological (3 years cancer-specific survival was 99.3% and 99.2%, respectively) outcomes equivalent to those of OPN [4]. With technological evolution and the adoption of robotic surgical platforms, multiple comparative series showed that RAPN has perioperative outcomes similar to those of LPN [5,6]. The

E-mail address: kaoukj@ccf.org (J. Kaouk).

ARTICLE IN PRESS

J. Garisto et al. / Urologic Oncology: Seminars and Original Investigations 00 (2018) 1-9

high-definition, three-dimensional optical system, and the wristed instruments of RAPN have been described to allow the surgeon to perform more precise tumor excision and renorrhaphy, providing advantages over LPN [7]. Moreover, as the RAPN experience has evolved, a preference toward such an approach when performing larger and more complex renal tumors has been observed at tertiary care centers [8]. Indeed, tumor size and anatomical characteristics should be considered in order to determine the complexity of the tumor before PN. In order to have a consistent nomenclature, Kutikov et al. introduced the R.E. N.A.L. nephrometry score to quantify the anatomical characteristics of renal masses on imaging studies based on tumor size, location, and depth [9]. This scoring system implements a standardized anatomical classification to facilitate surgical decision-making, and categorize the complexity of the renal masses (RENAL score range of 4 to 6, 7 to 9, and 10 to 12 are deemed too low, moderate, and high complexity lesions, respectively). Notably, a recent multiinstitutional study showed a significant association of RENAL score in predicting prolonged warm ischemia time and high-grade postoperative complications after RAPN [10,11]. A paucity of comparative studies between RAPN and OPN is available for highly complex renal tumors [11]. Trying to contribute in filling the gap in the literature, we performed the present study. The primary aim was to compare the perioperative outcomes of OPN and RAPN for renal tumors with RENAL score > 9. Factors potentially associated with occurrence of complications were investigated. The secondary aim was to compare the functional and the oncological outcomes.

2. Methods

2.1. Study population

The institutional review board-approved PN database was reviewed to obtain data from consecutive patients who underwent PN for renal tumors from January 2006 to December 2016 (IRB 5065 and 15-1593). Patients who had solitary kidneys, multifocal tumors, and radiographic evidence of metastatic disease were excluded.

Moreover, specifically for the purpose of the study, only patients with RENAL score > 9 were extracted and considered for the analysis.

All patients had undergone preoperative cross-sectional imaging to evaluate location, tumor size, depth of invasion, and, specifically, to assess the RENAL nephrometry score.

2.2. Patients' demographics

Patient demographics and preoperative variables were analyzed including age, gender, laterality, body mass index (BMI), comorbidities according to the Charlson comorbidity index (CCI).

2.3. Perioperative outcomes

Surgical data (operative time, estimated blood loss, ischemia time, transfusion rate, and conversion to radical nephrectomy) were recorded. Postoperative complications were graded using the Clavien-Dindo classification system and divided into nonurologic and urologic etiologies [12]. The length of hospital stay was considered.

2.4. Functional outcomes

Renal function was evaluated at baseline and then at 3, 6, and 12 months postoperatively by the estimated glomerular filtration rate (eGFR), as calculated by the Modification of Diet in Renal Disease study (MDRD) equation [13]. The percentages of patients who developed chronic kidney disease were evaluated and compared between groups [14].

2.5. Pathological and oncological outcomes

Pathological staging was performed according to the 2016 version of the TNM [15] classification and histological subtypes according to the WHO classification [16]. Incidence of recurrence and/or metastasis was evaluated, as well as cancer-specific mortality between the approaches. Follow-up was calculated from the date of surgery to date of the most recent documented examination. Oncological follow-up consisted of a physical and radiological evaluation. The latter consisted of a minimum of a chest X-ray and abdominal computed tomography or magnetic resonance imaging at 6 months, then annually.

2.6. Surgical technique and surgeons' experience

All RAPN were performed via transperitoneal approach using the da Vinci Surgical System (Intuitive Surgical, Sunnyvale, CA) according to a previously described technique [17]. The institutional OPN technique has been previously described as well [18]. Cases were by surgeons who did a minimum of 100 PNs. Resections were carried out with the intention of complete oncological resection.

2.7. Statistical analysis

Demographic and perioperative data were analyzed using descriptive statistics. Categorical variables were reported as frequencies and proportions; continuous data were presented as means and SD or as medians and interquartile ranges, as appropriate. *t*- and chi-square tests were used to compare the difference between continuous and categorical variables, respectively. ANOVA test was used when comparing more than two groups.

Univariable and multivariable logistic regression analyses were performed looking for variables associated with perioperative outcomes. The Kaplan-Meier method was used to estimate survival curves and the log-rank test was Download English Version:

https://daneshyari.com/en/article/11018175

Download Persian Version:

https://daneshyari.com/article/11018175

Daneshyari.com