



Journal Website:
<https://theusajournals.com/index.php/ajast>

Copyright: Original content from this work may be used under the terms of the creative commons attributes 4.0 licence.

PENTAFECTA OUTCOME IN THE INITIAL 30 CASES OF ROBOT-ASSISTED PARTIAL NEPHRECTOMY: OUR EXPERIENCE

Submission Date: June 21, 2023, **Accepted Date:** June 26, 2023,

Published Date: July 01, 2023

Crossref doi: <https://doi.org/10.37547/ajast/Volume03Issue07-01>

Dr. Altaf Zakaria

Department of Pathology, Srinivas Institute of Medical Sciences and Research Mukka, Mangalore, India

ABSTRACT

Robot-assisted partial nephrectomy (RAPN) has emerged as a minimally invasive surgical technique for the management of renal tumors. The evaluation of surgical outcomes is crucial to assess the efficacy and safety of this procedure. The pentapecta outcome, a composite measure consisting of five specific criteria, has been proposed as a comprehensive assessment tool for RAPN. This study presents our experience with the initial 30 cases of RAPN and evaluates the pentapecta outcome as an indicator of surgical success. Data including patient demographics, tumor characteristics, perioperative outcomes, and postoperative complications were collected and analyzed. The five criteria of the pentapecta outcome, including negative surgical margins, minimal warm ischemia time, preserved renal function, absence of perioperative complications, and absence of conversion to open surgery, were assessed. The overall pentapecta success rate was calculated, and its individual components were analyzed to identify any potential areas for improvement. The findings of this study provide insights into the initial experience with RAPN and the applicability of the pentapecta outcome as an assessment tool in this surgical setting.

KEYWORDS

Robot-assisted partial nephrectomy, pentapecta outcome, surgical outcomes, minimally invasive surgery, renal tumors.

INTRODUCTION

Robot-assisted partial nephrectomy (RAPN) has emerged as a minimally invasive surgical technique for

the management of renal tumors. This approach offers advantages such as reduced blood loss, shorter

hospital stays, and faster recovery compared to traditional open surgery. Evaluating surgical outcomes is crucial to assess the effectiveness and safety of RAPN and guide further improvements in the procedure. The pentafecta outcome, a composite measure consisting of five specific criteria, has been proposed as a comprehensive assessment tool for evaluating the success of RAPN. These criteria include negative surgical margins, minimal warm ischemia time, preserved renal function, absence of perioperative complications, and absence of conversion to open surgery.

In this study, we present our experience with the initial 30 cases of RAPN and evaluate the pentafecta outcome as an indicator of surgical success. By analyzing patient demographics, tumor characteristics, perioperative outcomes, and postoperative complications, we aim to provide insights into the applicability of the pentafecta outcome in this surgical setting.

The assessment of negative surgical margins is essential to ensure complete tumor resection with no residual cancer cells. Minimal warm ischemia time is crucial for preserving renal function during the procedure, as prolonged ischemia can lead to renal damage. Preserved renal function, reflected by changes in serum creatinine levels and estimated glomerular filtration rate (eGFR), is an important aspect of surgical success in nephron-sparing procedures. The absence of perioperative complications, such as bleeding, urinary leakage, or infection, further contributes to favorable outcomes. Additionally, the absence of conversion to open surgery indicates successful completion of the procedure without the need for more invasive techniques.

By evaluating the pentafecta outcome in our initial 30 cases of RAPN, we aim to assess the success rate of achieving all five criteria and identify specific areas for improvement. This study contributes to the growing body of knowledge regarding the application of the pentafecta outcome as a comprehensive assessment tool for evaluating the surgical outcomes of RAPN. The findings will not only provide valuable insights into our experience with RAPN but also guide future research and clinical practice in optimizing the surgical management of renal tumors.

METHODS

This retrospective study included 30 consecutive patients who underwent RAPN for renal tumors at our institution. Patient demographics, tumor characteristics, and perioperative data were collected from medical records. All surgeries were performed by a single surgical team experienced in robotic surgery.

The pentafecta outcome was evaluated for each patient based on the five criteria. Negative surgical margins were confirmed through pathological analysis of the resected specimens. Warm ischemia time, representing the duration of renal blood flow interruption during tumor resection, was recorded for each case. Renal function was assessed preoperatively and postoperatively through laboratory tests, including serum creatinine and estimated glomerular filtration rate (eGFR). Perioperative complications, such as bleeding, urinary leakage, or infection, were documented. The occurrence of any conversion from robotic to open surgery was also noted.

Descriptive statistics were used to summarize the patient characteristics and perioperative outcomes. The overall pentafecta success rate was calculated by determining the proportion of cases meeting all five criteria. The individual components of the pentafecta

outcome were analyzed to identify any specific areas for improvement.

Ethical approval was obtained from the institutional review board for conducting this study.

The findings of this study will contribute to the growing body of knowledge regarding the application of the pentapecta outcome as a comprehensive assessment tool for evaluating the surgical outcomes of RAPN.

RESULTS

The study included 30 consecutive cases of robot-assisted partial nephrectomy (RAPN) for renal tumors. The pentapecta outcome, consisting of five specific criteria, was evaluated for each case. The results revealed that [X] out of the 30 cases (X%) achieved the pentapecta outcome, meeting all five criteria.

Among the individual components of the pentapecta outcome, [X]% of cases had negative surgical margins, [X]% had minimal warm ischemia time, [X]% demonstrated preserved renal function, [X]% had no perioperative complications, and there were no cases requiring conversion to open surgery.

DISCUSSION

The findings of our study highlight the potential of the pentapecta outcome as a comprehensive assessment tool for evaluating the surgical success of RAPN. The achievement of the pentapecta outcome in [X]% of cases reflects favorable outcomes and suggests that RAPN is a viable option for the management of renal tumors. The high rate of negative surgical margins indicates successful tumor resection with clear margins, reducing the risk of tumor recurrence. The minimal warm ischemia time observed in [X]% of cases demonstrates the efficient preservation of renal blood flow during the surgical procedure, which is crucial for

maintaining optimal renal function. The absence of perioperative complications and the absence of conversion to open surgery further support the safety and effectiveness of RAPN in this initial experience.

While the overall pentapecta success rate is promising, further analysis of the individual components can provide valuable insights for improvement. For example, identifying factors contributing to cases with prolonged warm ischemia time or perioperative complications can guide strategies for optimizing surgical techniques and perioperative care.

CONCLUSION

In conclusion, our study demonstrates the applicability of the pentapecta outcome as an assessment tool for evaluating the surgical outcomes of robot-assisted partial nephrectomy (RAPN). The achievement of the pentapecta outcome in [X]% of cases reflects successful outcomes in terms of negative surgical margins, minimal warm ischemia time, preserved renal function, absence of perioperative complications, and absence of conversion to open surgery. These results support the effectiveness and safety of RAPN in the management of renal tumors. Further research and larger-scale studies are warranted to validate these findings and assess long-term outcomes of RAPN. The pentapecta outcome can serve as a valuable benchmark for evaluating and comparing the outcomes of RAPN across different institutions and surgical teams.

REFERENCES

1. Kato, M., et al. Natural history of small renal cell carcinoma: evaluation of growth rate, histological grade, cell proliferation and apoptosis. *J Urol*, 2004. 172: 863.

2. Kunath F, Schmidt S, Krabbe LM, Miernik A, Dahm P, Cleves A, Walther M, Kroeger N. Partial nephrectomy versus radical nephrectomy for clinical localised renal masses. Cochrane Database of Systematic Reviews 2017;5: CD012045.
3. Bianchi M, Becker A, Abdollah F, Trinh QD, Hansen J, Tian Z, et al. Rates of open versus laparoscopic and partial versus radical nephrectomy for T1a renal cell carcinoma: A population-based evaluation. International Journal of Urology 2013;20(11):1064–107.
4. Zargar H, Allaf ME, Bhayani S, Stifelman M, Rogers C, Ball MW, Larson J, Marshall S, Kumar R, Kaouk JH. Trifecta and optimal perioperative outcomes of robotic and laparoscopic partial nephrectomy in surgical treatment of small renal masses: a multi-institutional study. BJU Int. 2015 Sep;116(3):407-14.
5. Rosaleen B. Parsons, Daniel Canter, Alexander Kutikov, Robert G. Uzzo. RENAL Nephrometry Scoring System: The Radiologist's Perspective. (2012) American Journal of Roentgenology. 199(3): W355-W359.
6. Clavien PA, Barkun J, de Oliveira ML, Vauthey JN, Dindo D, Schulick RD, de Santibañes E, Pekolj J, Slankamenac K, Bassi C, Graf R, Vonlanthen R, Padbury R, Cameron JL, Makuuchi M. The Clavien-Dindo classification of surgical complications: ve-year experience. Ann Surg. 2009 Aug; 250(2):187-96.
7. Swami, Umang et al. "Revisiting AJCC TNM staging for renal cell carcinoma: quest for improvement." Annals of translational medicine vol. 7, Suppl 1 (2019): S18. doi:10.21037/atm.2019.01.50
8. Cockcroft DW, Gault H. Prediction of creatinine clearance from serum creatinine. Nephron 1976; 16: 31–41.
9. Kim DK, Kim LHC, Raheem AA, Shin TY, Alabdulaali I, Yoon YE, et al. (2016) Comparison of Trifecta and Pentafecta Outcomes between T1a and T1b Renal Masses following Robot-Assisted Partial Nephrectomy (RAPN) with Minimum One Year Follow Up: Can RAPN for T1b Renal Masses Be Feasible? PLoS ONE 11(3): e0151738. <https://doi.org/10.1371/journal.pone.0151738>
10. Kang M, Gong IH, Park HJ, Sung HH, Jeon HG, Jeong BC, Jeon SS, Lee HM, Choi HY, Il Seo S. Predictive Factors for Achieving Superior Pentafecta Outcomes Following Robot-Assisted Partial Nephrectomy in Patients with Localized Renal Cell Carcinoma. J Endourol. 2017 Dec; 31(12):1231-1236.