

Peer Review File

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Reviewer A

Comment 1: Correlation between blood tests and postoperative complications:
The reviewer seeks to ascertain whether there is a correlation between postoperative day 1 blood tests and the incidence of postoperative complications. The authors must consider whether serum hemoglobin, Na, and K levels, which they focused on in their study, are independent predictors of postoperative complications, postoperative hospital stay, and rehospitalization. They were not examined in this study.

Reply 1: We thank the reviewer for bringing this comment to our attention. The goal of our manuscript was not to assess for post-operative factors that predicted outcomes. Our primary aim was to examine if sending patients home the day of surgery following LRN was feasible without checking routine labs the day following surgery. We revised our discussion section by including how hemoglobin, sodium, and potassium can independently impact postoperative complications, postoperative hospital stay, and rehospitalization.

Changes in the text:

The second paragraph in our DISCUSSION now reads:

“While LRN helps reduce the risks of intraoperative blood loss, it continues to be a common complication (19, 20). 13.6% (65/478) of our patients had hemoglobin abnormalities, in which 1.9% (9/478) of those patients required medical intervention by receiving a blood transfusion. Patient factors significantly associated with abnormal hemoglobin levels were a higher CCI and increased intraoperative blood loss. Teixeira et al evaluated the necessity of postoperative blood tests following laparoscopic prostate surgery (21). 4.8% (11/231) of their patients experienced a significant drop in Hgb levels, with 1.7% (4/231) of their patients requiring a blood transfusion. Blood loss was significantly correlated to patients that experienced hemodynamic instability. Similarly in our cohort, seven patients that required a blood transfusion had hemodynamic instability. This was expected as our patients had underlying comorbidities such as coronary artery disease and hypertension. These results from both cohorts imply that while certain patients with specific risk factors may benefit from routine postoperative blood tests, it appears unnecessary for patients without these underlying factors.” (see page 6, lines 132-142).

The third paragraph in our DISCUSSION now reads:

“The majority of patients in our cohort experienced normal sodium and potassium levels. Most patients that experienced sodium and potassium abnormalities were mild cases and did not require medical intervention. Medications, IV fluids, and dietary changes can help treat patients with these abnormalities (24). In our cohort, 10.9% developed hyponatremia which is commonly induced by surgical stress (22, 23). Therefore, it does not typically pose for any potential concerns as it can be managed through intravenous (IV)

saline fluids and dietary changes. Only three patients had moderate hyponatremia which was treated through IV fluids (24). Our study found that 5.9% developed mild hyperkalemia and 2.5% developed mild hypokalemia. Hypokalemic patients were treated with oral potassium agents while patients with hyperkalemia were given loop diuretics. Studies have found that patients that develop postoperative arrhythmias are associated with other underlying comorbidities, not specifically from electrolyte imbalances (25). All 4 EKG's conducted in our cohort to check for arrhythmias came back normal." (see pages 6-7, lines 143-153)

Comment 2:

Please describe the methodology used to define the cutoff setting for abnormal blood test values on postoperative day 1. If the information is derived from a source outside of the original research, the relevant citation should be provided. In the absence of such information, the cutoff value should be described in detail.

Reply 2: We appreciate the reviewer's important comment.

Changes in the text:

We included the citations in the third paragraph of the METHODS section under "Laboratory Definitions" which now reads:

"All postoperative day one (POD1) labs were obtained following LRN. Abnormal POD1 Na labs were described as <135 mEq/L or >145 mEq/L (9) (10). Abnormal POD1 K labs were defined as <3.5 mEq/L or >5.0 mEq/L. Abnormal K was additionally defined as severe hypokalemia (<3.0 mEq/L), mild hypokalemia (3.0-3.4 mEq/L), mild hyperkalemia (5.1-5.4 mEq/L), moderate hyperkalemia (5.5-5.9 mEq/L), and severe hyperkalemia (6.0 mEq/L or higher) (9). Abnormal Hgb labs were described as POD1 Hgb <8g/dL or POD1 Hgb \geq 3.0 g/dL decrease from preoperative Hgb (9) (10). Acute kidney injury (AKI) on POD1 was defined as one of the following 3 stages: Stage I baseline Cr at POD1 was 1.5-1.9 times preoperative Cr or \geq 0.3 mg/dL increment from preoperative to POD1.26 Stage II POD1 Cr was 2.0-2.9 times preoperative Cr. Stage III POD1 Cr was \geq 3.0 times preoperative Cr or POD1 Cr of 4.0 mg/dL or more (10)." (see page 4, lines 77-85)

Comment 3: It is necessary to determine whether serum hemoglobin levels, potassium levels, and sodium levels are appropriate for this consideration. It may be more appropriate to consider white blood cell count or C-reactive protein levels in this context. It would be beneficial to gain insight into the rationale behind the establishment of this factor.

Reply 3: The reviewer raises a great point and we appreciate their suggestion. We believe that WBC count and C-reactive protein levels would be good predictors of complications and long term outcomes. However, we do not believe that measuring white blood cell count or C-reactive protein levels would be a helpful parameter in considering if POD1 labs are necessary following laparoscopic nephrectomy patients.

Our goal was to see if discharging patients home on the day of surgery would be okay without having routine labs checked the next day following surgery.

Comment 4:

Minor concerns

1) Clarification of Aim:

It is unclear what is meant by "Aim 1 on Line 79" and "Aim 2 on Line 81."

2) Terminology correction:

The designation "Hg" in line 71 should be written as "Hgb."

3) Figure labelling:

In Figure 1, the designation "LAPN" should be written as "LRN."

Reply 4: We truly thank the reviewer for their time in providing us important feedback to improve our manuscript. Regarding #1, we explained the two different statistical methods in evaluating our primary outcome. We revised our paragraph in the statistical analysis for better clarity. We also corrected the terminology in line 71 and wrote it as Hgb and corrected any word in Figure 1 that stated "LAPN" and wrote it as "LRN".

Changes in the text:

"All statistical analyses were performed using R version 4.2.2 (R Foundation for Statistical Computing, Vienna, Austria). Categorical characteristics were reported as the frequency and percentage of patients. Continuous characteristics were reported as the sample median and interquartile range (IQR). To evaluate our primary outcome, we estimated the proportion of patients who had one or more abnormal laboratory values on POD1 with a 95% confidence interval for a single proportion using the score method. We also used logistic regression models to examine which preoperative and intraoperative characteristics were associated with having abnormal labs. All statistical tests were two-sided. $P < 0.05$ was considered statistically significant without adjustment for multiple testing. Given the large number of tests performed, the possibility of a type I error (i.e. false positive finding) should be considered when interpreting the results."

(see page 4, lines 87-95)

Reviewer B

Comment 1: The authors wanted to state whether patients undergoing laparoscopic nephrectomy needed postoperative day one blood tests. They evaluated that this could not be omitted. I found the article interesting from the perspective of an early discharge and 1-day clinic surgery. The conclusions are quite obvious. The paper is well written, and the methodology is correct. The message to retrieve is not game changing. Even if I argue that nothing would change, I wonder why this was not conducted on a robotic series. Moreover - as reported by di trapani et al. doi:

10.21873/anticanres.12703 - the rate of big masses is decreasing over the year. Please better define in the paper the patient's selection

Reply 1: We thank the reviewer for their comment and input in improving our manuscript. We only included patients with laparoscopic nephrectomy as we only recently introduced robotic technology for nephrectomies at our institution. The median tumor size in our total cohort is 6 cm (IQR: 4,8 cm).

Changes in the text:

We revised the first paragraph of the RESULTS section which now reads:

“Table 1 summarizes patient characteristics found in our cohort including patients with any abnormal or normal POD 1 labs for Hgb, Na, and K. We found that 32.4% (155/478) patients had one or more abnormal labs on POD1 for Hgb, Na, or K. Patients with abnormal POD1 labs had a median age of 69 years (interquartile range [IQR]; 61 to 77 years), median BMI of 29 kg/m² (IQR; 25 to 34 kg/m²), a median LOS of 2 days (IQR; 2 to 3 days), and a median tumor size of 5 cm (IQR; 4 to 6 cm). The median tumor size in our total cohort is 6 cm (IQR; 4 to 8 cm).” (see page 5, lines 98-103)

We revised the fourth paragraph in our DISCUSSION which now reads:

“Ambulatory procedures, particularly minimally invasive surgeries, have gained popularity to help reduce hospital costs and enhance patient experience while minimizing unnecessary longer hospital stays (26). Geldmaker et al found that POD1 labs were necessary in patients that received a robotic partial nephrectomy (10). This interested us to evaluate POD1 labs using a laparoscopic nephrectomy series as we assumed we would find similar results. As advancements in LRN have significantly improved perioperative outcomes, it has been evaluated as a feasible outpatient procedure (4, 5). Azawi et al conducted a study that examined if LN was safe enough to be classified as an outpatient procedure (7). Postoperative care included pain control and early ambulation. 92% (46/50) of their cohort were discharged within 6 hours following LRN. Ragavan et al conducted a similar study on evaluating various robotic-assisted laparoscopic surgeries, including 15 radical nephrectomies and 7 simple nephrectomies, as an outpatient procedure (6). They found that 100% (43/43) of their cohort were discharged on the same day. Patients in these two studies had to meet specific inclusion criteria. Hence, the ability to evaluate LRN as an outpatient procedure is ambiguous because this can change based on the patient selection in the cohort. Azawi et al excluded patients that had heart comorbidities which minimized the risks of intraoperative blood loss and longer LOS. Our cohort had a median LOS of 2 days and excluded dialysis and transplant patients as they commonly require hospitalization and can have unpredictable lab results.” (see page 7; lines 154-169)

Reviewer C

Comment 1: Why is it necessary to understand the abnormalities in the Lab data for POD1? It would be better to have an analysis that shows this. For example, abnormalities in POD1 Lab data are associated with long-term renal function prognosis.

Reply 1: We thank the reviewer for their important question. The necessity of routine postoperative labs after surgery has become a popular topic in surgical literature as it helps reduce hospitals costs without hindering patient care. A recent publication evaluated the necessity of POD1 labs after a robotic-assisted partial nephrectomy¹. Since LRNs have successfully been evaluated as an outpatient procedure, we believe it is important to assess the necessity of POD1 labs after a LRN as no other study to our knowledge has examined this.

(1) Myers AA, Geldmaker LE, Haehn DA, Ball CT, Thiel DD. Evaluation of Routine Postoperative Labs Following Robotic Assisted Partial Nephrectomy in Patients With Normal Preoperative Renal Function. *Urology*. 2022;160:117-23.

Changes in the text:

We revised the first paragraph in the INTRODUCTION section which now reads:

“Laparoscopic radical nephrectomy (LRN) has evolved as the gold standard in treating localized renal cell carcinoma after it was first introduced in 1991 (1). This minimally invasive approach has improved perioperative outcomes including shorter hospitalizations, faster recovery time, and reducing intraoperative blood loss (2, 3). Some studies have evaluated the feasibility of LRN as an ambulatory procedure in patients that have met specific criteria (4-6). Azawi et al found that 92% of their patients were safely discharged within a few hours post-LRN (7). Standard care following LRN is to obtain postoperative day one labs (POD1). The necessity of routine postoperative labs has become a growing interest in recent studies in order to reduce hospital costs without sacrificing the quality of care (8, 9). A previously published study found that POD1 labs following robotic-assisted partial nephrectomy (RAPN) were necessary (10). As literature has evaluated the success of LRN as an outpatient procedure, this is the first study to our knowledge that examines the necessity of POD1 labs after LRN. Therefore, our primary outcome was to analyze the necessity of obtaining routine POD1 labs following LRN by specifically analyzing abnormalities in hemoglobin, sodium, and potassium.” (see page 3, lines 48-59)

Comment 2: Why was this study limited to nephrectomy? How does it compare to other techniques or what are the possible points?

Reply 2: We thank the reviewer for bringing up this comment. We have only recently introduced robotic technology for nephrectomy.

Changes in the text:

We revised the fourth paragraph in our DISCUSSION which now reads:

“Ambulatory procedures, particularly minimally invasive surgeries, have gained popularity to help reduce hospital costs and enhance patient experience while minimizing unnecessary longer hospital stays (26). Geldmaker et al found that POD1 labs were necessary in patients that received a robotic partial nephrectomy (10). This interested us to evaluate POD1 labs using a laparoscopic nephrectomy series as we assumed we would find similar results. As advancements in LRN have significantly improved perioperative outcomes, it has been evaluated as a feasible outpatient procedure (4, 5). Azawi et al conducted a study that examined if LN was safe enough to be classified as an outpatient procedure (7). Postoperative care included pain control and early ambulation. 92% (46/50) of their cohort were discharged within 6 hours following LRN. Ragavan et al conducted a similar study on evaluating various robotic-assisted laparoscopic surgeries, including 15 radical nephrectomies and 7 simple nephrectomies, as an outpatient procedure (6). They found that 100% (43/43) of their cohort were discharged on the same day. Patients in these two studies had to meet specific inclusion criteria. Hence, the ability to evaluate LRN as an outpatient procedure is ambiguous because this can change based on the patient selection in the cohort. Azawi et al excluded patients that had heart comorbidities which minimized the risks of intraoperative blood loss and longer LOS. Our cohort had a median LOS of 2 days and excluded dialysis and transplant patients as they commonly require hospitalization and can have unpredictable lab results.” (see page 7; lines 154-169)”

Comment 3: Regarding the definition of lab abnormalities in POD1, in the case of some abnormalities, the clinician does not intervene. It would be more clinically meaningful to define electrolyte abnormalities as requiring electrolyte correction or other interventions.

Reply 3: We appreciate the reviewer for bringing up this comment and agree with them. Most of our cohort that had electrolyte abnormalities did not require medical intervention and did not make a clinically meaningful difference. Patients with comorbidities were often associated to electrolyte abnormalities which was expected.

Changes in the text:

We revised the last paragraph in our DISCUSSION section which now reads:

“Two strengths in our study are all LRNs are performed by a single surgeon at a tertiary medical center and contains a large cohort. Our analysis is also limited due to its retrospective nature and not identifying the costs of each individual lab. Not all patients in our cohort with mild potassium and sodium abnormalities required medical intervention as many of them stayed an additional day for observation. Therefore, it is essential for a physician’s call of judgment in omitting POD1 labs in patients who are not associated with potential risk factors. As POD1 labs were necessary for a large number of patients in our cohort, this does not mean that all patients would be required to stay in the hospital overnight as they would be able to conduct bloodwork the following day after surgery.” (see page 8, lines 170-177)