

Saint Barnabas Medical Center



The Effect of Intravenous Acetaminophen on Opioid Use in Laparoscopic Donor Nephrectomy Patients

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BACKGROUND

- Laparoscopic nephrectomies are the preferred method of kidney transplantation from living donors due to reduced pain and complications¹
- Opioids are commonly used to decrease postoperative pain by binding mu receptors, causing inhibition of ascending pain pathways. However, opioids also cause side effects such as constipation, addictive tendencies, respiratory and central nervous system depression²
- Alternative pain management methods are being explored to reduce opioid use including acetaminophen and nonsteroidal anti-inflammatory drugs which may potentially have a more favorable adverse effect profile compared to opioids³

OBJECTIVE

- The objective of this study is to determine if intravenous acetaminophen use affects daily and cumulative opioid requirements in patients undergoing laparoscopic donor nephrectomy

METHODS

- This study is an IRB-approved retrospective chart review
- Primary endpoint: cumulative opioid use, measured in oral morphine equivalent, throughout hospitalization
- Secondary endpoints: opioid use per day, measured in oral morphine equivalents, length of hospital stay, discharge pain medication and 30-day readmission rate
- Patients collected in January 1, 2015-March 31, 2015 received no intravenous acetaminophen and served as the control group
- Patients collected in January 1, 2019-March 31, 2019 received at least 3 doses of intravenous acetaminophen and served as the experimental group
- Inclusion criteria: patients ≥18 years of age who underwent a laparoscopic nephrectomy were identified using Inpatient Cerner and ICD 10 codes at Saint Barnabas Medical Center.
- Exclusion criteria: patients who were converted to an open nephrectomy, using a continuous nerve block, dextromethorphan and/or pregabalin
- 30 mg of oral morphine was considered equianalgesic to 100 mcg of intravenous fentanyl, 7.5 mg of oral hydromorphone, 20 mg of oral oxycodone or 10 mg of oral oxymorphone

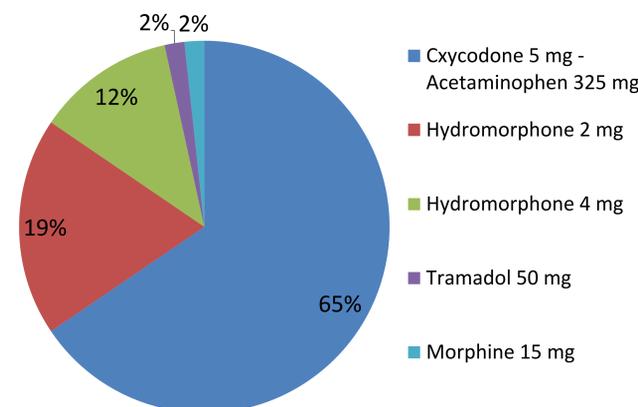
Assistance with Statistical Analysis
Patrick Hilden, MS

RESULTS

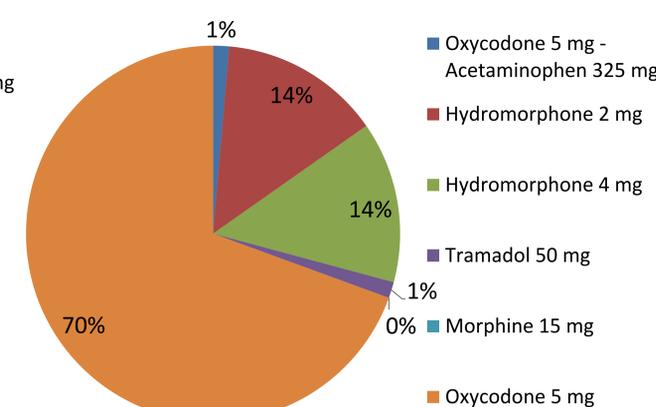
Baseline Characteristics	Control (n=51)	Experimental (n=64)	P-value
Age (years), mean	46.9	46.2	0.63
Female, n (%)	31 (61)	46 (71.9)	0.21
Weight (kg), mean	74.3	75	0.65
Race, n (%)			
Caucasian	34 (66.7)	49 (76.6)	0.11
Black	7 (13.7)	2 (3.1)	0.08
Other	10 (19.6)	13 (20.3)	0.94
Tramadol use, n (%)	1 (1.9)	3 (4.7)	0.63

Days	Control, Median (Range) (n=51)	Experimental, Median (Range) (n=64)	P-value
Opioids (oral morphine equivalents), mg			
POD 0	40 (0-250), n=51	30 (0-130), n=64	0.001
POD 1	70 (0-146), n=50	43.5 (0-112.5), n=61	0.001
POD 2	32 (0-160), n=44	15 (0-105), n=48	0.001
POD 3	0 (0-68), n=8	0 (0-45), n=9	0.87
Cumulative	157.5 (0-250), n=51	96.3 (0-130), n=64	0.001
Acetaminophen (oral and intravenous), mg			
POD 0	0 (0-650), n=51	2000 (0-3000), n=64	0.001
POD 1	1300 (0-2600), n=50	3000 (1000-4000), n=61	0.001
POD 2	650 (0-2600), n=44	1000 (0-4000), n=48	0.001
POD 3	0 (0-1950), n=8	0 (0-4000), n=9	0.8
Cumulative	1950 (0-2600), n=51	6000 (0-4000), n=64	0.001

2015 Discharge Pain Medication

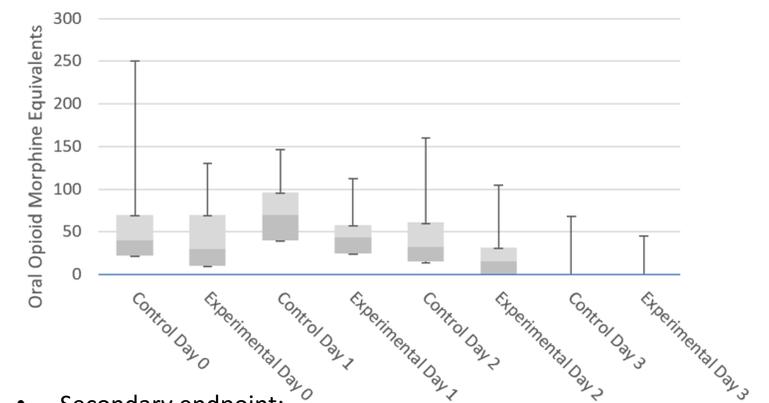


2019 Discharge Pain Medication



RESULTS

Opioid Use Per Day



- Secondary endpoint:
 - The median length of stay was similar between the control (2.1 days) and experimental (2.2 days) with an absolute difference of 0.1 days (p=0.48)
 - 30-day hospital readmission rate: no difference

LIMITATIONS

- Retrospective chart review collected from a single center
- Difficult to obtain objective evidence of pain control
- Changes in pain management, discharge planning practices over time and providers

CONCLUSION

There was a significant difference in median cumulative opioid oral morphine equivalents between patients initiated on therapy with intravenous acetaminophen versus without intravenous acetaminophen, although this finding may not be clinically significant. Further studies need to be conducted to understand the impact of adverse effects caused by opioids and the financial implications in donor laparoscopic nephrectomies.

REFERENCES

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- Winger SJ, Miller H, Minkowitz HS, et al. A randomized, double-blind, placebo-controlled, multicenter, repeat-dose study of two intravenous acetaminophen dosing regimens for the treatment of pain after abdominal laparoscopic surgery. *Clin Ther.* 2010;32:2348-2369.

Disclosure

Authors of this poster have the following to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation. CM, AE: Nothing to disclose