Pain Management After Outpatient Foot and Ankle Surgery

Akash Gupta, MD; Austin Sanders, BA; Mackenzie Jones, BA; Kanupriya Kumar, MD; Matthew Roberts, MD; David Levine, MD; Mark Drakos, MD; Martin O’Malley, MD; Andrew Elliott, MD; Jonathan Deland, MD; Scott Ellis, MD
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Akash Gupta, MD – I do not have a relevant financial relationship  
Austin Sanders, BA – I do not have a relevant financial relationship  
Mackenzie Jones, BA – I do not have a relevant financial relationship  
Kanupriya Kumar, MD – I do not have a relevant financial relationship  
Matthew Roberts, MD – I do not have a relevant financial relationship  
David Levine, MD – I do not have a relevant financial relationship  
Mark Drakos, MD – I do not have a relevant financial relationship  
Martin O’Malley, MD – I do not have a relevant financial relationship  
Andrew Elliott, MD – I do not have a relevant financial relationship  
Jonathan Deland, MD – I do not have a relevant financial relationship  
Scott Ellis, MD – I do not have a relevant financial relationship
Introduction

- The number of opioid prescriptions in the United States has significantly increased over the past 20 years (Dart, et al). As a result, the number of unintentional opioid overdoses has also significantly risen (Siegler, et al).

- The reason for these increases are multifactorial, however, there is an increase in prescribing patterns of opioids after low-risk surgery (Wunsch, et al.). Furthermore, the risk of long-term analgesic use after low-risk surgery is increased for those who are newly prescribed opioids (Alam, et al).

- One study looked at opioid consumption after outpatient upper extremity surgery and found that patients received 19 excess pills compared to what they took (Rodgers, et al). Excess pills are widely acknowledged as a source of diversion, which accounts for up to 40% of opioid related overdoses (Manchikanti, et al).
Introduction/Purpose

- There have been several studies have shown benefits of regional anesthesia as adjunct, which can help reduce the need for opioid pain medications.

- In the foot and ankle literature, there are no studies looking at the quantity of pain medications that should be prescribed following outpatient surgery. It appears that any guidelines on post-operative prescribing patterns are based solely on anecdotal and surgeon experience (Pinzur).

- There have been no studies in the foot and ankle literature that have looked at how many pills patients are prescribed and how many they are actually taking after outpatient procedures. This question becomes even more relevant with the increasing usage of regional anesthesia.

- The purpose of this study is to determine prescribing and consumption patterns of opioids following outpatient foot and ankle surgery and whether patients are being over or under prescribed.
Methods

- 125 patients were identified as having outpatient foot and ankle surgery performed by seven attendings at one institution.

- Preoperatively, patients received a standardized regimen of a spinal neuraxial block and a long-acting popliteal block, and did not receive ketorolac perioperatively.

- Patients were excluded if they had a history of chronic pain, or were using opioids or muscle relaxers at the time of surgery.

- Enrolled patients received a standard post-operative prescription regimen of 40-60 tablets of narcotics, 3 days of scheduled ibuprofen, aspirin 81mg twice a day or an alternate based on patient risk factors, and ondansetron taken on an as needed basis.

- Patients used a pain diary to record when their block wore off and the quantity of narcotic taken. They received surveys at post-operative day (POD) 3, 7, 14, and 56 detailing how many days they took the medication and how many pills were consumed, how their actual pain compared to their expected level of pain, and if they were satisfied with their pain control.
A total of 89 patients qualified for the study and completed at least three of the post-operative surveys.

Most patients received 60 pills of narcotics after surgery, with some receiving 40 at the discretion of the prescribing provider. One patient received 20 pills, and one received 90 pills.

Only 54% of patients were still taking narcotics on POD3 and by POD14, only 16% of patients were still taking narcotics.
Results

- Patients took an average of 21.7 pills throughout the entire 56 days post-operatively.
- The majority of the pills were taken within the first two weeks with 20 pills being taken until POD 14, and only an additional 1.7 pills being required between POD 14 and POD 56.
- Only 5 additional prescriptions of narcotic pain medications were written for, with one patient accounting for two of these.
- 3 of the 5 additional prescriptions written were due to side effects of the original prescription, with these patients taking significantly less than 60 pills.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total</th>
<th>Mean or N</th>
<th>SD or %</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
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<tbody>
<tr>
<td>Days 1-3</td>
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<td>7.4</td>
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<tr>
<td>Days 4-7</td>
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<td>8.2</td>
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<td>Days 8-14</td>
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<td>3.7</td>
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<tr>
<td>Days 15-56</td>
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<td>1.7</td>
<td>5.4</td>
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<td>39.0</td>
</tr>
</tbody>
</table>

What is the number of original prescribed pills that you have taken for the primary purpose of treating pain in your foot/ankle? During the period of days:

- Days 1-3
- Days 4-7
- Days 8-14
- Days 15-56

Did you obtain a refill on the original pain prescription? During the period of days:

- Days 1-3
- Days 4-7
- Days 8-14
- Days 15-56
Results

- The number of patients that were still taking narcotics significantly decreased at every time point compared to the previous time point.
Results

• The 95% upper confidence interval for pills taken throughout the entire course of the study was 26.8 pills meaning that 95% of patients would be covered by that number of pills

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total N</th>
<th>Mean</th>
<th>SD</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days 1-3</td>
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<td>9.6</td>
<td>7.5</td>
<td>7.9</td>
<td>11.3</td>
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<tr>
<td>Days 4-7</td>
<td>78</td>
<td>6.2</td>
<td>8.2</td>
<td>4.4</td>
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<tr>
<td>Days 8-14</td>
<td>78</td>
<td>2.9</td>
<td>6.6</td>
<td>1.5</td>
<td>4.4</td>
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<tr>
<td>Days 15-56</td>
<td>78</td>
<td>1.8</td>
<td>5.6</td>
<td>0.6</td>
<td>3.1</td>
</tr>
</tbody>
</table>

| Days 1-3       | 0.000 | 0.000 | 0.000 |
| Days 4-7       | 0.000 | 0.002 | 0.000 |
| Days 8-14      | 0.000 | 0.002 | 0.724 |
| Days 15-56     | 0.000 | 0.000 | 0.724 |

• The number of pills taken at each interval were significantly less at each time point compared to the previous time point, with the exception being when comparing days 8-14 to days 15-56
Patients’ pain scores significantly decreased at every time point compared to the previous time point.

This correlates with the reduction in consumption of narcotic pain pills.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total N</th>
<th>Mean</th>
<th>SD</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the last 24 hours, how would you describe the maximum (worst) pain, when considering pain in the foot/ankle you had surgery on a scale of 0-10…</td>
<td></td>
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<tr>
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<td>2.3</td>
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</table>

<table>
<thead>
<tr>
<th>Painwise Comparisons (P-value)</th>
<th>Days 1-3</th>
<th>Days 4-7</th>
<th>Days 8-14</th>
<th>Days 15-56</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days 1-3</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Days 4-7</td>
<td>0.000</td>
<td>0.041</td>
<td>0.006</td>
<td>0.006</td>
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<tr>
<td>Days 8-14</td>
<td>0.000</td>
<td>0.041</td>
<td>0.006</td>
<td>0.006</td>
</tr>
<tr>
<td>Days 15-56</td>
<td>0.000</td>
<td>0.000</td>
<td>0.006</td>
<td>0.006</td>
</tr>
</tbody>
</table>
**Discussion/Conclusions**

- The results of the study show that after outpatient foot and ankle surgery where patients receive spinal neuraxial blockade and a long-acting popliteal block, the majority of patients take significantly less narcotics than prescribed, with the average being 21.7 pills.

- The large majority of patients only require narcotic medications for the first two weeks after surgery, after which pain control is achieved through other non-narcotic means such as NSAIDs.

- The need for additional narcotic prescriptions were low, with the most common reason being side effects from the narcotic, not lack of pills. Only one patient required additional narcotics because of lack of pills, and this patient ended up needing two refills.

- Given that 95% of patients would be covered by 26.8 pills alone, we suggest that the number of narcotics prescribed at the time of outpatient foot and ankle surgery should be 30 pills. Patients requiring more than this should obtain refills on a case by case basis after speaking with or seeing their provider when the need arises, since the majority of patients will not need more than this.

- Furthermore, prescribing 30 pills of narcotics should cover nearly all patients until the POD14 mark, which is when most patients are seen by their provider for follow-up. This provides an excellent opportunity to counsel patients on narcotic usage, the use of other adjuvant treatments for pain control, and proper disposal of unused medications. This number of pills should provide adequate pain control for patients after outpatient foot and ankle surgery, while also reducing the risk of diversion and opioid-related overdoses.
References


