Kidney stones
Impact on prescription opioid use

Vernon M. Pais Jr
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AUA Quality Improvement Summit
Opioid Stewardship in Urology
Kidney stones

Sudden, Acute, Severe pain
Opioid analgesics
– Additionally, **200% increase** in opioid overdose/ death between 2000-2014

Sites, Beach, Davis. Regional Anesth Pain Med 39:6-12, 2014
Rudd et al. MMWR 64:1378-1382, 2016
Kidney stones are common

Cause acute and severe pain

- Identified as a leading diagnosis prompting opioid Rx from emergency departments
  - May be important source of initial opioid exposure
  - May be important source of repeated opioid exposure

- Prevalence and quantification of opioid use among those with stones remained largely undefined
Methods

• Cohort
  – Medical Expenditure Panel (MEPS): population-based survey of non-institutionalized, US civilians followed for 2 year “panels”

  – MEPS presents a nationally representative cohort with detailed and cross-referenced data on health care utilization over a defined time period
    • Employed weights, sampling units, and strata provided by MEPS to allow nationally representative cohort

• Main Outcome/Endpoint
  – Opioid use
  – Number of filled opioid prescriptions
Results

• 65,397 participants in MEPS 2008-2014
  – Weighted --209,043,539

• 1.29% had stone occurrence during survey panel
  – represented cohort of Stone formers (SFs)
Results — cross sectional analysis

• Overall opioid use among MEPS cohort

<table>
<thead>
<tr>
<th></th>
<th>Percent reporting opioid use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire Cohort</td>
<td>20.7%</td>
</tr>
</tbody>
</table>
Results – cross sectional analysis

- Opioid use by stone former status

<table>
<thead>
<tr>
<th></th>
<th>Percent reporting opioid use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stone Formers</td>
<td>59.5%</td>
</tr>
<tr>
<td>Non Stone formers</td>
<td>20.2%</td>
</tr>
</tbody>
</table>
Results — cross sectional analysis

• Those with stones had >5x odds of opioid use compared with non-stone formers

Table 2. Crude and adjusted* odds of opioid use among those with nephrolithiasis occurrence (SFs) compared with those without nephrolithiasis occurrence (NSF)

<table>
<thead>
<tr>
<th></th>
<th>Crude</th>
<th>Adjusted*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratio</td>
<td>95% CI</td>
</tr>
<tr>
<td>SFs vs NSF</td>
<td>5.81</td>
<td>4.80-7.03</td>
</tr>
</tbody>
</table>

*Adjusted for age, gender, race, BMI, depression, and anxiety
Results

Number of filled opioid Rx

- Stone former
- Non Stone former

P < 0.001
Results

- SFs with depression or anxiety had more opioid prescriptions than those without

![Bar graph showing number of filled opioid prescriptions by presence of comorbid affective disorders.](image-url)

- No Depression: 3 prescriptions
- Depression: 8 prescriptions, p<0.001
- No Anxiety: 3 prescriptions
- Anxiety: 9 prescriptions, p=0.008
Repeated opioid use
(refills during same 6 month panel)

• 50.1% obtained refill within first 6 months
  – Medical comorbidities
    • Diabetes (18% vs 8.8%)
    • Depression (28% vs 13%)
    • Anxiety (20.9% vs 9.6%)

  – SES associations
    • Lower income (31k vs 40k annually)
    • Public insurance (25% vs 13%)
Chronic opioid use
(still receiving opioids the following year)

- 21.8% still filling opioid Rx the following year
  - Medical comorbidities
    - Depression (32% vs 17%)
    - Anxiety (23% vs 13%)
  - No significant difference in age, gender, race, insurance or income
    - Chronic use does not differentiate by SES!
• Prescription opioids
  – Identified as the critical initial exposure for chronic opioid use and opioid abuse
  – Illegal opioid use is 8x higher in those with prior prescribed opioids c/w those without prior Rx

Barnett et al. NEJM 376:663-673, 2017
# Rates of Opioid Dependence and Overdose after Urological Surgery

<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>90 day events/10,000</th>
<th>1 year events/10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvic cystectomy/prostatectomy</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Inguinal/scrotal hernia/orchiectomy/hydrocele</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Transurethral TURP/ TURBT</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Renal radical / partial nephrectomy</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Stone Surgery</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Shah AS, J Urol 198:1130, 2017
Urologists contribution to the problem

• Over-prescribing and under-educating

• 67% had surplus medication
• 92% received no disposal instructions
  – <1% returned excess to pharmacy/hospital/drop off
  – 8% disposed of it in garbage or toilet
  – 91% kept it on hand

Conclusions

• Physicians must recognize stone formers as a group at elevated likelihood for opioid exposure

• Those with affective disorders receive significantly greater number of opioid Rx
  – Represent a cohort with whom we must be vigilant

• Ultimately may help inform more responsible opioid prescribing
Case Study

- 48 year old woman with PMHx significant for anxiety presents to the ER with acute onset, 10/10 severity left flank pain.
- CT reveals an 11 mm proximal ureteral stone
- ER calls you at 9 PM and reports that pain has resolved in the ER with ketorolac and hydromorphone
### How do you proceed?

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A)</td>
<td>Home with opioid, tamsulosin x2 weeks, then come to office if stone hasn’t passed</td>
</tr>
<tr>
<td>B)</td>
<td>Home without opioid, schedule consult in office next week</td>
</tr>
<tr>
<td>C)</td>
<td>Home without opioid, book for next available SWL in 3 weeks</td>
</tr>
<tr>
<td>D)</td>
<td>Admit for observation and add on for ureteroscopy in AM</td>
</tr>
</tbody>
</table>
Opioid use among stone formers

- Opioid prescription for stone formers significantly associated with:
  - Smoking (25% vs 11%)
  - Southern US (51% vs 10.2% Northeast)
  - Mean number of ER visits (1 vs 0.5)

- Initial opioid Rx NOT associated with depression/anxiety/insurance, income, age, gender, or race
• Stone treated successfully ureteroscopically, but ureter excoriated and edematous
  – 6 French stent left in place for 10 days
How many hydrocodone do you prescribe?

When poll is active, respond at PollEv.com/urology

Text UROLOGY to 22333 once to join

A. None – the stone is treated

B. 10 – “Stents hurt!”

C. 25 – “Stents hurt and I’m on-call this weekend”

D. 40 – “Do the math – 1 pill every 6 hours x 10 days”

E. 50 and a refill – “Stents REALLY hurt!”
• EDGE Stone survey
  – 365 patients from 7 geographically disparate centers
• Majority (61%) reported they did not require opioids to manage stent pain
• On multivariate analysis only younger age was significantly associated with greater reported need for opioids for stent pain
Take Home Messages

• Set appropriate expectations
• Provide adequate patient education
  – Stones
  – Opioid use, potential abuse, and proper disposal
• Recognize those at greatest risk for prolonged opioid use
• Reduce the need with timely intervention rather than extended courses of pain medication
Acknowledgement:

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Collaborators

**AUA**
William Meeks

*Dartmouth Department of Anesthesia*
Brian Sites

*Dartmouth Section of Urology*
Annah Vollstedt MD
Michael Rezaee MD, MPH

**EDGE Consortium**
Ben Chew
Ojas Shah
Roger Sur
Amy Krambeck
Brian Eisner
Mitchell Humphreys
Manoj Monga
Thank you

• Questions?