

15: Does Age Matter? An Analysis of 30-Day Open Ureteroneocystomy Outcomes

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Introduction

- 2011 American Academy of Pediatrics febrile urinary tract infection guidelines changed VUR landscape
- Decrease in the performance of VCUG and diagnosis of VUR among US patients¹
- Decrease in the number of VCUGs performed in Canada, without a decrease in the number of surgeries²

¹ Lee et al. J Urol. 2018

² Ming et al. J Pediatr Urol. 2019.

Hypothesis

If children are not undergoing VCUG, diagnosis may be delayed.



If diagnosis is delayed, children may be older at time of surgery.



We hypothesized that age would impact perioperative outcomes, with older patients having:

- Longer operative time
- Longer length of stay
- More complications



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Methods

- Queried NSQIP Pediatric for CPT code 50780 between 2012-2016
- Inclusion criteria:
 - Surgery for VUR
 - Age greater than 1
 - No concurrent surgeries
- Divided patients into age quartiles
- Data points:
 - Demographics
 - Operative time
 - Length of stay
 - Complications
 - Readmission
 - Reoperation
- Compared quartiles with chi-square and ANOVA analyses.

What is NSQIP Pediatric?

- Data set includes 94 data points from birth to age 18 across subspecialties from participating hospitals.
- HIPAA-compliant data file available to hospitals contributing data to NSQIP.
- Focuses on the time of surgery to 30 days post-operative.

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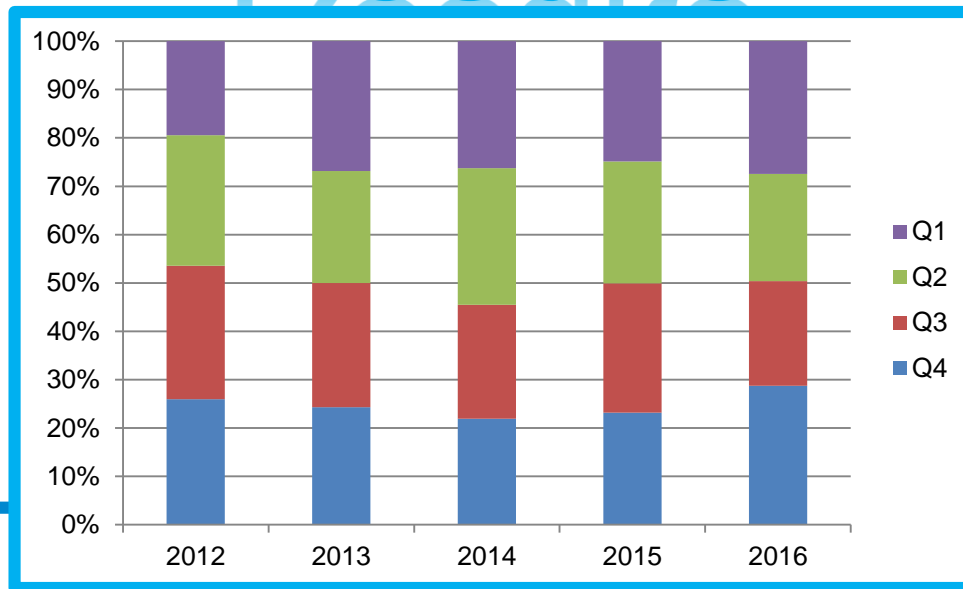
| | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 |
|---------------------------|-----------------|------------------|----------------|-------------------|
| N | 580 | 582 | 581 | 581 |
| Age (days, M \pm SE) | 635.0 \pm 6.8 | 1339.2 \pm 9.2 | 2092 \pm 9.8 | 3449.5 \pm 34.1 |

~1.7 years

~3.7 years

~5.7 years

~9.4 years



p=0.027



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| | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 | p-value |
|-----------------------------|------------|------------|------------|------------|---------|
| % Bilateral | 21.1% | 16.3% | 14.5% | 14.8% | <0.001 |
| % Male | 28.4% | 20.8% | 14.8% | 20.7% | <0.001 |
| Race | | | | | |
| % White | 86.6% | 85.6% | 85.9% | 87.4% | 0.040 |
| % Asian | 4.1% | 3.4% | 1.2% | 1.4% | |
| % Black or African American | 1.6% | 1.9% | 2.6% | 3.1% | |
| % Other | 0.9% | 0.9% | 1.4% | 9.0% | |
| % Unknown | 6.9% | 8.2% | 9.0% | 7.1% | |
| ASA Class | | | | | |
| % ASA1 | 22.8% | 24.7% | 28.1% | 28.9% | 0.038 |
| % ASA2 | 67.6% | 67.5% | 65.7% | 65.2% | |
| % ASA3 or greater | 9.7% | 7.6% | 6.0% | 5.9% | |



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| | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 | p-value |
|-----------------------------|------------|------------|------------|------------|------------------|
| Operative Time (min, M±SE) | 130.2±2.0 | 129.1±2.0 | 134.7±2.3 | 142.4±2.5 | <0.001 |
| % Inpatient | 84.3% | 82.3% | 79.9% | 83.3% | 0.224 |
| Length of stay (days, M±SE) | 1.6±0.2 | 1.9±0.1 | 1.9±0.2 | 1.8±0.1 | 0.331 |
| Complication Rate % | 4.3% | 4.3% | 3.1% | 3.4% | 0.616 |
| Re-Admission Rate % | 6.2% | 4.1% | 2.2% | 2.9% | 0.003 |
| Re-Operation Rate % | 2.2% | 0.5% | 0.3% | 0.5% | 0.001 |



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| Complication | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 |
|---|------------|------------|------------|------------|
| Superficial Incision Surgical Site Infection* | 0.3% | 0.2% | - | 0.2% |
| Deep Incision Surgical Site Infection* | 0.2% | - | - | - |
| Organ Infection* | 0.2% | - | 0.2% | - |
| Superficial dehiscence^ | 0.2% | 0.2% | - | 0.2% |
| Re-intubation* | 0.2% | 0.2% | - | - |
| Progressive Renal Insufficiency* | 0.3% | 0.7% | - | 0.3% |
| Acute Renal Injury* | 0.3% | - | 0.2% | 0.2% |
| Urinary Tract Infection* | 2.1% | 2.7% | 2.4% | 2.1% |
| Seizure* | 0.2% | - | - | - |
| Nerve Injury* | - | - | - | 0.2 |
| Cardiac Arrest* | 0.2% | 0.2% | - | - |
| Sepsis* | 0.2% | 0.2% | 0.3% | 0.3 |

No deep wound dehiscence*, pneumonia*, PE*, coma*, stroke*, intraventricular hemorrhage*, blood transfusion*, venous thrombosis*, septic shock^, or central line infections*.

* N = Q1 580, Q2 582, Q3 581, Q4 581
 ^ N = Q1 488, Q2 454, Q3 450, Q4 458

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Limitations

- The usual accompanying retrospective database analysis
- Unexpectedly low percent bilateral ureteroneocystostomies
- Don't know how many reoperations were planned, such as stent removals
- Quartile distribution may limit evaluation of post-pubertal patients



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Conclusions

- Revisiting our hypothesis...
 - Longer operative time → oldest quartile did take longer, despite a lower rate of bilateral procedures
 - Longer length of stay → no difference in length of stay
 - More complications → no difference in complications
- Younger quartiles had higher readmission rate
- Youngest quartile had greater reoperation rate

Older age at surgery does not negatively impact perioperative outcomes!



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Thanks!

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