



Delay in Percutaneous Nephrolithotomy and Healthcare Utilization Among Patients with a Stent Placement and Stone Disease



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Disclaimer: The study has been updated since the abstract. Updated study methods & results are being presented here.

OBJECTIVE

- Patients with longer indwelling stent duration prior to definitive stone treatment tend to have worse outcomes than those with shorter stent duration¹.
- This study evaluates the association between a delay in percutaneous nephrolithotomy (PCNL) and healthcare utilization among patients with a stent placement and stone diagnosis.

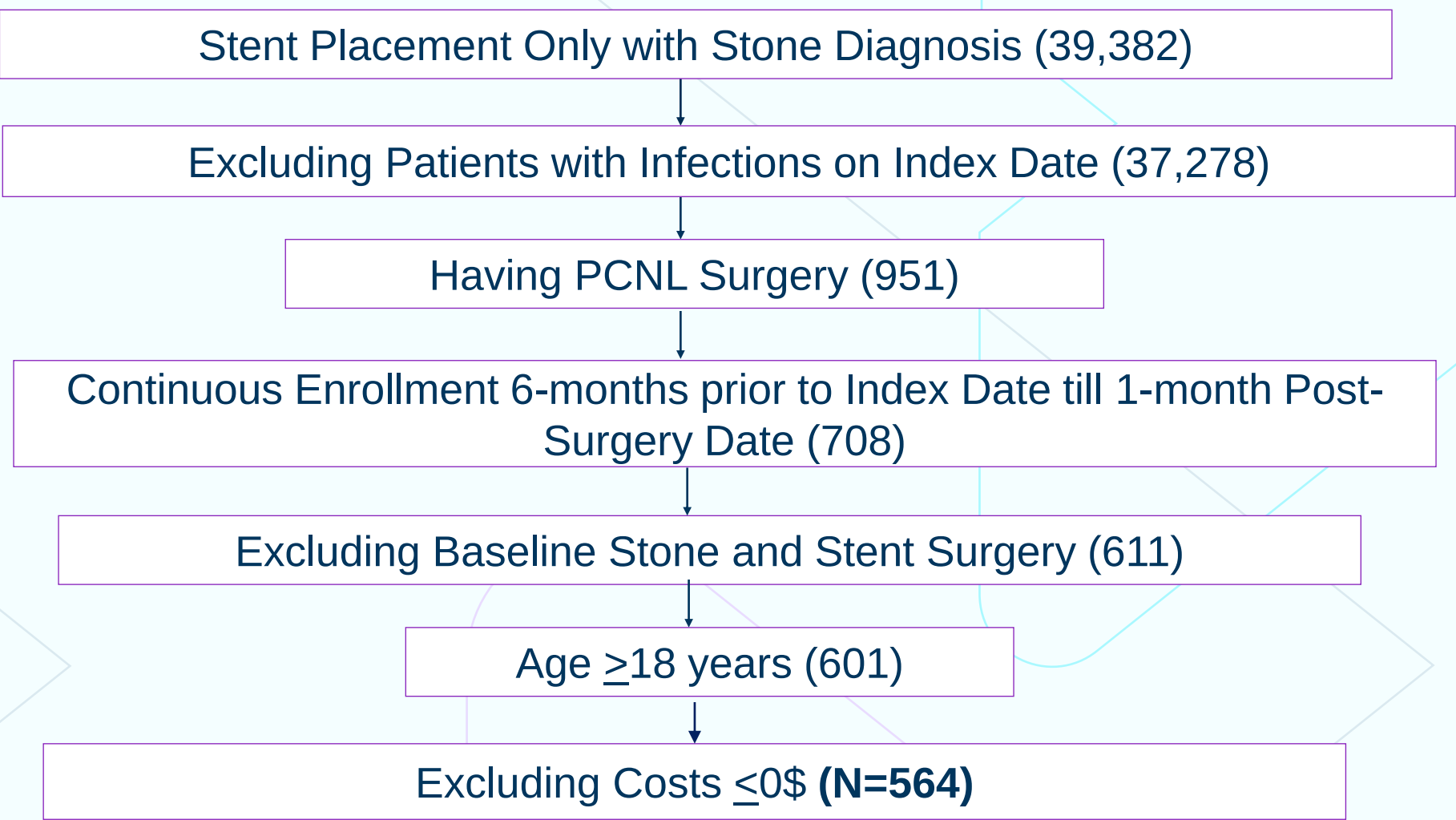
METHODS

- Retrospective analysis using IBM MarketScan commercial data from July 2014 through June 2020
- Inclusion criteria:
 - Having a stone diagnosis and stent placement during index period (January 2015 – November 2019)
 - Having a follow-up PCNL within 6 months following stent placement date (index date)
 - Patients continuously enrolled in health plan from 6 months prior to index date through 1 month following surgery date
 - Age ≥ 18 as of index date
- Exclusion criteria:
 - Stone surgery or stent procedure 90 days prior to index date
 - Infection (pyelonephritis or sepsis) on index date
- Outcomes (occurring within 1 month following surgery date)
 - Inpatient visits
 - Infectious complications (urinary tract infection, pyelonephritis, cystitis, sepsis)
 - Imaging procedures
 - Total medical costs (in 2020 USD)
- Logistic regression model and a generalized linear model with gamma distribution conducted to evaluate effect of delayed PCNL

RESULTS

- A total of 564 patients were included in this analysis, as shown in **Figure 1**.

Figure 1. Study Cohort



Time to PCNL Surgery

- Mean time to PCNL after initial placement of the ureteral stent: 48.83 days (SD ± 41.82)
- **Table 1** summarizes distribution of patients by time to PCNL surgery.

Table 1. % of Patients by Time to PCNL Surgery

≤ 30 days	44.33%
31-60 days	26.95%
>60 days	28.72%

DISCLOSURES

This research was supported by Boston Scientific. RP and BC are full-time employees of Boston Scientific. NB is Associate Professor of Urology at University of Montreal. BE is Medical Director at Massachusetts General Hospital, Harvard Medical School. NB and BE were not compensated for their participation in this study.

Healthcare Utilization and Costs Following Stent Placement

As compared to PCNL surgery ≤ 30 days after stent placement:

- PCNL surgery >60 days following stent placement was associated with increased inpatient visits, infectious complications, imaging, and medical costs
- PCNL surgery between 31-60 days following stent placement was associated with increased imaging, and medical costs (**Table 2**).

Table 2. Healthcare Resource Utilization and Cost by Time to Surgery*

Inpatient Visits	Odds Ratio	95% CI	P-value
31-60 days versus ≤ 30 days	1.22	(0.80 – 1.88)	0.3592
>60 days versus ≤ 30 days	1.97	(1.29 – 3.01)	0.0016**
Infectious Complications			
31-60 days versus ≤ 30 days	1.46	(0.92 – 2.31)	0.1116
>60 days versus ≤ 30 days	2.43	(1.55 – 3.81)	0.0001**
Imaging Procedures			
31-60 days versus ≤ 30 days	1.56	(1.02 – 2.38)	0.0383**
>60 days versus ≤ 30 days	2.01	(1.31 – 3.06)	0.0012**
Total Medical Costs (2020 USD)			
31-60 days versus ≤ 30 days	1.27	(1.08 – 1.49)	0.0048**
>60 days versus ≤ 30 days	1.46	(1.24 – 1.71)	<0.0001**

* Utilization and costs during the 1-month outcome period ** P-value is less than 0.05

CONCLUSIONS

- Patients who received a ureteral stent as their initial treatment and underwent PCNL more than 60 days after stent placement were associated with significant increases in healthcare utilization, worse outcomes and increased costs.
- These results are useful when considering health care resource utilization and prioritization of PCNL.

REFERENCES

1. Ray RP. Long-term complications of JJ stent and its management. Urol Ann. 2015;7(1):41-5.