



Predictive Factors of Complicated Stent Removal in Patients with Kidney Stone in the United States

Boston
Scientific

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BACKGROUND

- Cystoscopy-based stent removal (CBSR) is a common procedure following ureteroscopy with stent placement.
- CBSR may be associated with complications such as discomfort, infection, or encrustation of the surface or lumen of the stent.¹

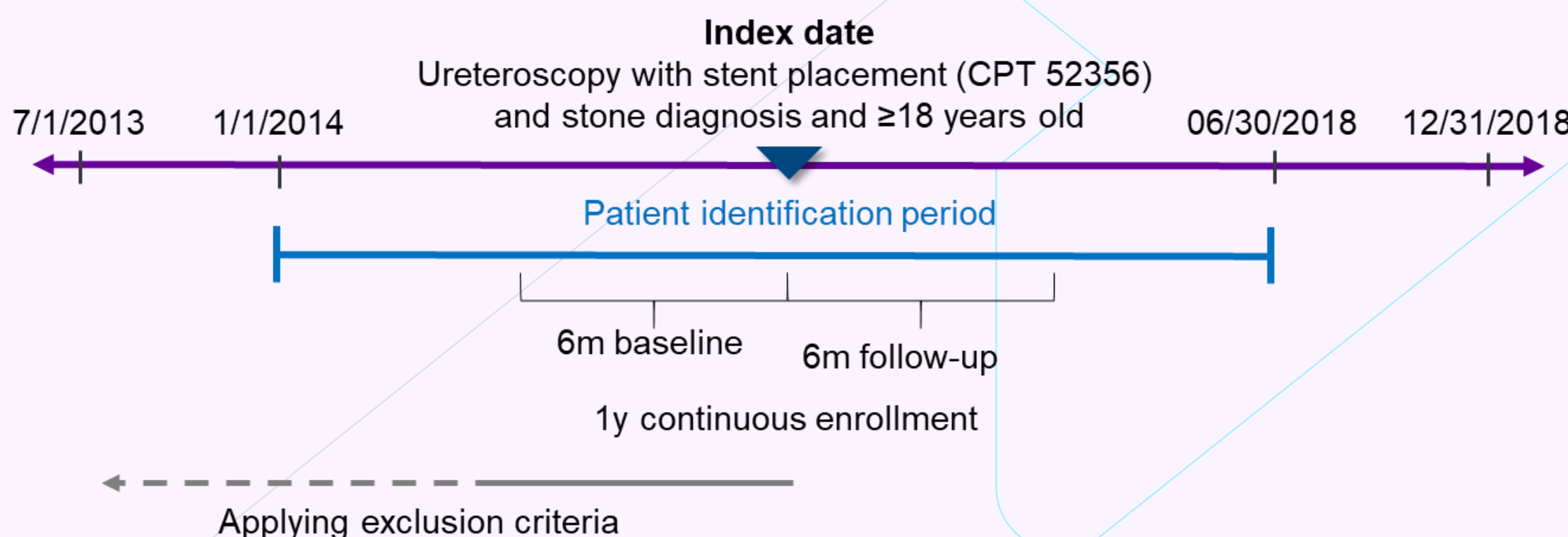
OBJECTIVE

To investigate the **predictive factors** associated with complicated CBSR among commercially insured patients undergoing ureteroscopy for kidney stone disease in the US.

METHODS

- Study Type:** Retrospective Cohort Study
- Database:** IBM® MarketScan® Commercial database
- Patient Groups:** Simple CBSR (CPT® 52310) vs. Complicated CBSR (CPT 52315)
- Predictive Factors Assessed:** Demographics, time to stent removal, comorbidities, site of service, and encrusted stent diagnoses.

Figure 1. Patient Identification



RESULTS

- 2.8% of patients (465/16,682) had complicated CBSR.
- A majority of simple and complicated CBSR patients were males, aged 55-64, and located in the South.
- Increased age, southern US geography, increased time to stent removal, and encrusted stent diagnoses** were significantly associated with complicated CBSR.

Table 1: Predictive Factors of Complicated CBSR

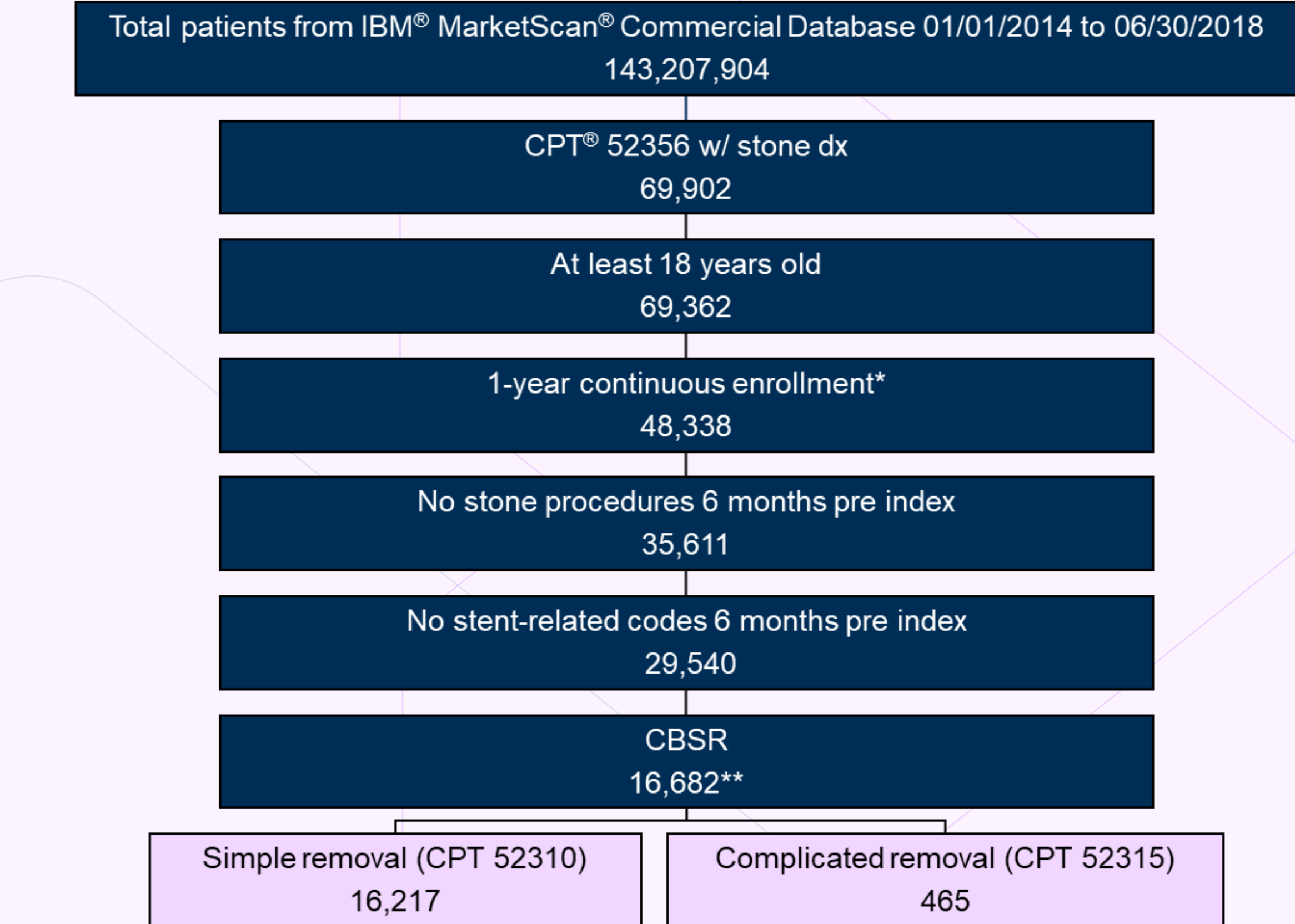
Covariate	Odd Ratio	Lower CI	Upper CI	P-value
Age at Index Procedure†				
35-44	1.28	0.86	1.89	0.23
45-54	1.47	1.02	2.12	0.04*
55-64	1.47	1.02	2.12	0.04*
Male Gender†				
1.21	0.99	1.47	0.06	
Geographical Region†				
Midwest	0.40	0.29	0.54	< 0.01*
Northeast	0.95	0.74	1.2	0.65
West	0.59	0.44	0.8	0.01*
Comorbidities				
Diabetes	1.10	0.82	1.46	0.53
Dyslipidemia	0.90	0.71	1.15	0.41
Gout	0.91	0.44	1.87	0.80
Hypertension	0.90	0.71	1.13	0.35
Obesity	1.03	0.76	1.41	0.85
Renal disease	0.82	0.43	1.57	0.55
Stone	1.05	0.86	1.28	0.62
Days to Stent Removal				
1.01	1.01	1.01	0.00*	
Non-office Stent Removal†				
1.14	0.93	1.40	0.21	
Encrusted Stent Diagnoses				
2.36	1.08	5.18	0.03*	

†References are 18-34 years of age, females, South region, and office stent removal.

*Significantly different at 0.05

PATIENT SELECTION

Figure 2. Inclusion and Exclusion Criteria



*6-month pre-index and 6-month post-index

**Excluded one patient with a negative cost for the stent removal encounter.

CONCLUSIONS

- Increasing patient age, geographic location, stent dwell time, and encrusted stent diagnoses are predictors of complicated stent removal billing in the US.
- Ureteral stents with anti-encrustation qualities may reduce the need for complicated CBSR.

DISCLOSURES

This study was supported by Boston Scientific. Sirikan Rojanasart, Ben Cutone, and Samir Bhattacharyya are employees of Boston Scientific. Khurshid Ghani is a professor of Urology at University of Michigan. Amy Krambeck is a professor of Urology at Northwestern University. Drs. Ghani and Krambeck were not compensated for their participation in this study.

¹ Tomer N, et al. J Urol. 2021;205(1):68-77.