

## Do urologists follow the *golden rule*? A global urolithiasis management study by the Clinical Research Office of the Endourological Society

Gregory Roberts, MD;<sup>1</sup> Dedan Opondo, MD;<sup>2</sup> Linda Nott, RN;<sup>3</sup> Hassan Razvi, MD;<sup>3</sup> Jean de la Rosette, MD;<sup>2</sup> Darren Beiko, MD<sup>1</sup>

<sup>1</sup>Department of Urology, Queen's University Kingston, ON, Canada; <sup>2</sup>Department of Urology, AMC University Hospital, Amsterdam, The Netherlands; <sup>3</sup>Department of Surgery, Division of Urology, Western University, London, ON, Canada

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### Abstract

**Introduction:** The primary objective of this study was to compare surgical management options for various urolithiasis scenarios that urologists would choose for themselves vs. the options they would recommend for their patients. The secondary objective was to identify the common recommended treatments for upper urinary tract stones of various sizes and locations.

**Methods:** Two surveys were sent by the Clinical Research Office of the Endourological Society (CROES) to members of the Endourological Society. Standard demographic information was collected. The first survey asked the urologists to recommend treatment for urolithiasis in 10 different scenarios assuming that they were the patient with stone disease. The second survey, sent eight months later, asked urologists to recommend treatment for the same 10 scenarios for a theoretical patient. Only urologists who responded to the first and the second survey were included. Recommended treatment options were compared between the surveys. Agreement between the two scenarios was measured with Cohen's kappa. Surveys were conducted on the Internet using SurveyMonkey™. All statistical analyses were performed using R statistical program version 2.12.2.

**Results:** The two surveys had response rates of 78% (160/205) and 84% (172/205), respectively with urologists from 38 countries. Median experience of respondents was seven years (range: 2–30). The majority of respondents, 117 (75%), were affiliated with academic hospitals. Recommended treatments for stone disease in different scenarios were not entirely consistent when the urologists considered themselves as the patients compared to the choice they might recommend for their patients. Cohen's kappa ranged from 0.292–0.534 for the different scenarios. Overall, shock wave lithotripsy (SWL) and ureteroscopy (URS) were the most commonly chosen treatment options, with medical expulsive therapy (MET) and laparoscopy being the least recommended by urologists for themselves, as well as for their patients.

**Conclusions:** Although urologists were not entirely consistent in their recommendations for stone treatment, they generally followed

the “golden rule” and treated their patients as they would want to be treated. The most commonly recommended treatments for upper urinary tract stones were SWL and URS.

### Introduction

Over the last few decades, there have been remarkable technological advances in treatment options for patients with urolithiasis. Specifically, SWL, URS, and percutaneous nephrolithotomy (PCNL) have supplanted open lithotomy as the mainstay of surgical management in most parts of the world.<sup>1</sup> Laparoscopy is routinely used in some parts of the world, and to be certain, open lithotomy remains a viable option for upper urinary tract calculi in a small number of countries where adoption of technology is cost-prohibitive.<sup>2</sup> This study seeks to investigate the difference between stone surgery treatments that urologists would choose for themselves as compared to the options they might recommend to their patients. The rationale behind the need to know whether or not urologists follow the “golden rule” is that one of the authors observed he would, at times, recommend treatment to patients that he himself would not pursue. In doing so, he would openly declare his “hypocritical” position to patients. For example, URS would be recommended for a 1 cm proximal ureteral stone for a patient, when he would choose SWL for himself. Secondly, this study seeks to identify the common recommended treatments for stones of various sizes and locations among a global population of urologists.

### Methods

Two surveys were sent in March and November 2012, respectively, to 205 members of the Endourological Society. The first survey asked the urologists to select the optimal management option for upper urinary tract calculi in dif-

ferent scenarios assuming they were the patient with stone disease. The second survey involved the exact same upper urinary tract calculi scenarios, this time asking urologists what optimal management option they would recommend for a patient. Both surveys were emailed to individual members of the Endourological Society with links to a web-based survey. Only the responses from urologists who completed both the first and the second survey were included in the analysis. Recommended treatment options were compared between the scenarios where the urologists themselves were the patient and when another person was the patient. Agreement between the two scenarios was measured with Cohen's kappa. Interpretation of Cohen's kappa scores was done according to the statistical paper by Landis and Koch<sup>3</sup> as follows: kappa <0.00 less than chance agreement; 0.01–0.20=slight agreement; 0.21–0.40=fair agreement; 0.41–0.60=moderate agreement; 0.61–0.80=substantial agreement; 0.81–0.99=almost perfect agreement. Surveys were conducted on the Internet using SurveyMonkey™. All analyses were performed using R statistical program version 2.12.2 (Bell Laboratories).

## Results

For both surveys, 205 urologists received an invitation to participate; 160 urologists completed the first survey (78% response rate) and 172 replied to the second survey (84% response). The characteristics of the respondents are summarized in Table 1. Urologists from 40 countries participated (Table 2). Academic setting accounted for 75% of the respondents. The majority of the respondents combined clinical and research training in their fellowship (45.8%). Among respondents, 17.2% had a personal history of urolithiasis.

Although recommended treatments for stone disease in different scenarios were reasonably consistent when the urologists considered themselves as the patient compared to the choice they made for their patients, the recommendations were not entirely consistent (Table 3). Cohen's kappa — a measure of agreement between the two scenarios — ranged from 0.292–0.534 for the different scenarios. Percentage agreement in each scenario ranged from 60.9–83% (Table 4). The stone scenarios that had the highest agreement scores were symptomatic 20 mm renal pelvis calculus and symptomatic 10 mm lower pole calculus (Cohen's kappa 0.534 and 0.531, respectively), with PCNL being favoured in 69% in the former and either URS and SWL being favoured in the latter. The largest differences in recommendations between the patient and self-treatment options were found in the scenarios asymptomatic 5 mm lower pole calculus and 15 mm ureteropelvic junction (UPJ) stone with mild hydro-nephrosis (Cohen's kappa 0.292 and 0.372, respectively). Overall, SWL and URS were the most frequently chosen

**Table 1. Baseline characteristics of participating urologists**

Participants characteristics	Participants N=157
Years of experience	17 (range: 2–30)
Practice setting	
Academic, n (%)	117 (74.5)
Community, n (%)	33 (21)
Combined, n (%)	7 (4.5)
Type of fellowship*	
None, n (%)	22 (14.0)
Laparoscopy, n (%)	59 (37.6)
BPH, n (%)	35 (22.3)
LESS, n (%)	5(3.2)
Endourology, n (%)	112 (71.3)
Robotics, n (%)	28 (17.8)
Pediatrics, n (%)	10 (6.4)
NOTES, n (%)	1 (0.6)
Metabolic stone disease, n (%)	29 (18.5)
Oncology, n (%)	37 (23.6)
Female urology, n (%)	18 (11.5)
Simulators and education, n (%)	8 (5.1)
Other fellowships, n (%)	10 (6.4)
Type of fellowship	
Clinical, n (%)	51(32.5)
Research, n (%)	7 (4.5)
Both clinical and research, n (%)	72 (45.8)
Not specified, n (%)	27 (17.2)
Personal history of urolithiasis, n (%)	27 (17.2)

\*Multiple answers were possible, so percentages add up to >100. BPH: benign prostatic hypertrophy; LESS: laparoendoscopic single-site surgery; NOTES: natural orifice transluminal endoscopic surgery.

**Table 2. Countries represented**

Argentina	Iran, Islamic Republic of
Armenia	Israel
Australia	Italy
Austria	Japan
Bangladesh	Mexico
Belgium	Netherlands
Brazil	Pakistan
Canada	Philippines
Chile	Portugal
China	Romania
Colombia	Russian Federation
Czech Republic	Saudi Arabia
Denmark	Singapore
Dominican Republic	Spain
Egypt	Sweden
France	Thailand
Germany	Turkey
Greece	United Kingdom
India	United States
Indonesia	Venezuela

**Table 3. Comparing treatment choices for the patient and self**

Clinical scenario	Recommended for self	Recommended for patient	Cohen's kappa
Symptomatic 15 mm upper pole (superior calyx) calculus			
Nothing, n (%)	2 (1.3)	-	0.469
PCNL, n (%)	17 (11.1)	15 (9.6)	
SWL, n (%)	100 (65.4)	96 (61.5)	
URS, n (%)	36 (23.5)	45 (28.8)	
Symptomatic 10 mm interpolar (middle calyx) calculus			
MET, n (%)	1 (0.7)	-	0.512
PCNL, n (%)	4 (2.6)	4 (2.6)	
SWL, n (%)	121 (79.1)	123 (79.4)	
URS, n (%)	27 (17.6)	28 (18.1)	
Asymptomatic 5 mm lower pole (inferior calyx) calculus			
Nothing, n (%)	99 (63.9)	97 (62.2)	0.292
MET, n (%)	11 (7.1)	11 (7.1)	
SWL, n (%)	37 (23.9)	37 (23.7)	
URS, n (%)	8 (5.2)	11 (7.1)	
Symptomatic 10mm lower pole (inferior calyx) calculus			
Nothing, n (%)	3 (2.0)	-	0.531
MET, n (%)	1 (0.7)	-	
PCNL, n (%)	17 (11.1)	19 (12.3)	
SWL, n (%)	69 (45.1)	70 (45.2)	
URS, n (%)	63 (41.2)	66 (42.6)	
Symptomatic 20 mm renal pelvis calculus			
Nothing, n (%)	1 (0.7)	-	0.534
Laparoscopy, n (%)	-	1 (0.6)	
MET, n (%)	-	1 (0.6)	
PCNL, n (%)	107 (69.9)	108 (69.7)	
SWL, n (%)	23 (15.0)	22 (14.2)	
URS, n (%)	22 (14.4)	23 (14.8)	

MET: medical expulsive therapy; PCNL: percutaneous nephrolithotomy; SWL: shock wave lithotripsy; URS: ureteroscopy.

treatment options, with MET and laparoscopy being the least recommended by urologists for themselves, as well as for their patients.

## Discussion

### Main findings

Overall, the author's choices for treatment recommendations were in keeping with that of the American Urology Association-European Association of Urology (AUA-EAU) joint guidelines for ureteral calculi,<sup>4</sup> as well as a contemporary article on the treatment of ureteral stones.<sup>5</sup> Interestingly, recommendations were not entirely consistent when the urologist thought of himself or herself as the patient vs. recommendations for a generic patient. The kappa agreement scores according to the statistical paper by Landis and Koch<sup>3</sup> show that most scenarios scored in the "moderate agreement" range, between 0.41 and 0.60 (Table 4). It is unclear whether this variation is due to a self-treatment bias held by

urologists surveyed or the result of minor change in treatment philosophy over the eight-month period between surveys. The scenarios were purposely selected to have multiple options, all of which could be considered, as there are no rigid, evidence-based "rules" on how to manage such calculi. To highlight this lack of agreement, for one scenario, 15 mm UPJ stone with hydronephrosis, experts recommended PCNL, URS, and SWL at roughly equal rates for themselves (32.3%, 33.5%, 31.6%, respectively). Because each option has its pros and cons, the variability could be attributed to a recency bias, in which a practitioner's recommendation could be related to a recent success or failure in treating similar stones.

### Secondary findings

Each of the urologists surveyed is a member of the Endourological Society and 75% were affiliated with academic practices, thus many of the respondents can be categorized as experts in the subspecialty of urology. Because each of the scenarios used in this study has multiple options

**Table 3 (cont'd). Comparing treatment choices for the patient and self**

Clinical scenario	Recommended for self	Recommended for patient	Cohen's kappa
Symptomatic 15 mm UPJ calculus with mild hydro			
Nothing	1 (0.6)	-	0.372
Laparoscopy	3 (1.9)	3 (1.9)	
PCNL	50 (32.3)	44 (28.2)	
SWL	52 (33.5)	45 (28.2)	
URS	49 (31.6)	64 (41.0)	
Symptomatic 10 mm upper ureteral calculus with mild hydronephrosis			
Nothing	1 (0.6)	-	0.504
Laparoscopy	1 (0.6)	2 (1.3)	
MET	-	2 (1.3)	
PCNL	5 (3.2)	6 (3.9)	
SWL	67 (43.5)	60 (39.0)	
URS	80 (51.9)	84 (54.5)	
Symptomatic 10 mm middle ureteral calculus with mild hydronephrosis			
Nothing	1	-	0.391
MET	2 (1.3)	4 (2.6)	
PCNL	-	1 (0.6)	
SWL	35 (22.7)	25 (16.1)	
URS	116 (75.3)	125 (80.6)	
Symptomatic 5 mm distal (lower) ureteral calculus with mild hydronephrosis			
Nothing	12 (7.7)	4 (2.6)	0.381
MET	72 (46.5)	77 (50.3)	
SWL	16 (10.3)	21 (13.7)	
URS	55 (35.5)	51 (33.3)	
Symptomatic 10 mm lower ureteral calculus with mild hydronephrosis			
MET	3 (1.9)	4 (2.6)	0.424
SWL	28 (18.2)	26 (17.0)	
URS	123 (79.9)	123 (80.4)	

MET: medical expulsive therapy; PCNL: percutaneous nephrolithotomy SWL: shock wave lithotripsy; UPJ: ureteropelvic junction; URS: ureteroscopy.

for treatment with no rigorous, evidence-based guidelines, this survey could be useful in clinical practice as an “expert-based guideline” for different stone scenarios. Lack of unanimity is partly explained by the fact that, for many of the stone scenarios presented, the published stone-free rates are acceptably high for more than one treatment modality.<sup>5</sup> Furthermore, the differences in treatment recommendations among urologists for some of the given scenarios could also be, at least partly, explained by availability of technology, expertise/experience, the urologist’s personal preference, and their perceptions of patients’ preference.

### Similar studies

A recent survey conducted among urologists and residents in Norway on personal preferences for stone treatments showed that SWL was the first choice of calculi in the upper ureter (47.8%).<sup>6</sup> This study did not, however, indicate the

size of the renal stones under treatment. The current study found that SWL was recommended roughly 34% of the time, but also included some scenarios with large stones in the kidney and distal ureteral stones, which infers different sample populations that cannot be directly compared.

### Strengths and limitations

A strength of the current study is that specific clinical scenarios were presented, including size of stones with symptomatology, to create a more realistic clinical decision.

Surveys are considered to be easily subject to selection bias; however, in this study the response rates are quite high (~80%), so the results can be considered reliable. To avoid any learning effects, the time between sending both surveys was eight months.

One of the limitations of this study is that causation is difficult to prove given the cross-sectional nature of our survey.

**Table 4. Percent agreement scores for each scenario**

Symptomatic 15 mm upper pole (superior calyx) calculus	72.1%
Symptomatic 10 mm interpolar (middle calyx) calculus	83%
Asymptomatic 5 mm lower pole (inferior calyx) calculus	61.7%
Symptomatic 10 mm lower pole (inferior calyx) calculus	71.5%
Symptomatic 20 mm renal pelvis calculus	78.1%
Symptomatic 15 mm UPJ calculus with mild hydronephrosis	57.1%
Symptomatic 10 mm upper ureteral calculus with mild hydronephrosis	72.8%
Symptomatic 10 mm middle ureteral calculus with mild hydronephrosis	78.3%
Symptomatic 5 mm distal (lower) ureteral calculus with mild hydronephrosis	60.9%
Symptomatic 10 mm lower ureteral calculus with mild hydronephrosis	81.3%

UPJ: ureteropelvic junction.

Further limiting is the fact that there are certainly several patient factors, stone factors, and anatomic factors that may influence a urologist's ultimate treatment recommendation. For us to focus only on the "golden rule" and simplify the decision-making process by negating these issues is a weakness in the study.

Another limitation was that the small number of community urologists completing the surveys made it difficult to draw any clinically meaningful conclusions regarding treatment differences between academic and non-academic urologists. Similarly, the small number of urologists from most countries made it difficult to determine if there were any significant differences in recommended treatments between countries. However, many of these limitations more directly restricted our ability to achieve the secondary objective and not the primary one.

Perhaps the most significant limitation was failure to ask about key variables in the surveys, such as availability of technology and any potential personal biases or preferences each urologist might possess, as it would have been interesting to determine potential factors that have a direct effect on urologists' decision-making process.

Finally, given that study subjects were all members of the Endourological Society, there may be some questionability and uncertainty of the external validation of the results.

## Conclusion

There is a minor amount of variation in how urologists would theoretically treat themselves vs. how they would treat their patients. This difference is generally minimal and it is difficult to ascertain if these differences would lead to a difference in treatment outcomes. We conclude that urologists generally follow the "golden rule" when providing treatment recommendations for their patients; for the most part urologists treated patients in the same way they would want to be treated. These findings may be used as a source of expert opinion for management of upper urinary tract calculi.

**Competing interests:** Dr. Roberts, Dr. Opondo, and Ms. Nott declare no competing financial or personal interests. Dr. Razvi is an Advisory Board member for Histosonics, a member of a Speakers' Bureau for Olympus, and has received grants and/or honoraria from Storz Lithotripsy and Cook Urological. Dr. de la Rosette is an Advisory Board member for Angiodynamics, BSC, and Coloplast. He has also received grants and/or honoraria from Angiodynamics, BSC, Coloplast, Storz Lithotripsy and Olympus and has participated or is participating in clinical trials sponsored by Olympus, Angiodynamics, and Storz Lithotripsy. Dr. Beiko has received honoraria as a speaker for Cook Medical.

This paper has been peer-reviewed.

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**Correspondence:** Dr. Darren Beiko, Department of Urology, Queen's University, Kingston General Hospital, Kingston, ON, Canada; [beikod@kg.hkari.net](mailto:beikod@kg.hkari.net)