Kidney Stone Care and the COVID-19 Pandemic: Challenges and Opportunities

THE SARS-Cov-2 (COVID-19) pandemic is a societal catastrophe with an unparalleled global impact on how we live, work, teach and play. In the United States, with the declaration of a national emergency and restrictions on nonessential medical care, the health care system is under great strain. While there are immediate challenges to overcome in prioritizing and increasing clinical activity, this crisis also presents us with a unique opportunity to fundamentally reexamine how we practice in order to improve and possibly even transform patient care.

Urinary stone disease accounts for a considerable portion of the clinical workload for many urologists in this country and it consumes significant resources. In addition, unplanned health care utilization, such as emergency department (ED) visits after ureteroscopy (URS) and shock wave lithotripsy (SWL), occurs frequently and is emerging as an important quality indicator.[1] Drawing on the Michigan Urological Surgery Improvement Collaborative (MUSIC), which has a clinical registry of more than 13,000 URS and 7,000 SWL procedures, we sought to identify the strengths, weaknesses, opportunities and threats to the future of kidney stone care as a result of the COVID-19 pandemic [F1] (see figure).

RESTRICTIONS ON SURGICAL CARE

Limits on elective care, although not uniform, have been instituted by most hospitals to preserve resources and capacity for spikes of COVID-19 infections. These are likely to remain in some form until effective therapies against the virus become available. This has resulted in a backlog of patients waiting for definitive surgical management—including those with obstructing urinary stones temporized with a ureteral stent. Surgical prioritization schemes categorize stented cases into a lower tier of urgency.[2] A delay in definitive stone treatment and an increase in stent dwell time impact quality of life, raise the risk of loss to followup with a forgotten stent and increase rates of postoperative sepsis.[3]

Interventions to prevent avoidable ED visits include improved patient education on what to expect with a stent and implementation of medication protocols to combat symptoms (resources available at https://musicurology.com). Another option is the use of silicone stents because they encrust less than polyurethane stents—a strategy already being employed by some urologists. Timely screening with urine culture and consideration of preoperative antibiotics will be critical in patients with longer stent dwell times in order to mitigate the risk of sepsis when the stone is treated.[3] Additionally consideration of stent omission during uncomplicated URS may reduce postoperative morbidity. When using stents, employing a string for extraction can eliminate an additional procedure and use of resources.

REDUCING EXPOSURE TO HEALTH CARE FACILITIES

Our patients' desire to limit contact with health care facilities may impact surgical decision making. The relative frequencies of URS and SWL may be altered as the latter has several unique advantages. In MUSIC we have observed lower rates of emergency department visits following SWL (3.5%) vs URS (7.7%). Additionally SWL rarely requires stent placement. Critically SWL can be performed with the patient under sedation or oral analgesia, obviating the need for intubation and therefore decreasing hospital resource consumption, viral particle aerosolization and health care worker exposure. Although SWL does have a lower rate of stone clearance than URS, the lower unplanned health care utilization after SWL may tip the scales in its favor. As such, we have an opportunity to develop shared decision making tools that empower patients to select the right treatment for them. Systematic efforts targeted at improving outcomes for SWL through appropriate use and technical refinement are now needed more than ever.

We must also recognize that fear may drive patients to present at a late stage for emergent issues. Conversely patients suitable for medical expulsive therapy may request emergent primary treatment

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Strengths	Weaknesses
SWL - sedation, low rates of ED visits ***Emergent primary URS*** - immediate treatment, reduced healthcare exposures ***Telehealth*** - follow-up care of kidney stones	***SWL*** - outcomes inferior to URS ***Emergent primary URS*** – may be associated with increased ED visit rate ***Telehealth*** - lack of integrated medical records and access to imaging
Opportunities	**Threats**
Patient education/symptoms - shared decision-making tools, medication protocols ***SWL*** - appropriate use, technical refinements ***Emergent primary URS*** - define indications ***Telehealth*** - secondary stone prevention, follow-up imaging	***Ureteral stents*** - quality of life, morbidity ***Restrictions on surgical care*** - increased risk of sepsis after surgery with long stent dwell time ***SWL*** – patient/stone factors hinder uniform use

Strengths, weaknesses, opportunities and threats to future of kidney stone care.

with URS to avoid the risk of another urgent hospital encounter. While this may be a reasonable consideration if resources allow, in MUSIC we have observed significantly higher rates of ED visits after emergent primary URS vs elective surgery. Defining the indications for emergent URS could improve stratification of patients who would benefit most from immediate care.

TELEHEALTH: PROMISES AND PITFALLS

The adoption of telehealth at scale has so far been the greatest transformative change of the COVID-19 era. In a recent survey of MUSIC members we found that 98% of urologists thought followup care for stone disease was appropriate for telehealth visits. It was the number 1 ranked urological condition for suitability.

Yet telehealth presents both opportunities and challenges for stone care. For example observation of asymptomatic renal stones, which should be a current priority, or followup visits can be adapted to telehealth. However, the challenge of obtaining a kidney, ureter and bladder x-ray before a virtual visit may be an implementation barrier. At present only 48% of patients undergo followup imaging after URS.[4] A clear advantage of an in-person clinic is access to same day imaging. Technology that works across platforms to allow images to be ordered and reviewed seamlessly between facilities may bridge this gap. This does not yet exist, but there is no reason why it cannot be developed.

With careful stewardship another quality of care gap that telehealth could address is secondary stone prevention. Claims based studies have demonstrated that use of 24-hour urine collections to inform medical management, even in high risk stone formers, is only at 7.4%.[5] In a time when some laboratories offer tests that can be sent to and collected from patients' homes telehealth may serve as the catalyst that allows us to integrate medical management of kidney stones into our practice. Virtual visits remove the barriers of travel and inconvenience for the patient, might improve treatment compliance and provide reimbursement to the physician for the care provided.

Despite the great suffering caused by COVID-19, we have a once in a generation opportunity to fundamentally reexamine our care models. For kidney stone care opportunities include better patient education, development of shared decision making tools to guide treatment choices, criteria for the appropriate use of SWL, defining indications for emergent primary URS, and improving followup and secondary stone prevention through telehealth. However, we need to remain vigilant and protect against threats to progress. Throughout history crises have forced innovations that have ultimately improved society. This moment is no different.

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Spencer C. Hiller,* Casey A. Dauw, Khurshid R. Ghani and for the Michigan Urological Surgery Improvement Collaborative

Dow Division of Health Services Research and Department of Urology

University of Michigan Ann Arbor, Michigan

*Correspondence: Department of Urology, University of Michigan, 1500 E. Medical Center Dr., 3875 Taubman Center, Ann Arbor, Michigan 48109 (telephone: 734-936-7030; FAX: 734-232-2400; e-mail: spehill@med.umich.edu).

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