



Patient's preferences: an unmet need by current urolithiasis guidelines: a systematic review

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Abstract

Introduction Shared decision making (SDM) in surgical specialties was demonstrated to diminish decisional regret, decisional anxiety and decisional conflict. Urolithiasis guidelines do not explicit patient preference to choose treatment. The aim of this review article was to perform a systematic evaluation of published evidence regarding SDM in urinary stone treatment.

Methods A systematic review in accordance PRISMA checklist was conducted using the MEDLINE (PubMed) database. Inclusion criteria were studies that evaluated stone treatment preferences. Reviews, editorials, case reports and video abstracts were excluded. ROBUST checklist was used to assess quality of the studies.

Results 188 articles were obtained. After applying the predefined selection criteria, seven articles were included for final analysis. Six out of seven studies were questionnaires that propose clinical scenarios and treatment alternatives. The last study was a patient preference trial. A general trend among included studies showed a patient preference towards the least invasive option (SWL over URS). The main reasons to choose one treatment over the other were stone-free rates, risk of complications and invasiveness.

Discussion This review provides an overview of the patients' preferences towards stone treatment in small- and medium-sized stones. There was a clear preference towards the least invasive management strategy. The main reason was less invasiveness. This is opposed to the global trends of performing more ureteroscopies and less SWL. Physicians played a pivotal role in counselling patients. SDM should be encouraged and improved. The main limitation of this study is the characteristics of the included studies.

Keywords Ureteroscopy · Shared decision making · Patient preferences · Endourology

Introduction

Shared decision making (SDM) represents a shift from paternalistic practice to active engagement of the patient with the physician [1]. It aims to achieve high quality treatment decisions through the sharing of knowledge between patient and their healthcare provider, whenever multiple options are considered clinically acceptable [2, 3]. It looks to improve the quality of medical decisions by helping patients choose options, delay or forego care altogether, concordant with their values and in accordance with the best available scientific evidence [2]. Adoption of SDM in surgical specialties was demonstrated to diminish decisional regret, decisional anxiety and decisional conflict. At the same time, SDM does not decrease surgical volume and increases awareness and decisional satisfaction for the patients [4]. Most urologist reports that they use SDM during their daily practice [5]. EAU Urolithiasis guidelines

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[6] state that the treatment of urinary stones is based on several parameters and it is individualized for each patient, implying that patient preferences should be taken into consideration, without explicitly mentioning it. If we could incorporate patient reported outcomes, such as satisfaction, treatment expectations and health-related quality of life, we could learn how to better tailor each specific alternative option for our patients [7]. Against this background, the aim of this review article was to perform a systematic evaluation of published evidence about patient preferences and SDM in urinary stone treatment (surgical, medical and/or observation).

Methods

A systematic review in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) checklist was conducted [8]. A literature search was conducted by one author (FP), using the MEDLINE (PubMed) database, using keywords “endourology”, “uro-lithiasis”, “ureteroscopy”, in combination with each of the following “patient preferences”, “shared decision making” compiling them with “AND”. Search was done from inception to April 04, 2023. Inclusion criteria were studies that evaluated patient preferences in stone treatment. Duplicates were removed from screening, and reviews, editorials, case reports and video abstracts were excluded from the full-text eligibility assessment. No language exclusion criteria were used. The resulted studies were included for qualitative analysis. The literature analysis was done by one author (FP) and confirmed for final selection by one author (EV) previous assessment to ensure that they met the inclusion criteria. Data extraction about objective of the studies, method to assess patient preference, results of each study concerning decision of the patient and the reasons (when stated) to choose one treatment over other alternative. Finally, the conclusions were also tabulated. Utility value and percentage

were the main effect measures used in the presentation of results.

The risk of bias utilized for surveys tool (ROBUST) [9] was used to assess the quality of all studies by one author. The ROBUST checklist eight specific items. Each study was assigned a scores 0–8. Studies scoring 8 points representing the highest level of confidence (low risk of bias) and 0 the lowest level (high risk of bias) (Table 1).

According to the substantial degree of heterogeneity among the included studies in terms of both design and outcomes, we report here a narrative synthesis of the results.

Results

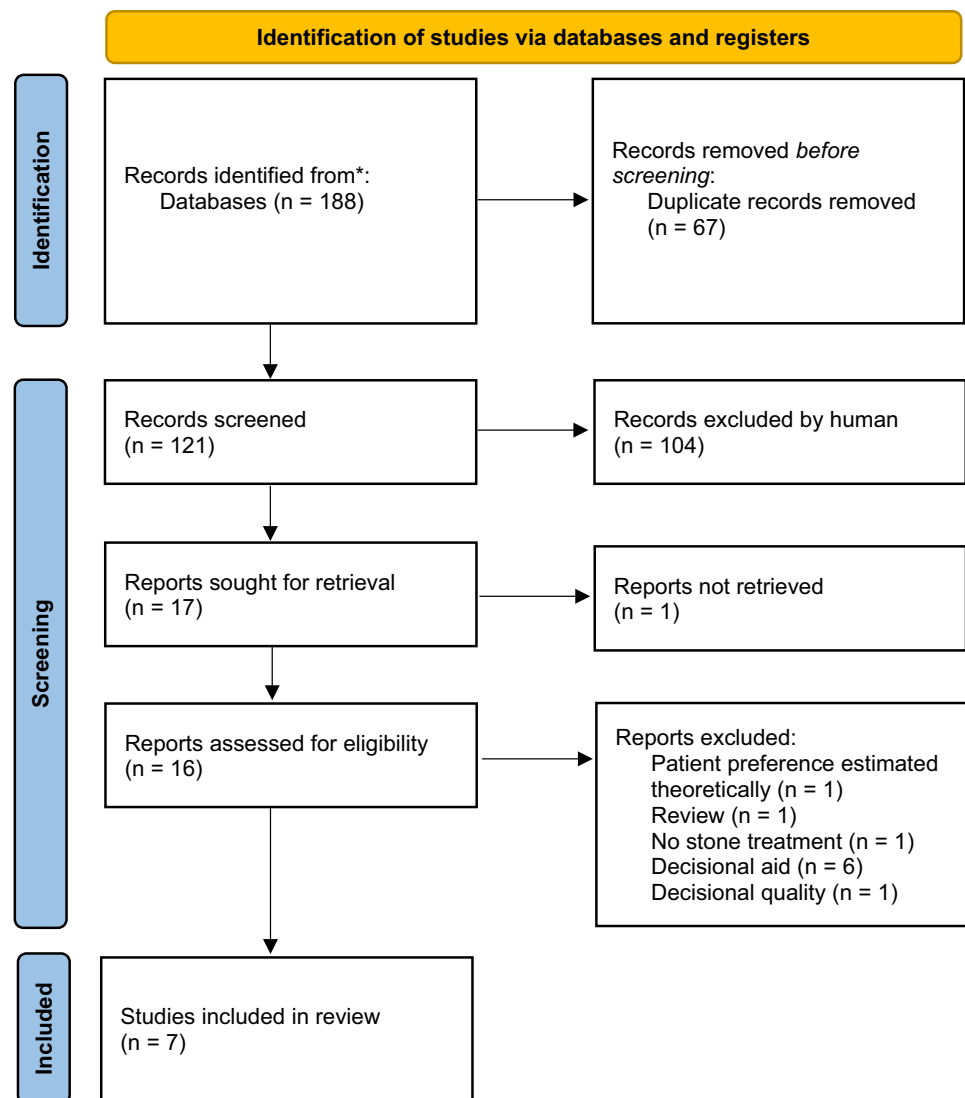
A total of 188 articles were obtained from the literature research (Fig. 1). After applying the predefined selection criteria, seven articles were included for final analysis. The following management strategies for stone disease were analysed: observation/active surveillance, medical expulsive therapy (MET), shock wave lithotripsy (SWL), and endourological procedures. In detail, one study evaluated patient attitudes regarding medical expulsive therapy (MET) solely [10]. Of the six remaining studies, four compared patients preferences for surgical or medical treatments (including observation/active surveillance) [1, 11–13]. Eventually, two studies investigated only surgical alternatives [14, 15] (Table 2).

The studies included in this synthesis are rather heterogeneous. Most of the studies [1, 10–14] were questionnaires with clinical scenarios proposed to patients with either active or recent history of stone disease. In detail, five out of seven studies proposed clinical scenarios for renal stones and offered those treatment alternatives detailing stone-free and complications rates. The preferred treatment in all studies was extracorporeal shock wave lithotripsy (SWL) [1, 11–14]. A preference trial [15] enrolled and treated patients either with ureteroscopy (URS) or SWL, and evaluated the degree of which patients would choose the same treatment modality again in the future

Table 1 Assessment of included studies according to ROBUST checklist

Author	Sampling frame	Participant recruitment	Exclusion rate	Sample size	Sample characteristics	Measurement validity	Setting	Data management	Final score
Kuo et al. [9]	1	1	0	1	1	0	1	0	5
Karlsen et al. [14]	1	1	0	0	1	0	1	0	4
Sarkissian et al. [10]	1	1	0	1	0	0	1	0	4
Omar et al. [11]	1	1	1	1	1	0	1	0	6
Bell et al. [8]	1	1	0	0	1	0	1	0	4
Sprading et al. [13]	1	1	1	0	1	0	1	0	5
Walters et al. [12]	1	0	0	1	1	0	0	0	3

Fig. 1 PRISMA flow diagram



and SWL was significantly above URS in the patient preferences. PCNL was the least option, even with medium-sized stones (15–20 mm) scenarios URS was preferred over PCNL [12, 13]. Up to 56–85% of the patients relied on the physician recommendations for the treatment modality [1, 12]. A general trend among included studies showed a patient preference towards the least invasive option. The main reasons to choose one treatment over the other was stone-free rates (SFR), risk of complications and invasiveness.

Discussion

Our results show a clear preference of patients with stone disease towards the least invasive management strategy. In medium-sized stones, URS is preferred over PCNL. Key factors in treatment choice were stone-free rates (SFR), risk

of complications and invasiveness. During decision making, physicians played a pivotal role in counselling patients.

Shared decision making implies that whenever patients are offered a range of clinical options, both benefits and harms should be clearly disclosed. In terms of SFR after URS, we now know that the real-life numbers are not as good as are results coming from trials [16]. A study that looked over 6000 ureteroscopies in multiple centers reported an average SFR of 49.6% for renal and 72.7% for ureteral stones [17]. The studies included in this review and offered URS to the enrolled patients indicating a potential stone-free rate for renal stones between 70 and 90% [1, 12–14]. This underlines that the data we use to inform our patients during shared decision making should reflect more precisely real-world numbers. Ideally, each surgeon should inform patients with updated results coming from the retrospective analysis of her/his series, in terms of both efficacy and complications

Table 2 Summary of studies included in the systematic revision

Authors	Year	Objective	Method	Population	Results	Conclusion
Kuo et al. [9]	1999	Decision modeling to understand patient choices	Questionnaire 6 scenarios: Nephrectomy PCNL (3*) SWL Medication	Patients in stone clinic n: 180 Mean age: 46 Male: 62% Female: 38% Previous stone disease: 100%	n = 180 Patients' preferences: SWL (UV: 0.968) Medication (UV: 0.949) PCNL (UV: 0.924–0.947) Nephrectomy (UV: 0.883)	Patients who had stone removal, except SWL, wanted to avoid future invasive procedures
Karlsen et al. [14]	2007	Compare outcomes of URS and SWL. Primary endpoints: stone-free rate and subjective patient experience	Patient preference trial 50 hose randomization 24 SWL 26 URS 21 hose their preference 9 SWL 12 URS Questionnaire 3 month post op: Satisfaction Would they choose it again	Patients undergoing treatment for a single proximal ureter stone of 5–10 mm n: 71 Mean age: 49 Male: 72% Female: 28% Stone diameter SWL: 7.9 mm Stone diameter URS: 7.7 mm	n = 71 General satisfaction: No diff ($p=0.315$) Degree of which patients would choose same treatment: SWL > URS ($p=0.006$)	ESWL was preferred by majority of patients because of lower discomfort after treatment
Sarkissian et al. [10]	2013	Evaluate which variables affect patients' decision of asymptomatic renal calculi	Questionnaire Scenario: Asymptomatic 8 mm LP stone	Patients in stone clinic N: 101 Mean age: N/A Male: Female N/A Previous SWL: 42% Previous URS: 47% Previous PCNL: 14% No previous stone surgery: 23% Previous stone passage: 56%	n = 101 Patients' preferences: SWL (47.5%) URS (29.7%) Observation (22.8%) They would choose: URS more likely if they had URS before SWL more likely if they had SWL before	Previous stone experience and treatment significantly affected treatment choice

Table 2 (continued)

Authors	Year	Objective	Method	Population	Results	Conclusion
Omar et al. [11]	2016	Evaluate patient's characteristics that affects their decision on the management of asymptomatic renal calculi	Questionnaire Scenario: Asymptomatic 8 mm LP stone	Consecutive patients in stone clinic n: 100 Mean age: 55 years Male: 54% Female: 46% History of previous stone: 100% Previous SWL: 44% Previous URS: 47% Previous PCNL: 16% Previous stone passage: 57%	n = 100 Patients' preferences: SWL (45%) URS (32%) Active surveillance (23%) Decisions were driven by: Success rate (52%) Risk of complication (29%) Postoperative pain (7%)	Success rate and risk of surgery are the most important factors for patients. Urologist should assess patient's priorities for SDM
Bell et al. [8]	2017	Evaluate patient attitudes regarding MET	Questionnaire after explaining conflicting data on MET	Consecutive patient in an endourology consultation N: 200 Mean age: 56 years Male: 52% Female: 48% History of previous stone: 87.5%	n = 200 49% would take MET despite conflicting data 25% unsure 26% no MET 71% prefer MET prior to surgery	Nearly half of patients would try MET despite the new studies
Sprading et al. [13]	2021	Evaluate what affects patient treatment preferences	Questionnaire 15–20 mm renal stone	Patients undergoing stone treatment n: 58 Male:Female 1:1 Age groups: 20–34: 7% 35–49: 28% 50–64: 36% > 65: 29% Previous stone surgery: SWL: 33% URS: 50% PCNL: 3% None: 29%	n = 58 Patient preference: URS (52.4%) PCNL (47.6%) Most important treatment attribute: SFR 42.5% Risk of UTI 25.3% Cosmesis 12.9% Length hospital stay 14.9%	Nearly equal patient preference for URS and PCNL Younger patients prefer higher SFR (PCNL), while older patients prefer lower UTI risk and shorter hospital stay (URS)

Table 2 (continued)

Authors	Year	Objective	Method	Population	Results	Conclusion
Walters et al. [12]	2022	Evaluate the preference and treatment choices for renal stones	Questionnaire: 2 scenarios: 8 mm asymptomatic kidney stone 15 mm asymptomatic kidney stone	Online questionnaire posted on social media N: 476 Age groups: 18–25: 40% 26–49: 40% 50 + : 28% Male:Female 1:2.7 History of previous stone: N/A	n = 476 Treatment Obs SWL URS PCNL Factors: Success Complication Invasiveness	Urologists should take patient priorities and concerns into account 8 mm 15 mm 22.5% – 52.3% 40.8% 25.2% 45.4% – 13.9% 30.9% 29.6% 16.2% 27.1% 40.5% 35.5%

*3 scenarios for PCNL: mild, moderate, and severe pain

UV, utility value; PCNL, percutaneous nephrolithotomy; SWL, extracorporeal shock wave lithotripsy; URS, ureteroscopy; SDM, shared decision making; MET, medical expulsive therapy; SFR, stone-free rate; UTI, urinary tract infection; N/A, not available

[18]. Surprisingly, despite this possible bias, most patients preferred SWL over URS.

This is even more compelling given that that ureteroscopy has currently become the most frequently active treatment modality for urolithiasis in many countries [19]. Its use has increased over 250% in total number of treatments performed, with a share of total treatments increase by 17%. Conversely, SWL is performed less and less with an opposite trend as compared to URS and a share of total treatments decrease by 14.5%. PCNL has a more or less static rate [19]. As whole, URS diffusion and utilization keeps increasing despite an apparent patient preference towards SWL. This can be explained by the fact that up to 85% of patients would rely on the physician's recommendation for the treatment modality [1, 12], and ureteroscopy may be more attractive to perform by practicing urologists. However, when urologists were asked what treatment would they prefer for a < 1 cm lower pole stone, 52.3% choose observation, 25.5% SWL, and only 16.1% URS [20], making the understanding of the general picture even more difficult. In addition, it must be considered that probably many centers are not still fully equipped with SWL, making a bias in the treatment decision/recommendation.

A systematic review that evaluated SDM and surgery conclude that data is limited regarding this topic in the surgical literature, which is similar to our results. In addition, they stated that patients and surgeon expressed preference towards SDM [21].

One more key point has to be considered during SDM, i.e., how we provide information to our patients [2]. Information must be given tailor made to our patients to adapt it to their cultural, educational and social background. We have to consider that there is also a nocebo effect, which is opposite to the placebo. Nocebo means that poor outcomes result, because patients believe that the outcome will be negative [22]. It means that socially given negative expectations and their emotional associations facilitate their own realization [23]. One striking example of this effect is that women from the Framingham study who believed that they were more likely than others to suffer a heart attack were 3.7 times as likely to die of coronary conditions as were women who believed that they were less likely, independently of commonly risk factors [24]. Considering the urological literature, some years ago, a study assessed sexual side effects of finasteride comparing two treated groups, one of those was not counselled about finasteride side effects. Sexual side effects were three times more in the counseled group compared to the control [25]. Being the nocebo phenomenon a side effect of human culture [23], we recommend informing patients during the SDM as to adhere to quality standards.

Back in 2019, a survey was done by the AUA [5] about SDM with more than 2200 urologist answering this census. Overall, 77% reported that they regularly use SDM in at least

one clinical scenario. 66.3% of the urologist responded yes to four or more SDM elements that were asked about urolithiasis. Surprisingly, only 66% of the sample reported asking patients about their values and preferences for urolithiasis. The lowest reported that SDM adoption rates were seen in urinary incontinence and pediatric vesicoureteral reflux, 63 and 50%, respectively. Strikingly urologist practicing in academic settings were less likely to report SDM use. However, only 9% of decisions met the definition of SDM completeness in another study [26] and almost half of patients with urolithiasis report decisional conflict [27].

As a whole, 84% of urologist reported that they felt no barriers to routine use of SDM [5]. Anyhow, the main barriers associated with SDM are differences between guidelines recommendations and patient preferences for a certain scenario. In addition, an emergency setting differs from an elective one. Actually, it has been reported that patients in an emergency setting were much more likely to sign the consent form regardless of its content compared to elective surgery (93 vs 39%) [28]. Another concern is the time needed to give a complete explanation of available alternatives to the patient. The more trained we are the more efficient we will be. Decisional aids are tools frequently used in SDM for improving knowledge sharing and facilitating the decision process [4]. The use of decisional aids has demonstrated to have a positive impact on level of knowledge and diminish decisional conflict for patients with symptomatic non-lower pole stone < 20 mm [29]. Non-availability of specific equipment or technology can also undermine SDM process. There is a five-step approach (SHARE approach) [30] to SDM that outlines how health care professionals can ensure that they are effectively implementing shared decision making with patients during clinical encounters (Table 3). In addition, there is an updated version of how to implement SDM into urological practice published by the AUA that we encourage to look at [2]. This systematic review has some limitations due to the heterogenous study design of included articles, as well as their limited sample size.

This is the first review of patients' preferences in stone treatment to our knowledge, and despite the limitations that this study has we think it puts a topic over the table about the real patient preferences compared to what urologist prefer to do and has available or encourage the patient to perform.

Table 3 Five-step approach (SHARE approach) to SDM

Step 1	Seek your patient's participation
Step 2	Help your patient explore and compare treatment options
Step 3	Assess your patient's values and preferences
Step 4	Reach a decision with your patient
Step 5	Evaluate your patient's decision

Adapted from AHRQ's SHARE reference guide

We must consider that maybe our obsession with stone-free rates is not the most important factor to patients.

Conclusion

This systematic review reported the patients' preferences regarding small- and medium-sized renal stones treatments. When patients decide for active treatment, they prefer the least invasive as first choice. The main reasons to choose one treatment over another are success rate, risk of complications and invasiveness. There is an incongruency between patients' preferences (SWL) and treatment modalities perform worldwide (URS over SWL). SDM should be encouraged and improved.

Author contributions FP: project development, data collection, manuscript writing. EV: data collection, manuscript writing. OT: manuscript writing.

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Data availability The authors confirm that the data supporting the findings of this study are available within the article.

Declarations

Conflict of interest Prof. Olivier Traxer is a consultant for Coloplast, Rocamed, Olympus, EMS, Boston Scientific and IPG. Eugenio Ventimiglia and Felipe Pauchard have no potential conflict of interest.

Ethical approval This research did not involve Human Participants and/or Animals.

Informed consent Informed consent was not used.

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