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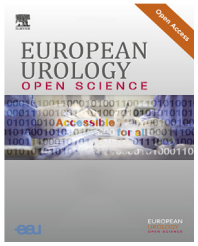

European Association of Urology

Brief Correspondence

Adult Ureteroscopy (A-URS) Checklist: A New Tool To Standardise Reporting in Endourology

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Abstract

Ureteroscopy is increasingly being used for urolithiasis. Technological innovations have been accompanied by wide variations in practice patterns. At the same time, a common finding in many studies, especially systematic reviews, is that the heterogeneity of outcome measurements and lack of standardisation can limit both the reproducibility and generalisability of study findings. While many checklists are available to improve study reporting, there are no ureteroscopy-specific ones. The Adult-Ureteroscopy (A-URS) checklist is a practical aid for both researchers and reviewers for studies in this field. It contains five main sections (study details, preoperative, operative, postoperative, and long term data) and a total of 20 items.
Patient summary: We developed a checklist to improve how studies on ureteroscopy (insertion of a telescope through the urethra to inspect the urinary tract) in adults are reported. This could help in advancing the field and improving patient outcomes, as all the key information is captured.

Checklists are well established in the setting of study reporting. Examples include Strengthening the Reporting of Observational studies in Epidemiology (STROBE) guidance for observational studies and the Consolidated Standards of Reporting Trials (CONSORT) statement [1,2]. These are valuable tools for both authors and reviewers when making an assessment for publication. However, procedure-specific tools are lacking in surgery, which is also the case for endourology. We recently developed the Paediatric Ureteroscopy (P-URS) checklist to improve standardisation of parameters reported in this clinical area [3]. As for paediatric URS, practice patterns vary widely in adult URS [4]. Topics of continued debate and disagreement include the role of access sheaths, laser settings, and prestenting. A core reason for this variation is the heterogeneity of data collection and reporting. This is a common conclusion in literature reviews [5,6].

While there is an ever-increasing volume of URS publications, which is of course welcome, the path towards gaining clarity and resolution will be slow without more efforts to address these issues. Results can also be misleading when subtleties in study protocols are not clearly defined. This can cause confusion for readers, especially for more junior faculty without the experience to "read between the lines" regarding a study's results. For example, it can be claimed that a particular technique for URS is superior as the stone-free rate (SFR) was higher than in another study. However, the latter study may have pooled SFR data for renal and ureteral stones but not made it clear that 90% of the burden was represented by distal ureteric stones. Even such seemingly small points can lead to quick dissemination of the conclusion that one modality is clearly superior. This is just one example of many.

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Item	Recommendation
	Study details
Study aim	☐ **Description of primary and secondary aims of the study**
Study setting	☐ Hospital setting and volume of cases performed each year
Study design	☐ **Retrospective (clinical audit), prospective (comparative) study (non-randomised), randomised controlled trial**
Selection criteria	☐ Description of how patients were enrolled e.g., consecutively ☐ **Inclusion criteria** ☐ **Exclusion criteria** ☐ **Indication for surgery**
	Pre-operative
Operating team	☐ Experience of surgeon e.g., case volume ☐ Number of surgeons involved ☐ State whether resident involvement
Patient information	☐ Previous treatments undergone by patient during that stone episode ☐ Comorbidities ☐ **Pre-operative urine culture** ☐ ASA grade
Medical therapy	☐ Specify if any patients had MET (either pre or post operatively) ☐ Use of any medications (alpha blocker or anticholinergics) for stent symptoms
Imaging	☐ **Breakdown of imaging modalities used** ☐ **Time interval of imaging pre and post treatment**
Preoperative stone status	☐ **Stone size, largest diameter (for biggest stone if multiple)** ☐ Stone volume (include formula for calculation) ☐ Stone density (Hounsfield units) ☐ **Stone location (both in kidney -UC, MC, LC and central RP - and ureter)** ☐ Preoperative stone obstruction (hydronephrosis/proximal dilatation) ☐ Stone multiplicity ☐ Stone access (e.g., diverticulum or urinary diversion)
Prior drainage	☐ **Proportion of patients with indwelling stent** ☐ **Proportion of patients with indwelling nephrostomy**
	Operative
Timing	☐ **Breakdown of elective and emergency cases** ☐ **Operative and laser time** ☐ **Type of anaesthesia used**
Equipment and description of URS procedure	☐ **Type and dimensions of ureteroscope(s)** ☐ State use of safety guidewire (mandatory, optional, not in use) ☐ **Energy source for lithotripsy** ☐ **Laser type and power output** ☐ **Start-up settings** ☐ Extras: Laser activation time, total laser energy ☐ Fragmentation strategy: fragmentation or dusting or both ☐ Stone retrieval: Y/N (if yes, state device) ☐ **Use of access sheath (including size)** ☐ Irrigation used (preferably information on temperature – pre-warmed, room-tempered or chilled – and irrigation pumps/gravitational) ☐ Total radiation dose used during the procedure

Fig. 1 – Adult Ureteroscopy (A-URS) checklist. Items of high priority are highlighted in bold font.

	☐ Rate of negative ureteroscopy (i.e., no stone found)
Access success	☐ Success at accessing upper urinary tract at the initial surgery ☐ If active dilatation (e.g., balloon) - provide details of equipment and settings
Complications	☐ **Report any intra operative complications and status of ureter on exit** ☐ Use a validated grading tool wherever possible ☐ State if procedure was interrupted or not due to the occurrence of intraoperative complication/adverse event
Exit strategy	☐ **Breakdown of patients receiving stent, ureteral catheter or nephrostomy** ☐ Specify if stent modification used e.g., Stent on string ☐ Duration of indwelling stent (or other) ☐ Number of patients receiving post op urinary catheter
Post operative	
Follow up	☐ **Length of hospital stay** ☐ **Time interval when follow up performed** ☐ Stone composition (if available) ☐ Use of patient reported outcome measure (PROM)
SFR	☐ **Definition and imaging used to calculate SFR** ☐ Include zero fragment definition ☐ Breakdown of SFR according to ureteral and renal stones rather than pooled result only ☐ Give initial SFR after first procedure as well as final SFR after any additional URS treatments required. ☐ Provide total and average no. of URS procedures to become stone free.
Auxiliary treatment	☐ Give details on any further intervention e.g., PCNL or SWL required to become stone free and provide a further SFR result including this accordingly.
Complications	☐ **Use a validated grading** tool (e.g., Clavien-Dindo) ☐ Specify if complications were per patient, procedure or renal unit ☐ Include complications occurring during all stages of stone treatment i.e., pre-stenting, formal stone surgery, post operative and stent removal ☐ Indicate if complication rate is for URS procedure only or whether it includes additional procedures such as stent removal ☐ Mention how the complications were resolved (e. antibiotics, hospital readmission, stent insertion etc.)
Long term	
Additional information *(if available)*	☐ Stricture rate ☐ Any stone recurrence noted in study period ☐ Any metabolic screening and changes noted ☐ Use of any preventative medications (e.g., potassium citrate etc.) ☐ Cost of the procedure (including ancillary equipment used) ☐ Long-term complications ☐ Quality of life assessment and changes

URS = Ureteroscopy
PCNL = Percutaneous nephrolithotomy
MET = Medical expulsive therapy
SFR = Stone free rate

Fig. 1 (*continued*)

With these issues in mind, we created the Adult Ureteroscopy (A-URS) checklist to complement the P-URS [3]. The development process mirrored the methods used for the P-URS, including a literature review (P.J.-J. and B.K.S.) and the development of a list of core items. The draft version was critiqued by all of the authors and then revised accord-

ingly. This process was repeated a total of four times until consensus was finally achieved. Before its development, the team decided that the general layout for the A-URS would match that of the P-URS. While many of the points included in the final version may seem obvious at first glance, a review of the literature on adult URS revealed that such information is often missing.

The final version is shown in Figure 1. Key items deemed by the authors to be of high priority are highlighted in bold font. There are five main sections, which cover information on the following areas: study details, and preoperative, operative, postoperative, and long-term data.

Section 1 (Study details) covers generic information relevant to the study such as the aim, design, setting (eg, academic or community and annual case volume), as well as the study selection criteria and indication for the surgery.

Section 2 (Preoperative data) includes details for the operating team (eg, experience) and the number of surgeons involved in the study. This has relevance as it helps in differentiating when a series has been performed by single expert surgeon or whether a group that includes residents was involved. Information on patient demographics is also included here (eg, preoperative urine culture). Another important area covered is preoperative stone status, including stone dimensions, multiplicity, and location, as well as imaging modality. Maximal stone diameter is still the most common measure of size, but stone volume is increasingly being used.

Section 3 contains operative information. Key areas include information relating to the energy source (laser type, power output, and start-up settings). Intraoperative complications can occur, and tools exist that can aid classification at the time of reporting, such as ClassIntra [7]. In cases in which ureteral mucosal trauma has occurred, this can be graded, for example, using the Traxer and Thomas system [8]. The exit strategy should be made clear, including use of any modifications such as a stent on a string.

Section 4 covers postoperative information and follow-up. Consensus is lacking on the ideal approach for reporting stone-free status. From a practical perspective, the inclusion of at least a zero-fragment definition allows for a useful baseline when comparing study results. Use of noncontrast computed tomography allows for more accurate assessment of the residual stone burden and is preferable if available. As well as use of a classification tool for postoperative complications, we recommend recording of further details, rather than only reporting the percentage breakdown for major and minor adverse events, as is often observed. This should also include the time period over which complications were recorded (eg, 30 d).

Section 5 covers long-term information as well as more general items that are valuable for analysis, if available. With this in mind, it is fully appreciated that when undertaking retrospective data collection, not all items can be gathered at a later date; for example, access to prescription records or patients treated out of the area with loss to longer-term follow-up may not be possible.

While there is clear overlap with the P-URS, there are a number of subtle but important differences. In the paediatric setting, for example, further breakdown of the sample by age group is suggested (eg, infants, children, prepuberty, adolescents) and/or weight. Another difference is the highlighting any additional intraoperative radiation protection measures in paediatric URS and transparency regarding repeat URS at the time of stent removal, given that this is typically performed under general anaesthesia in the paediatric age group. The A-URS also includes an additional fifth section that covers long-term information such as the stricture rate and quality of life that is not present in the P-URS checklist.

The A-URS checklist is not aimed at being an exhaustive list and authors should also not feel obligated to include every item. The main goal is to provide a practical supplement that authors and reviewers can use to provide more robust studies and reports in the setting of URS and stone lithotripsy.

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Study concept and design: Juliebø-Jones, Somani, Ulvik, Beisland.
Acquisition of data: Juliebø-Jones, Somani, Ulvik, Beisland.
Analysis and interpretation of data: Juliebø-Jones, Somani, Ulvik, Beisland.
Drafting of the manuscript: Juliebø-Jones, Somani, Ulvik, Beisland.
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