American College of Radiology
ACR Appropriateness Criteria®

Radiologic Management of Urinary Tract Obstruction

Variant 1: Adult patient with urinary diversion after remote history of cystectomy for cancer. Patient has no fever. Patient has normal white blood cell (WBC) count and urine output. Loopogram shows no reflux into distal ureters. Computed tomography (CT) scan shows new moderate bilateral hydronephrosis.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Medical management without decompression	Usually not appropriate		N/A	N/A	3	n/a	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	May be appropriate		N/A	N/A	4	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy	Usually appropriate		N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	May be appropriate		N/A	N/A	6	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy followed by delayed surgery	Usually appropriate		N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0

Variant 2: Adult patient with a 7-day history of right flank pain, fever, and leukocytosis. Urinalysis is positive for blood and infection. CT scan shows a 10-mm calculus in the mid right ureter without hydronephrosis.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Medical management without decompression	Usually not appropriate		N/A	N/A	2	n/a	0	0	0	0	0	0	0	0	0

Retrograde ureteral stenting	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy	May be appropriate		N/A	N/A	5	n/a	0	0	0	0	0	0	0	0	0
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually not appropriate		N/A	N/A	2	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy followed by delayed surgery	May be appropriate		N/A	N/A	5	n/a	0	0	0	0	0	0	0	0	0

Variant 3: Adult pregnant (20 weeks) patient with a 3-day history of left flank pain, fever, and leukocytosis. Urinalysis is positive for infection. Ultrasound scan shows new, moderate left hydronephrosis.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Medical management without decompression	Usually not appropriate		N/A	N/A	2	n/a	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy	Usually appropriate		N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually not appropriate		N/A	N/A	2	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy followed by delayed surgery	Usually not appropriate		N/A	N/A	1	n/a	0	0	0	0	0	0	0	0	0

Variant 4: Adult patient with advanced cervical carcinoma presenting with decreased estimated globular filtration rate <15. Normal WBC, positive pelvic pressure, no flank pain. CT scan reveals new bilateral hydronephrosis and hydroureter due to local invasion by a pelvic mass.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Medical therapy without decompression	Usually not appropriate		N/A	N/A	1	n/a	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy followed by delayed surgery	May be appropriate		N/A	N/A	4	n/a	0	0	0	0	0	0	0	0	0

Variant 5: Adult patient with a prolonged history of right flank pain, fever, and leukocytosis. Urinalysis is positive for blood and infection. Patient appears septic and is hypotensive. CT scan shows dilated right ureter and renal pelvis with perinephric stranding. No etiology for ureteral obstruction identified with current imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Medical therapy without decompression	Usually not appropriate		N/A	N/A	1	n/a	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	May be appropriate		N/A	N/A	6	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually not appropriate		N/A	N/A	2	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy followed by delayed surgery	May be appropriate		N/A	N/A	5	n/a	0	0	0	0	0	0	0	0	0

Variant 6: Adult patient with urinary ascites after recent abdominal surgery. Elevated blood urea nitrogen/creatinine, moderate abdominal pain, and no peritoneal signs. CT urogram reveals contrast leak from left pelvic ureteral injury. Current therapy consists of Foley catheter in the bladder.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Medical therapy without decompression	Usually not appropriate		N/A	N/A	1	n/a	0	0	0	0	0	0	0	0	0
Retrograde ureteral stenting	Usually appropriate		N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy	Usually appropriate		N/A	N/A	9	n/a	0	0	0	0	0	0	0	0	0
Percutaneous antegrade ureteral stenting (with or without safety nephrostomy)	Usually appropriate		N/A	N/A	8	n/a	0	0	0	0	0	0	0	0	0
Percutaneous nephrostomy followed by delayed surgery	Usually appropriate		N/A	N/A	7	n/a	0	0	0	0	0	0	0	0	0

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality**: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at **www.acr.org/ac.**