Table 9 – Recommendations for pain relief in renal colic.

Recommendation	GR
In acute stone episodes, pain relief should be initiated immediately	A
Whenever possible, a nonsteroidal anti-inflammatory drug should be the first choice, such as diclofenac [a], indomethacin, or ibuprofen [b]	A
The second choice should be hydromorphine, pentazocine, or tramadol	C
Use α-blockers to reduce recurrent colic	A

GR = grade of recommendation.
[a] Affects the glomerular filtration rate in patients with reduced renal function (LE: 2a).
[b] Recommended to counteract recurrent pain after ureteral colic.

drugs are effective in patients with acute stone colic and have better analgesic efficacy than opioids [5,32]. Daily α-blockers reduce recurrent colic.

If medical analgesia is insufficient, drainage or stone removal should be performed (Table 10).

An obstructed kidney with signs of a UTI is a urologic emergency that requires urgent decompression to prevent further complications. Currently, there are two options for urgent decompression of obstructed collecting systems: placement of an indwelling ureteral catheter and percutaneous placement of a nephrostomy tube (Table 11). There is little evidence to support the superiority of one over the other [33,34]. Definitive stone removal should be delayed until the infection is cleared following a complete course of antimicrobial therapy (Table 12).

3.3.2. *Observation of renal stones*

The risk of a symptomatic episode or the need for intervention in patients with small nonobstructing stones is 10–25% per year [35,36]. However, a prospective RCT reported no advantage for prophylactic SWL for asymptomatic calyceal stones (Table 13) [35].

3.3.3. *Conservative management of ureteral calculi*

Some 95% of stones ≤4 mm pass within 40 d [37]. Observation is feasible in informed patients who develop no complications (infection, refractory pain, or deterioration of kidney function). Stones >6 mm are usually treated actively, although even such stones pass occasionally (Table 14).

Table 10 – Symptomatic ureteral stones.

Evidence summary	LE
For symptomatic ureteral stones, urgent stone removal as first-line treatment is a feasible option	1b

LE = level of evidence.

Table 11 – Placement of stents and catheters.

Evidence summary	LE
For decompression of the renal collecting system, ureteral stents and percutaneous nephrostomy catheters are equally effective	1b

LE = level of evidence.

Table 12 – Management of sepsis in obstructed kidneys.

Recommendation	LE	GR
For sepsis with obstructing stones, the collecting system should be urgently decompressed using percutaneous drainage or ureteral stenting	1b	A
Definitive treatment of the stone should be delayed until sepsis is resolved	1b	A
Collect urine for an antibiogram test following decompression	3	A*
Start antibiotics immediately thereafter (+ intensive care if necessary)	3	
Re-evaluate the antibiotic regimen following antibiogram findings	3	

LE = level of evidence; GR = grade of recommendation.

Table 13 – Recommendations for the treatment of kidney stones.

Recommendation	GR
Active surveillance with annual follow-up is an option for asymptomatic, nonobstructing calyceal stones, that have remained stable for 6 mo	C
Kidney stones should be treated in cases of growth, de novo obstruction, associated infection, and acute or chronic pain	A*
Comorbidity and patient preference need to be taken into consideration when making treatment decisions	C
If kidney stones are not treated, periodic evaluation is recommended (after 6 mo and yearly thereafter)	A*

GR = grade of recommendation.

3.3.4. *MET*

The aim of MET is to facilitate spontaneous passage of ureteral (Table 15). The treatment should be discontinued in the case of complications (infection, refractory pain, or deterioration of kidney function). Owing to the high likelihood of spontaneous passage of stones <6 mm, MET is less likely to increase the stone-free rate (SFR) (LE: 1b) but reduces pain episodes (LE 1a) [5,38]. Meta-analyses have shown that patients with ureteral stones treated with α-blockers or calcium-channel inhibitors are more likely to pass stones with fewer colic episodes than those not receiving such therapy (Table 16) [5,38]. α-Blockers seem to be superior to calcium-channel inhibitors [39,40]. Even though tamsulosin is one of the most commonly used α-blockers [5,38], other studies evaluating different α blockers have demonstrated similar effects, indicating a

Table 14 – Recommendation for the conservative management of ureteral calculi.

Recommendation	LE	GR
In patients with newly diagnosed ureteral stones <6 mm [a], if active removal is not indicated, observation with periodic evaluation is an optional initial treatment	1a	A
Such patients may be offered appropriate medical therapy to facilitate stone passage during observation		

LE = level of evidence; GR = grade of recommendation, MET = medical expulsive therapy.
[a] The exact cutoff size for ureteral stones cannot be determined from the literature, but the panel suggests <6 mm.

Please cite this article in press as: Türk C, et al. EAU Guidelines on Diagnosis and Conservative Management of Urolithiasis. Eur Urol (2015), http://dx.doi.org/10.1016/j.eururo.2015.07.040