

URINARY TRACT OBSTRUCTION

Optimizing ureteral stent design

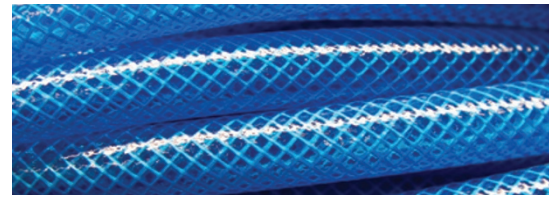
Ureteral stents are used to restore urine flow between the kidney and the bladder in the treatment or prevention of urinary tract obstruction. Although effective at ensuring renal drainage, ureteral stents can cause complications (including infections and pain). Two new papers demonstrate that designs for ureteral stents are not yet optimal in terms of associated complications.

For the first report, Kim Davenport *et al.* from the Bristol Urological Institute, UK, conducted a prospective, randomized study between 2002 and 2006 to compare the use of two different—in terms of composition and physical properties—stent designs. The next-generation Polaris™ (Boston Scientific, Natick, USA) had been designed with the specific aim of minimizing associated symptoms. 159 patients eligible for stent insertion for stone disease were recruited to the study and randomly assigned to receive either a Polaris™ or InLay™ (Bard, Crawley, UK) ureteral stent. Study participants completed questionnaires about their symptoms 2 weeks after stent placement and 1 week after stent removal.

For the 98 patients who completed and returned study questionnaires (45 in

the InLay™ group and 53 in the Polaris™ group) no substantial differences were observed between the groups in terms of urinary symptoms, bodily pain, general health, work performance and sexual performance. Overall, 40% of patients sought medical help because of stent-related adverse effects. Most of the patients experienced pain (up to 94%) when the stent was *in situ*; this percentage was more than halved once the stent had been removed. Furthermore, up to two-thirds of the patients (60% in the InLay™ group and 66% in the Polaris™ group) would not wish to undergo further stent-based treatment because of the associated symptoms. The study authors conclude that “there is little evidence to date that one stent design is better than another”.

On the other hand, Juha Lumiaho and colleagues have reported success with a new helical spiral stent trialled in pigs. The researchers compared the commonly used double-J stent with that of the next-generation short helical spiral partial ureteral stent made of biodegradable material, in order to determine whether the new design could minimize problems associated with vesicoureteral reflux by



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leaving the ureterovesical junction intact. Eight pigs were fitted with either a spiral or a double-J stent. Intravenous urography and voiding cystourethrography were performed 4 weeks and 8 weeks after stent placement. The spiral partial ureteral stent seemed to be superior to the standard double-J stent in terms of drainage and antireflux properties. The authors add that removal of the new spiral stent is unnecessary as it degrades over time (dissolved stent products can be detected in urine by 8 weeks), another advantage that could eventually make this next-generation stent clinically useful.

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Original articles Davenport, K. *et al.* New ureteral stent design does not improve patient quality of life: a randomized, controlled trial. *J. Urol.* **185**, 175–178 (2011) | Lumiaho, J. *et al.* A short biodegradable helical spiral ureteric stent provides better antireflux and drainage properties than a double-J stent. *Scand. J. Urol. Nephrol.* **45**, 129–133 (2011)