Key Points:
- Ileal-ureteral substitution has been performed in people with generally favorable results
- Surgery of the feline ureter presents a variety of challenges to the veterinary surgeon
- Ileal-ureteral substitution can be performed successfully in the cat

The feline ureter can provide many challenges to veterinary surgeons. Current options for a stenotic feline ureter include resection and anastomosis, division of the ureter proximal to the obstruction and reimplantation into the bladder (ureteroneocystostomy), nephrectomy, and anastomosis into the contralateral ureter to provide diversion of the urine flow. The small diameter and limited length of the ureters of cats make it difficult to perform resection and anastomosis, even with high-powered magnification. Postoperative complications, including stricture and urine leakage, complicate recovery and reduce the chances for a successful outcome. Because of a lack of ureter length, strictures in the mid to proximal portion of the ureter may eliminate the ability to perform a ureteroneocystostomy, even with cranial mobilization of the urinary bladder and caudal mobilization of the kidney. When possible, stenting of the ureter can be performed successfully to relieve ureteral obstruction.

Ureteral substitution is performed in humans when standard ureteral treatment options are not feasible. Ileal-ureteral substitution has been performed experimentally in cats and dogs. Ureterocolonic anastomosis has been reported in dogs with transitional cell carcinoma, however, it has been associated with pyelonephritis and neurologic and metabolic abnormalities. Replacement of the ureter of a cat with a vascularized segment of ileum offers many advantages. The length of the ileum allows for a sufficient graft that will span from the kidney to the urinary bladder. Length of the ileal graft can be easily modified to adjust for variations in the amount of viable ureter. The large diameter of the ileal graft reduces the chance for strictures and obstructions, which can lead to the development of calculi. The ileal graft also maintains a generous blood supply that is beneficial for healing. The risk of pyelonephritis may be mitigated by proper graft preparation. Peristalsis of the ileal graft also helps to prevent reflux of urine and therefore reduces the chances for pyelonephritis.

A 10 year-old female spayed feline domestic short hair was referred with a one-week history of vomiting, lethargy, and anorexia. She was diagnosed with post-renal azotemia secondary to ureteral stones and referred for stone removal. The right ureter was obstructed with calculi resulting in secondary proximal ureteral dilation and severe hydronephrosis. The left kidney was small and suspected to be failing. Despite fluid therapy, the azotemia persisted prior to surgery.

At surgery, a ureterotomy was performed and the stones were removed. A ureteral stricture was identified just distal to the stones. Substitution of the nonfunctional ureter with a vascularized segment of ileum was successfully performed. The azotemia resolved and the clinical signs improved. The cat lived for 3 years after surgery and died of causes unrelated to the surgery. Ileal graft substitution is a surgical treatment option for ureteral obstruction in the cat. This procedure can be considered in any animal with a condition such as ureteral neoplasia,
trauma, or stenosis, in which a ureter is severely compromised. This procedure may also be used as a salvage technique for animals in which a primary ureteral repair has failed. Severe disease or injury within the proximal portion of a ureter or the renal pelvis would preclude the usefulness of this technique. Further prospective studies are required to determine the morbidity and rate of success of this procedure in cats.