



Photo: Chad Schmiedt removes kidney from donor cat.

# Keepin' It Renal

Feline renal transplants can be a viable treatment option for kidney failure

by Jen Reeder

WHEN NEW YORK ARCHAEOLOGIST ANDRE GONCIAR WAS WORKING IN ROMANIA in 2003, he noticed a little white kitten clinging to a rock in the midst of a rushing river. After saving the “purebred stray,” he learned the cat was riddled with infection, but decided against euthanasia. Instead, he nursed the cat he named Oki back to health and adopted him.

Oki grew into a beautiful, affectionate cat, who later became paralyzed from the waist down, but remained “inspirational” even after his rear legs had to be amputated. Oki even helped Gonciar decide to propose to his wife because, despite being a tough judge of character, the cat loved and trusted her.

So when Oki was diagnosed with stage 4 kidney failure, Gonciar was desperate for a solution and talked to his veterinarian about the possibility of a kidney transplant. He was referred to Lillian Aronson, VMD, DACVS, founder and coordinator of the Renal Transplant Program at the University of Pennsylvania’s School of Veterinary Medicine (Penn Vet).

“It was clear Oki was going to die within a few months,” Gonciar said. “Once the decision was made, we took every scrap of money we had and went for it.”

On May 18, 2015, Aronson removed a kidney from a donor cat named Cherry and successfully transplanted it



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—ANDRE GONCIAR, OWNER OF FELINE KIDNEY TRANSPLANT RECIPIENT

into Oki. Since then, the Gonciars have added the “adorable” Cherry to their family of five cats, and are diligent about giving Oki his immunosuppressive medications every 12 hours to avoid rejection. Though “our lives revolve around Oki now,” Gonciar has no regrets.

“It was absolutely worth it,” Gonciar said. “Oki’s like a 6-year-old kitten now. He’s happy, he’s bouncy, and follows you around like a puppy. He has proven that cats may have more than nine lives.”

Though kidney disease is common in cats and a leading cause of death, feline renal transplantation remains an unusual treatment; at time of writing, only three veterinarians are currently performing the procedure in the

United States. But for the right candidate, a kidney transplant can be a viable option for adding quality years to a cat’s life.

Penn Vet’s Aronson has performed more than 150 feline kidney transplants, with a 93% success rate and a median survival rate of 3 years post-transplant, though one patient lived an incredible 13 years with his new kidney.

“It’s very rewarding when you take a patient whose owners have basically been told, ‘Your animal’s going to die and there’s not that much you can do,’ and you can actually do something to save that life,” she said.

Cats can receive a kidney from an unrelated donor with a compatible blood type. Since the majority of cats have type A blood, it’s relatively easy to find a donor. The recipient’s owner must then either adopt the donor cat or find it a permanent home regardless of the surgery’s outcome, an ethical practice supported by the American Society for the Prevention of Cruelty to Animals (ASPCA).

Aronson said there isn’t any pushback about that standard from her clients.

“They’re cat lovers to begin with,” she said. “They feel like they’re saving the life of the cat who has saved their cat’s life, so they get very emotionally attached to the donor. It’s really amazing.”

Thanks to a partnership with the York County SPCA, Penn Vet houses a large playroom of potential donor cats (the cats are quarantined at the shelter and hospital before entering the group). Aronson said staff members are fond of the future donors so they are well socialized before being rehomed, which happens even if an unforeseen medical issue prevents kidney donation.

“We’ve never, ever euthanized any animal for the program. We always find a home,” Aronson said, adding with a laugh, “Even in my own home—I have two of them.”

Adopting the donor cat is one of many expenses a cat owner must take on—a feline renal transplant without complications costs \$15,000–\$18,000, and immunosuppressive drugs run \$30–\$60 a month. (Some pet insurance companies like Petplan cover kidney transplants and associated medications.)

Aronson said the recipients' surgery lasts about 4 hours, and they can usually go home in a week. Donors are under anesthesia for up to 3 hours and typically go home within 48 hours.

She said a Penn Vet resident recently researched 140 feline kidney donors from the program and evaluated owner feedback, blood work, and urine tests to determine the effect of the surgery.

"Basically, we found that there was no impact on long-term survival by having a nephrectomy on the donors, which was great to know," Aronson said, noting the results have been accepted for publication by the Journal of the American Veterinary Medical Association.

Aronson said though her office receives numerous phone calls asking about kidney transplants for dogs, she has performed just three canine renal transplants at Penn Vet. This is because, unlike in feline transplantation, the kidney must come from a relative with a tissue match, since dogs have an immune system that often leads to rejection and complications.

"I'm hoping to figure out a way to do an unmatched dog successfully," she said. "The goal for any of the patients is a good quality of life afterward."

Chad Schmiedt, DVM, DACVS, associate professor of soft tissue surgery at the University of Georgia's College of Veterinary Medicine, said he and his team are evaluating mesenchymal stem cells to help modulate the immune response to a transplanted kidney in cats, and initial results are promising. He performs one to three feline kidney transplants a year,

explaining that testing of potential candidates is moderately extensive.

"Any cancer or active infection is a big contraindication. Heart disease is a contraindication. The owner should be able to medicate the cat, and the cat should be tractable. Other items like hypertension, thyroid disease, and dental disease are problems until they are either under control or resolved," Schmiedt said.

"For the donors, we want to be sure the kidney we are harvesting and transplanting is the best it can be, and we want to be sure that, in taking one of their kidneys, we are not putting them at any unnecessary risk," he added.

After the transplant, recipients will visit their referring veterinarian each week for blood work and physical exams to monitor for rejection, eventually tapering to a maximum of 3 months between visits. Schmiedt said

general practitioners should give special consideration to immunosuppressed patients when performing dental procedures or other surgeries. It's also important to isolate them from other sick animals and potential fomites for infection. But precautions must be balanced, Schmiedt said.

"I keep in touch with all of the owners to help manage their cases over the rest of the cat's life. One owner called and was asking something about the cat going out and hunting lizards. I said, 'What do you mean, going out to hunt lizards? This cat is immunosuppressed!' In the end, I realized the cat's quality of life is very important, and if that's what it takes for the cat to be happy, then they should let it do it. That's been years ago now and the cat continues to thrive."



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—JONATHAN MCANULTY, MS, PHD, DVM

Photo: Jonathan McAnulty performing a kidney transplant.

Jonathan McNulty, MS, PhD, DVM, professor of surgery and chair of the Department of Surgical Sciences at the School of Veterinary Medicine at the University of Wisconsin–Madison, has performed about 90 feline renal transplants since 1995. He said referring veterinarians should consider kidney transplants even for senior cats if the client is willing.

“Remarkably, we’ve transplanted some cats 18–20 years old that have lived multiple years after that,” he said. “It’s definitely an option.”

He said while there are diets that can be helpful once a cat has developed renal disease, there is little concrete

## Why Are Kidney Transplants for Dogs so Rare?

While the kidney transplant success rate is high for cats—more than 80 percent are discharged from the hospital and are alive at 6 months—dogs present a unique challenge.

“The actual surgery is easier because everything is bigger. However, it is the post-operative management that is problematic,” said Chad Schmiedt, DVM, DACVS, associate professor of soft tissue surgery at the University of Georgia’s College of Veterinary Medicine. For instance:

“Canine kidney disease is normally a little different than cats’. Dogs more typically have a glomerular component of their disease, and this results in protein loss. That protein loss may make dogs predisposed to have clotting after surgery.”

“Dogs have a very robust immune response to the allograft, and they are more difficult to immunosuppress. If you immunosuppress a dog enough to prevent them from rejecting the kidney, they frequently succumb to opportunistic infections.”

“Dogs are expensive. For a large dog, one could expect to spend \$700–\$1,000 a month on immunosuppressive drugs.”

evidence regarding ways to prevent the onset of kidney disease in cats. However, he is convinced good dental health is “key to sparing the kidneys.”

“That’s probably due to when they have really bad dental health, they shower their system with bacteria, so there’s a chronic inflammatory state. These bacteria can get in the kidneys, and antibodies that are attacking those can also get filtered down to the kidneys and cause damage,” he explained.

In one memorable case, McNulty and his team had a cat come in for workup that was “absolutely” consistent with severe chronic renal failure, including a high creatinine level of about 8. During initial testing, they gave the cat a much-needed dental cleaning. Over the 3 ½ months it took to find a suitable donor—the cat was reactive to 16 donors during cross-matching—his creatinine slowly improved. By the time a donor was found, the cat’s creatinine had returned to normal, and he no longer needed a kidney transplant.

“I would never have believed it,” McNulty said. “The only thing we did that might be considered therapeutic was clean his teeth. So, to me, that’s just an exemplar that maintaining good dental health is key to preserving renal function.”

He said he enjoys the challenge feline kidney transplants present as an abdominal microsurgery, but suspects the technical challenge is one reason more hospitals don’t offer transplants. However, he said research into using microsurgical clips instead of suturing ureters could lead to the procedure becoming more widely available.

McNulty and his team successfully altered the immunosuppression regimen so recipients can be treated just once a day. But he said future advances are needed to develop more affordable medications that are easier to administer than the current pills.

“The other area is immunotolerance—the idea that you could eventually create a chimera and they become tolerant to the organ and don’t require any drugs,” McNulty said. “That’s the holy grail of transplantation.”

Meanwhile, it’s critical for referring veterinarians to educate clients about the importance of compliance

after a pet's transplant. Shannon Ewing, DVM, owner of AAHA-accredited Collier Animal Hospital in Atlanta, Ga., referred a 6-year-old domestic longhair named Chase for transplantation in 2010 and managed his care for nearly 5 years after a successful transplant at the University of Georgia's College of Veterinary Medicine.

"It doesn't matter if you have a client with all the money in the world, if they're not going to medicate that animal daily or bring that animal in," she said.

Before recommending a transplant to a client, Ewing said veterinarians should discuss the costs, risk of surgery and complications, and management care—reminding owners that their cat will need to take medication every day, and that it can be difficult to give cats pills.

"You want to paint a clear picture of what's involved. It's not, 'You write a check for \$15,000 and this is done.' It's



Research into using microsurgical clips instead of suturing ureters could lead to the feline kidney transplants becoming more widely available.

a high-management case for the owners—financially, physically, and emotionally.”

She pointed out signs of renal failure that owners might notice in their cat include drinking more water, increased urination, weight loss, inappetence, lethargy, and vomiting. To confirm kidney disease, veterinarians can run a complete blood count (CBC), chemistry profile, urinalysis, and thyroid test, as well as perform X-rays or ultrasounds to identify kidney stones.

Once a cat is diagnosed with kidney failure, Ewing said transplantation should be discussed as an option if the patient seems like a potential candidate. She said it can be easy to assume a pet owner wouldn't be interested, but that the choice should be left to the client. She once had clients who “literally lived in a tent” pay for chemotherapy for their pet—proof that despite appearances, people might be able to afford expensive treatments like kidney transplants.

“I don't think you should make them feel like bad owners if they can't do a kidney transplant, but I do think it's our duty to make sure that owners at least know their options,” Ewing said. “Our decision is to let them know what the options are and then support them and help them in what they decide to do.” ✨



Award-winning pet writer Jen Reeder was thrilled to be able to donate her left kidney to her husband in 2012. Now she “rocks one kidney” by hiking every day with their rescued Labrador retriever mix, Rio. Visit her online at [Rock1Kidney.org](http://Rock1Kidney.org).

## Resources

### For more information, see:

ASPCA's position statement on “Using Animal Organs for Transplantation into Other Animals,” [aspc.org/about-us/aspc-policy-and-position-statements/using-animal-organs-for-transplantation-into-other-animals](http://aspc.org/about-us/aspc-policy-and-position-statements/using-animal-organs-for-transplantation-into-other-animals)

Penn Vet's Renal Transplantation Program, [vet.upenn.edu/veterinary-hospitals/ryan-veterinary-hospital/services/comprehensive-urology-care/renal-transplantation](http://vet.upenn.edu/veterinary-hospitals/ryan-veterinary-hospital/services/comprehensive-urology-care/renal-transplantation)

The University of Georgia's College of Veterinary Medicine's Veterinary Feline Renal Transplantation Program, [vet.uga.edu/hospital/services/surgery\\_sa/renal\\_transplants](http://vet.uga.edu/hospital/services/surgery_sa/renal_transplants)

Feline Kidney Transplantation at the University of Wisconsin, [vetmed.wisc.edu/dss/mcanulty/felinekidneytransplant](http://vetmed.wisc.edu/dss/mcanulty/felinekidneytransplant)

Collier Animal Hospital, [collierah.com](http://collierah.com)