

Post-surgery, Basil recovers in Ryan Hospital's ICU where he gets plenty of attention from certified veterinary technicians, including Jessica Coughlan. Here, Basil has just finished a meal and is being held vertically by Jessica to ensure the food passes to his stomach.



provide our clients an option for less-invasive, less painful surgeries for their beloved pets.”

## Basil's Big Day

On Monday, October 24, Basil underwent a thoracoscopic surgery, which required a team comprised of board-certified anesthesiologists, certified veterinary technicians and veterinary surgeons, including Dr. Runge and Julie Callahan Clark, DVM, DACVIM, internal medicine lecturer at Penn Vet.

To make the challenging surgery and access to Basil's heart a bit easier, anesthesiologists and Dr. Callahan Clark performed an advanced technique called “one-lung ventilation,” which allows one lung to collapse while keeping the other ventilated. This method allows surgeons to work with an unobstructed view.

In addition to this assistance, Dr. Callahan Clark executed diagnostic esophagoscopy with a flexible camera while Basil's thoracoscopic surgery was underway. While viewing inside the esophagus, the light emitted from her scope highlighted the area of the stricture for Dr. Runge. For the thoracoscopic

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The KARL STORZ OR1<sup>®</sup> system is the foundation of the integration solution used at Ryan Hospital's minimally invasive surgery suite and gives the surgical team control of endoscopy and other devices, as well as video cameras, monitors and other key systems.

Integration equipment in the suite transmits information from various video and data sources and routes it to multiple locations both inside and outside the operating room. Images and network data can be sent to any of the six displays within the suite, as well as to a display in an observation area outside the suite. Linked with hospital information systems, radiology and pathology lab systems, the system provides access to critical patient information and medical images.

The new suite is equipped with the latest KARL STORZ telescopes and instruments for performing a broad array of minimally invasive surgical procedures on animals of various sizes. For example, a new smaller-sized pediatric telescope enables surgeons to perform delicate procedures on small or young patients, like Basil, while still minimizing trauma.

Complete with video conferencing capability, surgical images can be sent anywhere, allowing true telemedicine for real-time collaboration with referring veterinarians, sharing information with colleagues on either of Penn Vet's campuses, or for use in the classroom. Images can be recorded as video or still images. This is achieved with the KARL STORZ AIDA<sup>®</sup> VET, which allows digital pictures and videos to be archived on CD, USB storage device and hard disk. Still images can also be immediately sent from the device to a printer for hard-copy records.

“We are proud to be leading the charge in these specialized procedures,” said Lillian R. Aronson, VMD, chief of surgery at Ryan Hospital. “Not only will the tools and equipment in this amazing facility allow us to better prepare the next generation of vets with these specialized skills, we can now

*And as for Basil's future?*

*“Well, Gidget went to a family down the road, but Basil — oh, gosh, yeah, he's staying with me,” said Brent. “He's my buddy on the farm.”*

Brent with Basil at home on the farm.





# German Shepherd Puppy Undergoes Heart Surgery in New Surgery Suite

*Basil is one of first patients through Buerger Family Minimally Invasive Surgery Suite*

BY KELLY STRATTON



Basil at five months old, about 2-1/2 months after his surgery.

*"He was an August baby," said Brent Grove of Basil, a six-month-old German shepherd puppy. "He's about 44 pounds now so he's doing well."*

But he hadn't always been doing well. Born a normal, healthy pup weighing in at 1 lb., 5 oz., Basil and his only littermate, Gidget, both took to suckling without a hitch. It was only when Brent began weaning the pair that he noticed a difference.

"Basil, after he would eat, he would get this distressed look on his face," said Brent who has raised German shepherds for more than 10 years. "And then he would regurgitate."

## The Diagnosis

Brent sought out his primary care veterinarian at Airpark Animal Hospital in Westminster, MD. There, Nicholas Herrick, DVM and John Kable, DVM took chest X-rays and conducted a barium swallow. Their findings? Basil's esophagus was being constricted and anything thicker than water was getting held up at the level of the heart and not passing easily to the stomach.

The condition suspected was a persistent right aortic arch (PRAA), a congenital vascular abnormality of the heart, which shows clinical signs of regurgitation in young dogs. This malformation causes a large dilatation to develop in the esophagus where food and liquids can be trapped and has been reported in German shepherd dogs more frequently than in other breeds.

Brent went home and began researching the condition and how to correct it, which brought him to Penn Vet.

"I wanted to do whatever I could do for Basil," said Brent. "I searched on the computer for surgeries and that's how I found Dr. Runge. I emailed him right away and told him I wanted to save this puppy."

The following week, Brent and Basil met with Jeffrey Runge, DVM, DACVS, lecturer at Penn Vet. During the consultation, they discussed the treatment options available for correcting Basil's PRAA and determined that a minimally invasive thoracoscopic procedure was a possibility – even though Basil was still a puppy and small.

Historically, an open surgical procedure would be required to correct this kind of condition, but with advances in minimally invasive surgical techniques, Dr. Runge felt Basil was a good candidate for a less-invasive thoracoscopic procedure.

“With the help of our cardiology department we confirmed that Basil had a persistent right aortic arch,” said Dr. Runge. “In a normal dog’s development, the aortic arch should be present on the left side. With the vascular ring anomaly, PRAA, the aorta unfortunately develops on the right side and the esophagus is then encircled by the ligamentum arteriosum. This arrangement will cause a stricture [narrowing].”

Basil’s symptoms matched up perfectly to what an owner would see in a dog with this condition – once a puppy is weaned and starts eating more solid foods, regurgitation can occur and possibly lead to aspiration pneumonia.

## State-of-the-Art Surgery

Basil would be one of the first patients to undergo surgery in Ryan Hospital’s new state-of-the-art Buerger Family Minimally Invasive Surgery Suite. The Buerger Family Suite is the first of its kind in any veterinary teaching hospital and is one of the only operating rooms in veterinary medicine that offers a comprehensive array of minimally invasive surgical procedures for companion animals.

Minimally invasive surgical procedures allow for quicker recovery times, shorter hospital stays and quicker return to function. Types of procedures available in the Ryan Hospital suite include:

- Arthroscopy
- Laparoscopy
- Thoracoscopy
- Interventional radiology
- Minimally invasive fracture repair

The Buerger Family Minimally Invasive Surgery Suite opened its doors on Monday, October 3, 2011.

The \$750,000 suite, the first of its kind in any veterinary school, includes the KARL STORZ OR1® Integration System; the Berchtold lighting and boom system; and Covidien Electrosurgical Force Triad Unit. The integration equipment transmits information from various video and data sources and routes it to multiple locations both inside and outside the operating room. Images from the surgical cameras, C-Arm fluoroscope, and picture archiving and communication system (PACS), as well as Internet images and network data can be routed to any of the six displays within the suite, and to a display in an observation area outside the suite.

In addition to providing an option to clients, the School’s Shelter Animal Medicine Program will benefit from having access to these advanced tools so that minimally invasive spays of shelter animals can be provided.

Thanks to the following donors who made this suite a reality:

Nancy Brougher  
Alan H. Buerger  
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# thank you



During surgery, a number of veterinarians, certified veterinary technicians and board-certified anesthesiologists are at Basil’s side ensuring a successful surgery.



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surgical portion, three small ports were placed between Basil's ribs, allowing tiny instruments and cameras to access to his chest, the latter of which transmitted images to the displays in the operating room, allowing Dr. Runge to perform the delicate and precise dissection correcting the vascular ring.

After the successful surgery, Basil was transferred to the Intensive Care Unit where he received round-the-clock care from board-certified critical care doctors and veterinary technicians until his discharge.

## Recovery

"Basil's symptoms were relatively mild," said Dr. Runge. "Complications are still certainly possible just like with any surgical procedure, so we still need to be vigilant and take the necessary precautions to reduce the chance of them occurring, but one thing that we do know for sure is that since this surgery was done in a minimally invasive manner, he will be in a lot less pain, and he will have a much faster recovery."

One day post-surgery, Basil was up walking around and trying to play.

Two days post-surgery, Basil went home.

Upon discharge, Brent got detailed instructions on what to expect, including feeding instructions. Basil needed to be on a soft-food diet for the next few weeks to reduce the chance of regurgitation.

"I pureed his food until it was almost liquid," said Brent. "We did that for about a month. Now I feed him moist food with a couple of crunchies mixed up and he stands on his hind legs to eat. It's been three months [since surgery] and he's doing great."

Brent has also had follow up appointments and rechecks with the vets at Airpark Animal Hospital and so far, Basil is exceeding expectations.

"This was a very rewarding case for us," said Dr. Kable. "Basil has done very, very well and he's growing at a normal rate. His prognosis is what it would be for any normal puppy now."

And as for Basil's future?

"Well, Gidget went to a family down the road, but Basil — oh, gosh, yeah, he's staying with me," said Brent. "He's my buddy on the farm." ♥

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