This Hospital Life

Saving Great Apes: A Case of Animal Magnetism

“If we could talk to the animals, learn all their languages
I could take an animal degree
I’d study elephant and eagle, buffalo and beagle
Alligator, guinea pig, and flea.” – Leslie Bricusse

Not quite three years ago, Monique Spillman, MD, PhD, prepared to operate on a 44-year-old female. Spillman, a specialist in gynecologic oncology at UCH and the University of Colorado Cancer Center, led a surgical team called in to remove a large uterine mass that was sitting on the patient’s colon, creating a dangerous bowel obstruction. During a laborious six-hour surgery, the team drained an abscessed cyst and removed the mass, which they were relieved to find was not cancerous. The patient recovered and is living a normal life.

It was the kind of procedure taken for granted in the day-to-day world of modern medicine, but this was no ordinary patient. She is a Sumatran orangutan named Sally who has made the Denver Zoo her home since 1996. Losing her would in itself have been devastating for the zoo and the animal experts who care for her, but beyond that, Sally is part of a vanishing species. The Sumatran Orangutan Society estimates that there are only about 6,000 orangutans in the wild in Sumatra and perhaps another 60,000 or so in Borneo – down from more than 300,000 a century ago. There are fewer than 1,000 in captivity worldwide.

So when the zoo asked for Spillman to help save Sally, she didn’t hesitate. “When you have an endangered animal, and the choice is life or death, you use the skills you have to help all you can,” she said. “I knew how hard Sally’s vets had worked to keep the animal alive with a good quality of life, and surgery was the only thing that could be done to help her.”

In the typical hospital setting, surgeons and their teams take command of the operating room, but Spillman emphasized that wasn’t the case when they got ready to work on Sally. “The vets are in charge,” she said. “In order to ensure the health of the animals, they sometimes ask for our participation.”
Different turf. Spillman joined the surgical team at the request of Dr. Diana Boon, a Denver Zoo staff veterinarian. Spillman also helped secure surgical equipment and put together a team of consultants that included Kian Behbakht, MD, director of the CU School of Medicine’s Division of Gynecologic Oncology; Ruben Alvero, MD, medical director of CU's OB/Gyn Advanced Reproductive Medicine Clinic; Henry Galan, MD, chief of CU’s Maternal Fetal Medicine section; interventional radiologist Kimi Kondo, DO; and radiologist Thomas Suby-Long, MD.

Anesthesiologists from Children’s Hospital Colorado also played a key role – orangutans process anesthesia more like human children than adults, Spillman said.

That was only one of many differences Spillman encountered between operating on an orangutan and the many procedures she’s performed on humans. The operating table was different – an orangutan is shorter and wider than a human, which required a lot more stretching during the procedure – but that was the least of her worries, Spillman said.

“It was more stressful because of what we couldn’t do,” she said. For example, there is no blood bank for orangutans, so minimizing Sally’s blood loss was crucial. Removing her colon was not an option; an orangutan would not tolerate a colostomy bag. Surgical staples were out because Sally or another animal would have picked them out.

“We have a whole system built up to support human surgery,” Spillman said. “In these cases, we have to make accommodations for the animal’s needs, their natural behaviors, and their social system. You have to put yourself in the mindset of normal animal thinking after the intervention.”

For her part, Boon acknowledges the lifesaving surgical assist Spillman and her team made.

“Without [Spillman’s] help, I do not think we would have had the successful outcome that we did,” Boon wrote in an email. “The knowledge that she brought to the zoo from the human side, combined with the experience of the zoo vet team, was crucial for Sally’s recovery. Before and since that time, Dr. Spillman has continued to foster positive relationships between zoo veterinarians and human medical professionals.”

Cross-species collaboration. The dwindling number of orangutans and other great apes, including chimpanzees, gorillas and bonobos, is likely to spur more of these collaborations. Some of their issues, as it turns out, are similar to those of another species of great apes: humans. For example, males in captivity are at greater risk for heart disease because of their sedentary lifestyle. Contraception is another big issue. There is a breeding plan for every great ape in captivity, and that includes preserving genetic diversity by preventing in-breeding.

Anesthesiologists from Children’s Hospital Colorado kept Sally sedated during the long surgery.

“The zoos know who they want for breeding pairs,” Spillman said. “There is contraception so there is no breeding between non-approved partners.” Call it Planned Parenthood, zoo-style.
But while vets and consultant-physicians continue to forge bonds, information about the procedures on great apes that have taken place is mostly anecdotal. To find out more, Spillman, Boon, and fourth-year CU School of Medicine OB/gyn resident Sumer Allensworth, MD, sent some 1,500 email surveys to members of the Society of Gynecologic Oncology (SGO) to assess how many had been consulted by zoos for help with medical problems of their great apes, how many had performed gynecologic surgeries, the quality of the interactions, and the problems that cropped up.

Their work was approved for a poster presentation at the SGO’s annual conference in Tampa, Fla., in late March. The poster, which was on display with many others for one full conference day, garnered plenty of attention, Allensworth said.

“Lots of people asked about the idea and what it was all about,” she said. “There were many who have been consultants or know someone who has been.”

"The major difficulty that makes people uncomfortable with the procedures is that the anatomy of the great apes is different,” Allensworth said. “We also heard from some that when things don’t go well or there are post-operative problems, there is no roadmap to go by.”

The book covering orangutan anatomy has yet to be written, but that could change. Spillman has left Colorado to return to Texas to help care for her ill mother while she starts a new job with Texas Oncology at the Sammons Cancer Center of Baylor University Hospital. With the help of Boon, she’s forged a relationship with veterinarians at the Fort Worth Zoo.

“These collaborations don’t come along very often,” Spillman said. “My 10-year goal is to develop a medical consultant book with Dr. Boon to prepare human physicians to help vets.”

It’s more than a matter of simply learning the animals’ anatomy and dealing with their medical problems, she added. It’s a matter of physicians and vets learning one another’s languages – and those of the beings with whom we share so much.

The payoffs could be large. As the song puts it:

“And if you just stop to think of it
there’s no doubt of it
I would win a place in history
If I could talk with the animals.”

– Tyler Smith. Smith is editor of the UCH Insider. To respond to or comment on this column, email him at tyler.smith@uchealth.org or uch-insiderfeedback@uchealth.org.

Writing the book. Many of the responding physicians who had performed surgeries described the same difficulties Spillman faced during the Sally surgery: anatomical differences, lack of diagnostic information, a lack of reference values for labs or imaging procedures, and so on.

Spillman (right) works to remove the uterine mass in Sally that had caused a dangerous bowel obstruction.
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