

Horse Equipment Solves Breathing Problem for Large Dog

By Rob Warren

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Bryggen, a 112-pound, one and one-half-year-old Bernese Mountain Dog, was brought to the [UC Davis Veterinary Medical Teaching Hospital](#) because she was having trouble breathing. Her owners reported that she was lip-smacking, wheezing, coughing, vomiting and regurgitating. Her condition had been persisting for the past six months, much to the dismay of her local veterinarian, whom she had seen on several occasions for these episodes, but no abnormalities were ever found on examination. Multiple blood tests and X-rays had been performed without a diagnosis, and there had been no resolution of signs with medication for infection and gastrointestinal reflux disease.

Bryggen, a Bernese Mountain Dog, suffered from breathing difficulties, coughing, vomiting and regurgitating for more than six months before specialists at the UC Davis Veterinary Medical Teaching Hospital found a mass in her trachea. Photos courtesy of UC Davis.

Initial examinations by the UC Davis Small Animal Internal Medicine Service were also unremarkable. Bryggen's swallowing was normal, and she showed no signs of acid reflux disease. Small feedings and new drug trials were instituted with minimal results. Bryggen's troubles were stumping the veterinarians.

At age 2, Bryggen returned to UC Davis when her condition worsened to daily episodes of gasping, wheezing and open-mouth breathing. At this appointment, her physical examination was again essentially normal, but UC Davis' internal medicine specialists witnessed intermittent episodes of severe inspiratory wheezing associated with development of "blue" gums, indicating that she was not receiving an adequate amount of oxygen to her lungs.

Figure 1 (left): An X-ray of Bryggen's chest shows a mass within the trachea (red circle). Figure 2 (right): During bronchoscopy, we visualized the mass obstructing 90 percent of the trachea.

Neck and chest X-rays were repeated, and at this evaluation, a large, irregular mass could be seen within a section of the trachea (Figure 1). The mass was so close to the entrance to the lungs, though, that surgical removal was considered dangerous. Bryggen's veterinarians decided to perform a bronchoscopy (passing a camera down into the airways) to visualize the mass and collect cell samples.

During the bronchoscopy, it was discovered that the mass was filling almost 90 percent of Bryggen's trachea (Figure 2). Cell samples of the mass were consistent with degeneration and proliferation of cartilage. While it was good news for Bryggen that the mass was unlikely to be a type of cancer, there still was the matter of finding a way to remove it. For help with this problem, the Small Animal Internal Medicine Service turned to colleagues in the Large Animal Clinic, who had specialized equipment designed to perform laser procedures in the upper airways of horses.

Following a consultation with the LAC on Bryggen's condition, the equine surgeons were eager to help. The large animal specialists recommended using a combination of cautery (a burning technique that can control bleeding and remove tissue) and laser energy to remove Bryggen's tracheal mass. Due to Bryggen's large size, the veterinarians were confident the horse equipment could be used on her.

Use of cautery or laser in the respiratory tract can be dangerous because of an interaction between the cauterization process and the high oxygen content of the air in the airways when a patient is under anesthesia. Prior to the procedure, the hospital's Anesthesia Service delivered a low oxygen mixture that would maintain Bryggen's blood oxygen while reducing the likelihood of injury within her airways.

Figure 3 (left): The laser catheter (at the bottom of the screen) is cutting through the base of the mass to allow removal. Figure 4 (right): Two months after removal, only small scars remain at the site of the mass.

The surgery started with passing the specialized equine endoscope into Bryggen's windpipe. A wire snare was then passed through the endoscope and looped around the mass to cauterize the base of the growth. Following this, a laser catheter was passed into the windpipe in order to destroy the region of attachment of the mass to the windpipe using laser energy (Figure 3). The delicate procedure took three hours, but the mass was completely removed.

Bryggen's breathing was almost immediately normalized, and a biopsy of the removed mass proved it to be a benign mass of cartilage. Two months after the procedure, Bryggen was recovering well at home with no episodes of wheezing or respiratory difficulty. A repeat bronchoscopy revealed that the trachea had healed nicely at the site of mass resection, and there was no evidence of regrowth (Figure 4).

"The collaborative approaches we take to veterinary medicine at UC Davis make for some of the most special cases," said Lynelle Johnson, D.V.M., Ph.D., chief of the Internal Medicine Service. "Getting to find a solution to Bryggen's problems, and using horse equipment to do it, was exciting for our service, and such a relief for her family."

This article, written by Rob Warren of UC Davis Veterinary Medicine, was reprinted with minor changes and with the permission of the UC Davis School of Veterinary Medicine.

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