VetCare
Veterinary Emergency & Specialist Care Center

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Tracheal Stents: Indications and Complications

Barry Kipperman, DVM, DACVIM

Boomer, a 10 year old male Yorkie was seen at VetCare in August 2008 for progressive stridor, coughing, and labored breathing. Quality of life had declined to the point where Boomer's caretaker carried him around to prevent episodes, and sedated him most of the time. Medications included Hycodan, Prednisone and Acepromazine given prn. Radiographs (Fig 1) showed marked tracheal collapse

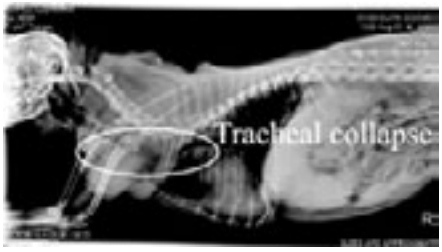

Fig 1

at the thoracic inlet. Examination revealed marked stridor with minimal exertion.

Based on Boomer's declining quality of life and minimal ability to cope with excitement, placement of a nitinol stent was discussed as a last-ditch alternative. Bronchoscopy revealed Grade 4 collapse at the thoracic inlet, with almost complete obliteration of the tracheal lumen (Fig 2). No main-stem bronchial collapse was noted. Tracheal measurements were obtained using digital radiography under positive-pressure, and Boomer was recovered. The ap-

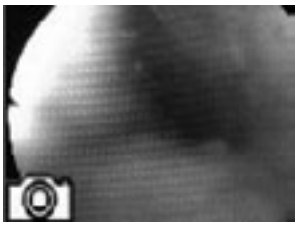
Fig 2

propriate sized stent was ordered, and Boomer was discharged to continue medications as before.

On September 4, a 14 x 72 cm Nitinol stent (Vet-Stent-Infiniti Medical) was placed intra-luminally under Propofol anesthesia to encompass the mid-cervical to mid-thoracic trachea. Serial digital radiographs confirmed proper placement (Fig 3). Stridor resolved immediately upon recovery, but Boomer was resistant to all efforts to keep him quiet, and was discharged that evening to allow rest and to minimize persistent vocalizing.

Fig 3

We advised that cough be minimized over the next 10 days via aggressive anti-tussive therapy at home and anti-inflammatory does of Prednisone. Recheck on Day12 post-placement revealed Boomer to be much more active and alert, with minimal coughing. Radiographs showed no complications. I advised a slow Prednisone taper, to a maintenance dose of 2.5 mg EOD indefinitely.

Boomer returned 4 months post-placement for slowly progressive gurgling and coughing over the prior 6 weeks. Signs were considered less severe than in the summer. Prednisone had been discontinued for 3 months. Exam revealed moderate gurgling noises from the lower airway. Radiographs showed the stent to be intact, but collapse of the tracheal lumen was noted at the caudal aspect of the stent (fig 4). Bronchoscopy revealed marked stenosis, erythema and granulation tissue at the caudal

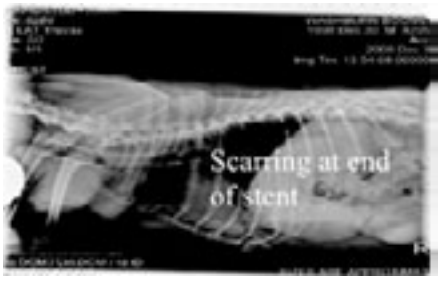

Fig 4

margin of the implant (fig 5). A diagnosis of post-implant tracheal stenosis was made. Boomer was discharged on Prednisone 7.5 mg/day with slow taper and Colchicine (anti-fibrotic) suspension 0.2 mg/day.

Tracheal collapse is a common condition affecting older, toy-small breed dogs, causing dynamic upper

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airway obstruction. Signs include mild, honking cough to severe respiratory distress and cyanosis. Epi-

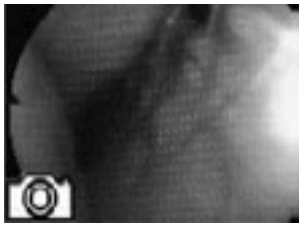


Fig 5

sodes are often precipitated by heat, stress and excitement. Emergency stabilization is usually successful via injectable sedation. Medical management includes a combination of anti-inflammatories, anti-tussives and sedatives.

Intraluminal tracheal stenting has become available over the past few years, in large part due to the risk of surgical rings, and their inability to resolve intra-tracheal collapse. This procedure should only be considered as a palliative measure, in a dog failing appropriate medical management, with no other serious concurrent cardiopulmonary conditions. Procedural complications are rare and include aspiration pneumonia, and cyanosis. Long-term complications include stenosis of the lumen secondary to excessive granulation tissue in response to the implant, fracture/migration of the stent, and collapse of the lumen in regions cranial or caudal to the stent. As with any new procedure, the frequency of long-term complications is unknown, as is the best mode of therapy for each one. Clinical reports have confirmed resolution of scarring/stenosis with Prednisone and Colchicine.

As exciting as these new interventions may be, they often bring unforeseen challenges.

Boomer will have periodic bronchoscopic studies to gauge response to therapy. I'm hopeful we can maintain an acceptable quality of life with lifelong medications.

Our Experiences with Continuous Glucose Monitoring Systems

Claudia Thatcher, BS, RVT

Ah, remember the days when a blood glucose curve meant a long day in the hospital?

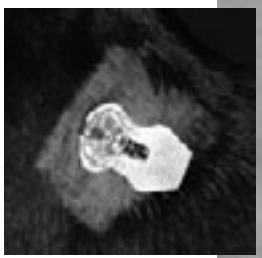
Well, those days may be over. At Vetcare, we are trying to improve the quality of our diabetic patients blood glucose testing.

Up until about one year ago an average recheck for a blood glucose curve meant dropping off your pet to the hospital very early in the morning and leaving him/her there all day. Every two hours a blood sample would be drawn. Some pets didn't like to be "poked" and many were nervous and anxious. This could translate to elevated blood glucose levels and undue stress on the pet.

In 2008 Medtronic came out with a new and improved glucose monitoring system. The unit is called CGMS iPro. It is a small, wearable unit that is inserted subcutaneously (interstitialy) on to either a cat or dog. The inserted glucose monitor is about the size of a small clam shell. Once applied, glucose is measured every five minutes over a 24 hour period. Our patients experience minimal pain or discomfort in the placement or wearing of the sensor. After 24 hours of wearing the unit, the data is downloaded into specific Medtronic software where it can be tabulated into a 24 hour graph or list of individual values or both. It is only necessary to draw one blood glucose before and after the sensor is applied on the pet. The best thing about this small, portable unit is that the pet can go back home for 24 hours. No need for a day in the hospital!

Our experiences with the clinical use of the Medtronic glucose monitoring system have been a learning curve for us since its clinical design is for people. Through trial and error, we have found the ideal placement and attachments we needed to keep the unit in place for a 24 hour period. The 24 hour data collected has given our doctors a bigger picture of the animals' blood glucose levels and any necessary adjustments to the pets' insulin therapy could be made.

If our furry friends could talk, they would say "Yes, I'd much rather wear this fashionable clamshell and be at home than spend a day at the veterinary hospital!"



Monitor unit inserted (above), and the Medtronic system (right).

"No Nodes Littrell" Cancer Survivor

Faith Hoffman
Internal Medicine Nursing Supervisor

Harley is a 9 year old male golden retriever enjoying life, happily completing his 'bucket list'. He was diagnosed with intermediate grade lymphoscarcoma in October of 2007. Having dedicated owners, Harley began undergoing chemotherapy.

The intensive Wisconsin protocol was initiated, and the response was immediate — lymph nodes shrank, calcium levels dropped down, and appetite became great. Week after week, month after month, he came into VetCare for his CBC, whatever injectable chemo agent he was due for, a palpation of nodes, and a weight.

There were occasional setbacks. Sometimes the chemo made Harley feel sick. Sometimes Harley felt fine but his CBC told a different story. Overall though, he thrived. His hair coat changed a bit, became a little rougher than it used to be, a little shorter too, certainly not as luxurious as in his younger days. But who needs long locks when you have life!

In March of 2008, Harley relapsed. His nodes increased in size, his calcium levels crept up, he turned away from his food, became a little grumpy with everyone. He was out of remission. Now came the big decision. Harley had had a pretty good five month run. Would it be tempting fate to try to get a little more time out of him? Would it be selfish? When is enough, enough? What would Harley want? His family thought it over, took some time, took him to his favorite spots, and decided to keep going. After all, it's just money, right?

Harley started a rescue chemotherapy protocol of Prednisone, Lomustine, and Elspar. We continued the cycle of checking his blood counts, his calcium, his nodes, his weight.

By April, Harley was back to his old self. No nodes, normal calcium, good appetite, and most importantly, good spirits. The decision was made to continue Harley on Prednisone and Lomustine, with a CBC every three to four weeks, indefinitely. It has been magic.

Harley is now sixteen months out from his original diagnosis (eleven months on his rescue protocol). He is happy, at home, and vibrant. We see him only when he needs to pick up his next dose of meds, and he gets the usual once over and a high five. "No Nodes Littrell" is our little cancer survivor, our reminder that a hard road can be rewarding. Now he is off to Tahoe to check one more item off his 'bucket list'.

Faith Hoffman with Harley Littrell

VetCare

7660 Amador Valley Blvd
Dublin, CA 94568

Phone: 925-556-1234
Fax: 925-556-1299
Email: s.hatch@EmergencyVetCare.com
Web: www.EmergencyVetCare.com

Barry Kipperman, DVM, DACVIM
River May, DVM
Cheryl Ramos, DVM
Britta Revels, DVM
Molly Steinberg, DVM

John J. Haburjak, DVM, DACVS
Kimberly R. Carlson, DVM, DACVS
Heather Towle, DVM, MS, DACVS