The New York City Veterinarian

VMA NYC Newsletter

Veterinary Medical Association of New York City

PO Box 959
NYC, NY 10024

212-246-0057 (tel)
212-721-1620 (fax)
www.vmanyc.org

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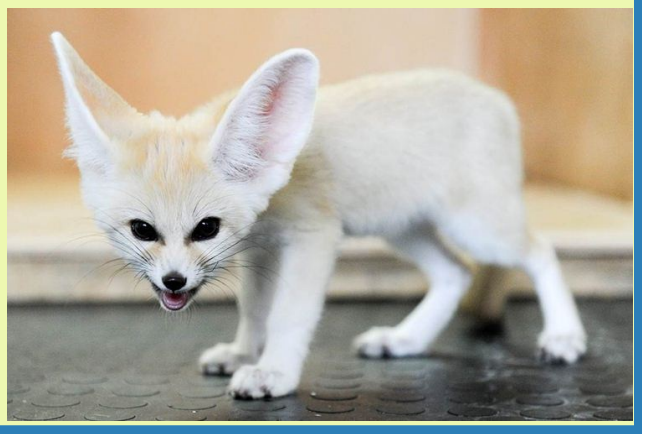
TABLE OF CONTENTS

Page



A 2-month old fennec fox sneer at photographers at Lodz Zoo in Poland on July 29. Abandoned by her mother, the fox is being raised by zookeepers. **Grzegorz Michalowski / EPA**

President's Message

Dr. John Sykes

You know that the summer is coming to an end when back-to-school commercials are filling the airways! Hopefully you all had an enjoyable and productive time and are all ready to start coming back to VMA events this fall.

This summer we had 2 successful social outings. The Bronx Zoo outing, coordinated by Amy Attas, was again lots of fun for the whole family. About 60 people attended and most of those took advantage of the behind-the-scenes tour of the Wildlife Health Center. The annual summer baseball outing at the Staten Island Yankees was attended by 70 people and was a great time, with excellent weather and a close ballgame. It is always great to get together with other veterinarians to share experiences, tips, and "war stories." If you have any ideas for other social events or outings, please contact anyone on the executive board, or our social program leader Mari Morimoto (nycfishgirl@aol.com).

We also reached out to the community last summer though our High School Awards program. This year, we gave the award to 5 highly deserving graduating seniors: *Aliza Yaillen* – Bard High School Early College; *Alexzandra Ajduk* – John Bowne High School; *Mark Gregory* – John Bowne High School; *Yasly Gonzalez* – Middle College High School; and *Tiffany Intravaia* – St. Joseph Hill Academy. Board members and I were lucky enough to be able to personally present most of these awards and I can attest that it is very moving to be part of encouraging these bright young students in their pursuit of the veterinary profession!

Your executive board and management firm are gearing up for a productive fall. One of our biggest challenges right now is locating a great space to hold our scientific meetings. You will notice in the announcements for the meetings that the location has changed. Pfizer has been a great support to us in the past and we appreciate all their contributions, but the space there is no longer available. I want all members to know that we are actively looking for a new permanent home for the meetings that fulfill our size and AV needs, but still fit within our budget. In the meantime, please read the announcements carefully to be sure you go to the right place! Our high-quality continuing education lectures are a core function of the Association and we remain dedicated to bringing you great speakers in a convenient and comfortable location.

You will also very soon notice a change in our website. We will be launching a newly designed website in the next few months that will be both more user-friendly and practical for the general public and for members. The new look of the website comes from our management firm, and this change will enable us to directly update the site much more quickly than we have been able to in the past.

As always, I encourage you to become involved in your Association. This fall we will be sending our nominations forms for board members and awards, so please participate if you are able!

Sincerely,
John M Sykes IV, DVM, DACZM
President, VMA of NYC


Merial is proud to support the Veterinary Medical Association of New York City.
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lori.rogers@merial.com
(Downtown NYC, Western Queens, Brooklyn)
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(Uptown NYC, Bronx, Westchester)
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SUBMISSIONS WANTED!

We are looking for members to submit medical articles, photographs, stories and essays. If interested, or you want to know more, please contact Sally Slavinski at sslavins@health.nyc.gov

Social Committee

Dr. Mari Morimoto

5TH ANNUAL VMA BASEBALL OUTING RECAP

On the night of July 27th, about 70 members, staff, sponsors, and their families gathered at the Richmond County Bank Ballpark for the annual VMANYC field trip to see the Staten Island Yankees. The evening kicked off with an all-you-can-eat barbeque buffet sponsored by Western Beef, the national anthem, and our name in lights, as we returned to the Picnic Deck once again. The weather couldn't have been more perfect, and game was quite thrilling! The extremely close, seesaw match ended with the Brooklyn Cyclones edging past the Staten Island Yankees 3-2, thanks to a two-run effort in the 7th inning by the Mets' farm team. The fun then continued (and concluded) with a spectacular fireworks display and the kids' run around the bases.

This cat stowed away in a container ship headed from Manila to Los Angeles. She is gaining weight and getting stronger after surviving the 7,300-mile trip without food or water.
Picture: HOPD via AP

Liaison Committee

The liaison committee interacts with our local specialty hospitals, educational institutions and not for profit organizations and lists in this column any information which is relevant for our membership. Specifically, we highlight continuing education which is complementary to our membership and new hires in specialty areas. Please contact us if your hospital has information that you would like to share with our membership

The Animal Medical Center's Partners in Practice:

Partners In Practice Tuesday (7 - 8:30pm) Clinical Workshops

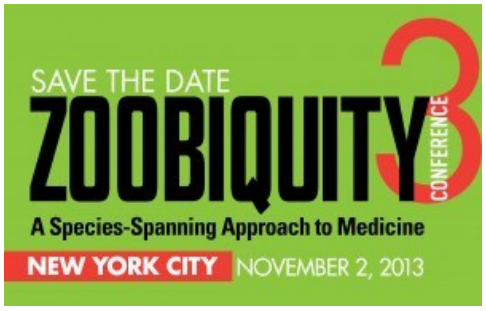
- **September 17** – Radiology-What's Your Diagnosis?, Speaker: Dr. Anthony Fischetti
- **October 15** – Urinary Tract Surgery; Speaker: Dr. Janet Kovak McClaran
- **October 29** – How to Manage Renal Disease; Speaker: Dr. Cathy Langston
- **November 12** – Endocrine Diseases, Speaker: Dr. Beth Appleman
- **November 26** – Rehabilitation - Who, What, When; Speaker: Dr. Leilani Alvarez
- **December 10** – Pearls of Clinical Oncology, Speaker: Dr. Maria Camps

PIP Conferences

Clinically Useful Tips and Techniques for Veterinary Technicians—Sunday, September 22

REGISTER ON LINE: http://www.amcny.org/pipseminars
Questions? Contact Dr. Philip Fox at PHILIP.FOX@AMCNY.ORG OR CALL 212.329.8606

The 3rd Zoobiquity Conference is scheduled for Saturday, November 2, 2013 in New York City. Leading physicians from Weill Cornell Medical College, Columbia University, NYU Langone Medical Center and Memorial Sloan-Kettering Cancer Center, along with veterinarians from The Animal Medical Center and the Wildlife Conservation Society will come together for a conversation between doctors treating the same diseases in different species. At this one-day conference, the morning session will be held at The Rockefeller University and "Walk Rounds" will be hosted by the Wildlife Conservation Society at the Bronx Zoo.



The conference schedule and registration information will be available soon. Please visit www.zoobiquity.com for updates and http://zoobiquity.com/conference-research/conference/2013-pages/conference-program/ for the conference program agenda.

Veterinarians attending Zoobiquity will receive RACE or New York State continuing education credits. Physicians attending Zoobiquity will receive CME credits.

News from Blue Pearl Veterinary Partners:

Continuing education lectures are free and open to all area veterinarians. There are also veterinary technician CE lectures which are open to all veterinary technicians and assistants. Registration is required and is done by contacting Dr. David Wohlstadter at david.wohlstadter@bluepearlvet.com . Dinner begins at 7 PM and the lectures start at 7:30 PM. BluePearl is approved as a New York State sponsor of CE for veterinarians and veterinary technicians. Unless otherwise noted, lectures are given in Brooklyn, Queens and Manhattan at the addresses listed below:

Check the bluepearl website for upcoming CE events at
http://newyork.bluepearlvet.com/veterinary-community/calendar-of-events/

ZOOBIQUITY 3 CONFERENCE

A Species-Spanning Approach to Medicine

NEW YORK Saturday, November 2, 2013

The Animal Medical Center is pleased to announce our co-sponsorship of the 3rd Zoobiquity Conference.

This conference features leading clinicians and scientists in human and veterinary medicine to discuss diseases affecting both humans and animals. This cross-disciplinary conference encourages collaboration between doctors and veterinary colleagues with shared clinical challenges across the "species-divide."

Delivering keynote addresses at this event:
National Institutes of Health cancer geneticist, Elaine Ostrander, PhD
Institute of Medicine President, Harvey Fineberg, MD, PhD

Additional speakers include prominent veterinarians from The Animal Medical Center, NY and the Wildlife Conservation Society, along with leading physicians from Weill Cornell Medical College, Columbia University, NYU Langone Medical Center, Memorial Sloan-Kettering Cancer Center and Mount Sinai Hospital.

At the morning session held at The Rockefeller University, veterinarians and physicians will compare diagnostic and therapeutic approaches in the areas of cancer, psychiatry/behavioral disorders, infectious disease and neurological/cognitive dysfunction. Afternoon sessions will include "Walk Rounds" at the Bronx Zoo, led by the Wildlife Conservation Society's Zoological Health Program staff and leading subspecialty physicians.

To register, visit amcny.org/zoobiquity3
Seats are limited and pre-registration is required.
This activity is approved for AMA PRA Category 1 Credit™.
AAVSB veterinary CE credit (RACE) approval pending.

THIS PROGRAM IS SPONSORED BY:

Animal Medical Center 100 Years | Wildlife Conservation Society | UCLA David Geffen School of Medicine

AGENDA

7:00 A.M. **REGISTRATION / POSTER SESSION**
(*Continental breakfast provided)*

7:30 **WELCOME REMARKS**

8:00 **KEYNOTE:** Both Ends of the Leash – The Human Links to Good Dogs with Bad Genes

(Note: The cases below for the selected diseases are only samples. Actual cases to be determined)

8:30 **ONCOLOGY:**
- Invasive Breast Cancer in an 8-Year-Old Golden Retriever , 19-Year-Old Amur Tiger and 57-Year-Old Psychotherapist
- Questions and Answers

9:15 **PSYCHIATRY/BEHAVIORAL:**
- Anxiety Disorder in a 2-Year-Old Yorkshire Terrier and 21-Year Old Barista
- Eating Disorder (Self-Induced Vomiting) in a 15-Year-Old Beluga Whale and 19-Year-Old Collegiate Gymnast
- Questions and Answers

10:30 **BREAK / POSTER SESSION**

10:45 **INFECTIOUS DISEASE:**
- Lyme Disease in a 6-Year-Old Bull Terrier and 41-Year-Old Tax Attorney
- Questions and Answers

11:30 **NEURODEGENERATIVE & COGNITIVE DISORDERS:**
- Canine Cognitive Dysfunction in an 11-Year-Old French Poodle and Alzheimer's Disease in a 63-Year-Old Literature Professor
- Degenerative Myelopathy in a 10-Year-Old Boxer and ALS in a 44-Year-Old Lacrosse Coach
- Questions and Answers

12:45 **BOARD BUSES AND DEPART FOR THE BRONX ZOO**
(*boxed lunch provided*)

2:30 – 4:30 **"WALK ROUNDS" AT THE ZOO**
(Conference attendees will sign up for one of four pairs of cases during registration on November 2nd. Space capacity is limited; first-come, first served.)
- Seizure Disorder in an Aged Male Gorilla / Environmental Change and Amphibian Health
- Pica in a California Sea Lion / Malaria in Penguins and People
- Gait Disturbance and Spinal Cord Lesions in a Siberian Tiger / Immunodeficiency and Respiratory Fungal Infections in Pheasants and Humans
- Feminizing and Virilizing Tumors of Domestic Ferrets / Tour of the Bronx Zoo's Wildlife Health Center

4:30 **CLOSING KEYNOTE**

5:00 **COCKTAIL RECEPTION**

6:15 **BOARD BUSES BACK TO THE ROCKEFELLER UNIVERSITY**

TO REGISTER, VISIT THE AMC WEBSITE AT:

amcny.org/zoobiquity3

Nine-day-old gorilla lays in the hand of its mother Kijivu at the Prague Zoo.

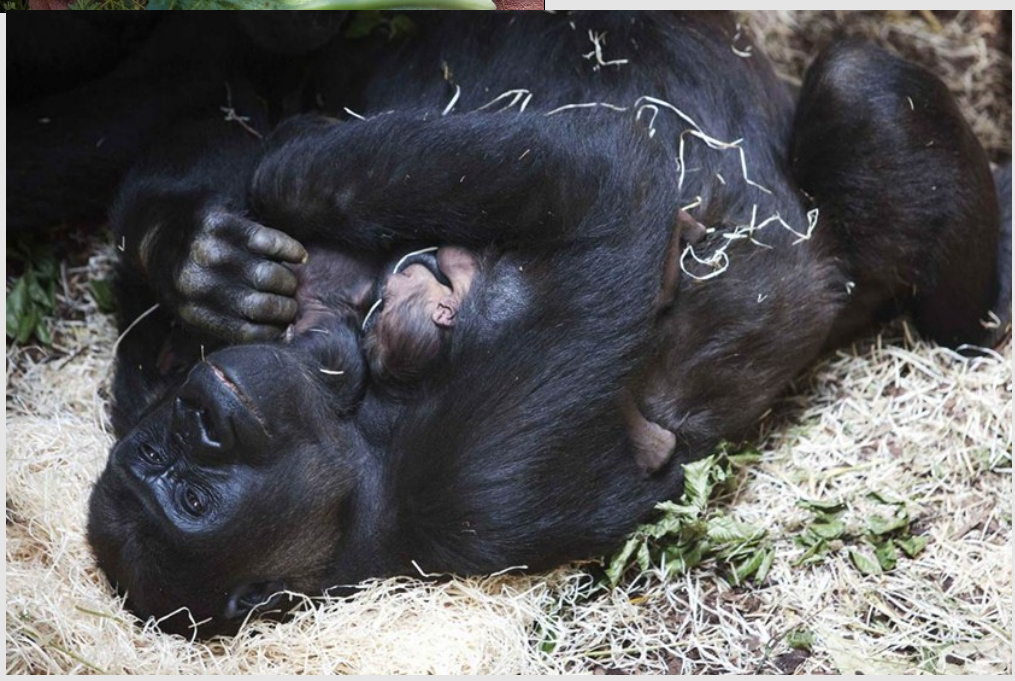
AFP PHOTO MICHAL CIZEK

Monroe, a western lowland gorilla, celebrates his second birthday with a multicolored ice cake made of fruits and vegetables at the San Diego Zoo Safari Park in Calif. on June 17.

KEN BOHN / SAN DIEGO ZOO SAFARI PARK VIA AP

Gorilla mother N'Gayla holds her twins (a boy and a girls) at the Burgers' Zoo in Arnhem, the Netherlands, on June 15. The twins were born on June 13.

STRINGER / REUTERS



Calendar of Events

Program Committee

Dr. Mark E. Peterson, Chairman , Dr. Deirdre Chiaramonte, Dr, Sally Haddock

The schedule of the VMA of NYC Continuing Education meetings for the 2013 calendar year is listed below, including the speakers and topics. All meetings will be held at the ASPCA 520 Eighth Avenue (near the corner of 36th St) on the seventh floor, NYC. The meetings will start at 7 PM. Please bring photo ID with you to allow entry into the facility. Members of the VMA of NYC are automatically registered to attend the meetings, but guests need to be added to the attendance list in advance of each meeting date.

September 11, 2013

Speaker: Tina Wismer, DVM, Dip. ABVT & ABT
ASPCA, Animal Poison Control Center
Topic: Clinical Toxicology: When Pets Ingest Human Medications

October 2, 2013

Speaker: Linda Barton, DVM, Dip. ACVECC
Veterinary Specialty Center of Seattle
Topic: Fluid Therapy

November 6, 2013

Speaker: Debra Horowitz, DVM, Dip. ACVB
Veterinary Behavior Consultations
Topic: Behavior

December 4, 2013

Speaker: Ed Breitschwerdt, DVM, Dip. ACVIM
North Carolina State University College of Veterinary Medicine
Topic: Tick Diseases

January 8, 2014

Speaker: Elizabeth A, Giuliano, DVM, MS, Dip. ACVO
University of Missouri College of Veterinary Medicine
Topic: Ophthalmology

Remember, our Continuing Education program is meant for our VMA of NYC members, so please do not ever hesitate to provide your input and suggestions for great speaker or timely topics to make our C.E. program the best it can be. I can always be contacted via email at mark@animalendocrine.com or feel free to call me in my office (212.362.2650) if you have any suggestions.

Membership Spotlight

Dr. Amy Attas

DR. AMY ATTAS

NYC VMA MEMBER SPOTLIGHT

Q1. Where did you grow up and when did you move to NYC?
I grew up in Bayside, New York and moved to Manhattan at 16 when I started Barnard College. From the moment I moved to the City I knew that I would never live anywhere else.

Q2. Why did you become a veterinarian and when did you know you would become one?
This is easy to answer and I am sure that my response is the same as most of yours would be—I never wanted to be anything else? When my friends were playing teacher or nurse with their dolls, I played veterinarian with my stuffed animals. Times were different then and my pediatrician gave me hypodermic syringes without needles which I filled with water and straight pins and used to inject into my "patients". I had a lot of soggy stuffed animals.

When I was 13, I read James Herriot's, *All Creatures Great and Small*, and I was inspired to start my career. I called every veterinary hospital in the Queens telephone book and asked if I could have a volunteer position. Dr. Jay Luger of the Forest Hills Cat Hospital graciously said that I could come by and observe for a day. I had to take a bus and train to get there and I was more than a little bit nervous. I watched while he did an examination on a cat and then he took some blood and asked me to invert the purple top a few times while he took some more blood. That was the last thing I remembered before passing out. Although I was incredibly embarrassed that I fainted, in retrospect it worked out because he felt sorry for me and said that I could come back anytime. That was the start of my career and a life long friendship.

Q3. Where did you go to veterinary school?
I am a 1987 graduate of the University of Pennsylvania School of Veterinary Medicine. Even though I was a New Yorker I had my heart set on going to Penn. I remain very connected to Penn Vet and I serve on the Board of the Veterinary School at Penn.

Q4. What was your first job as a veterinarian?
I was in the 1987 internship class of the Animal Medical Center. I was in private practice in Manhattan for four years before starting my own practice.

Q5. Where do you practice now, and how long have you been there?
For the past 21 years I have owned and run City Pets, a house call service for dogs and cats in Manhattan. When I first started my practice, many people I respected advised me to "get a real job" thinking that the novelty of house calls would soon wear off and I would have nothing to do. There had been a few earlier house call practitioners who were successful and I thought that there were ways to make house calls even more efficient and fun. Although there are days when house calls are difficult-like when the patient is nowhere to be found, or there is no good place to work, or the light is insufficient-most days are more rewarding for me than working in a bricks and sticks hospital. House calls are much more personal with the people and I find my patients are more relaxed (with a few exceptions). I also get to see things in homes which are potential hazards to pets that we might not think to question people about. I have closed windows and terrace doors, discarded lily plants and folded up strangle hazard telephone cords and window blind strings. I have watched families evolve, children grow up and move out and get pets of their own. Many of my clients have become close personal friends. I smile when I think of the early influence that James Herriot had on me and how my practice is a modern, urban iteration of his.

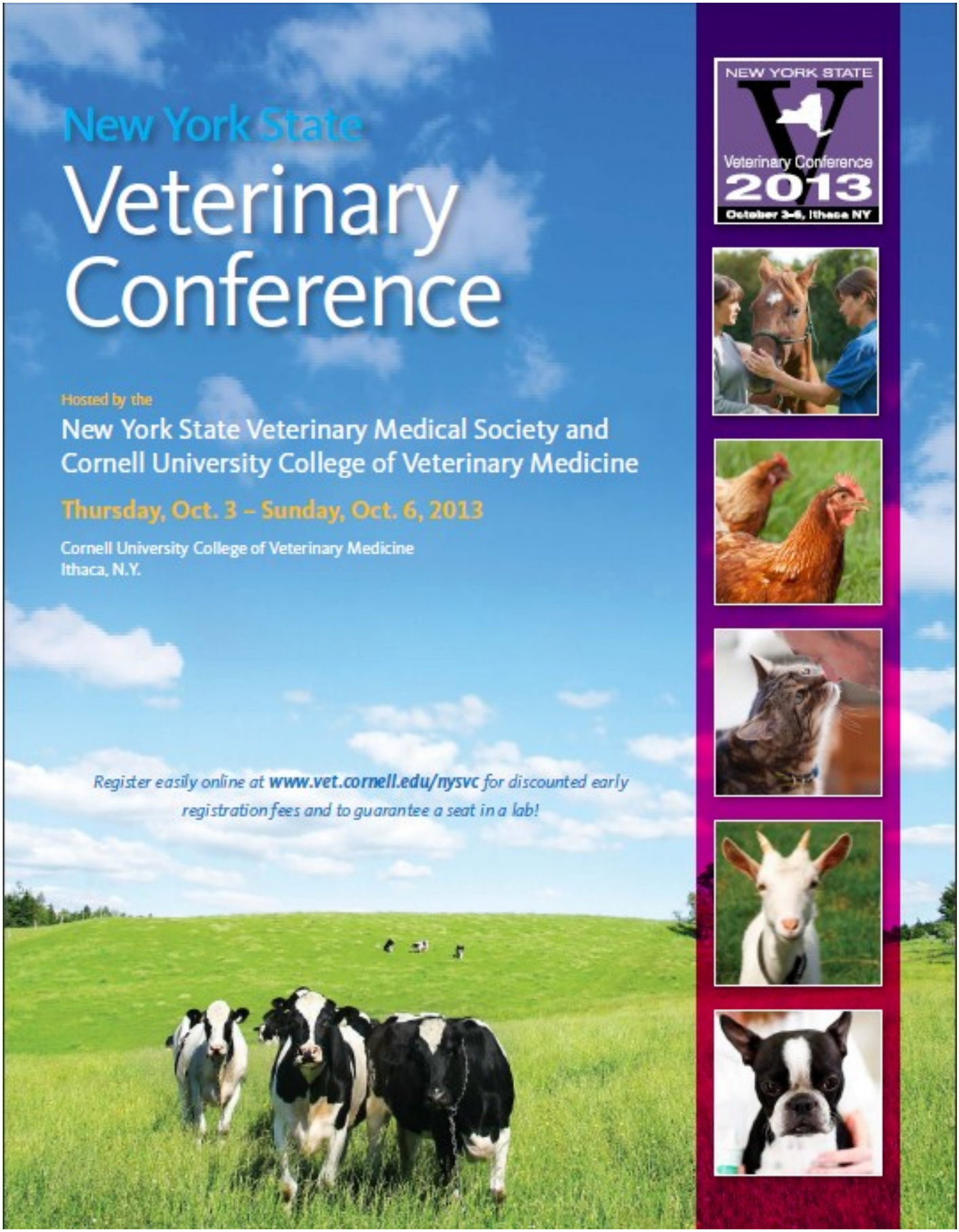
Q6. What pets do you have?

Anyone who knows me knows that I am passionate about pug dogs. My family rescued our first pug over 50 years ago at a time when they were not popular. When we went out as a family, strangers would comment that we had the ugliest dog they had ever seen. Sometimes a few minutes later another person would say that our dog and my dad looked a lot alike. It is possible that both comments were true. I have had 5 pugs and all have been rescues. Two of them came to me as blind dogs, most likely from the effects of distemper virus as puppy mill dogs. Both were inspirations to me as they behaved like perfectly normal dogs who played with others, jumped on and off furniture and went through my home up and down stairs with no fear despite being totally blind.

Q7. What are your hobbies/interests?

I live in Manhattan and go out almost every night to the theater, Carnegie Hall, Lincoln Center and the New York Rangers. I garden (on a NYC terrace and at my home in the country) and I love to cook. My husband Steve and I are avid travelers to both exotic and traditional destinations. We have hiked through the Eastern and Western United States, from France to Italy around Mont Blanc, and Switzerland. We traveled through India with one of the world's foremost tiger scientists and with Mountain Gorilla Veterinary Project in Rwanda. I serve on the Board of EcoHealth Alliance, an international organization of scientists dedicated to the conservation of biodiversity and protection of ecosystems for the benefit of wildlife and human health. I am also on the Board of the University of Pennsylvania School of Veterinary Medicine. I am happily married to Steve and we have two rescue pugs. And, most important-after 26 years, I still love being a veterinarian.

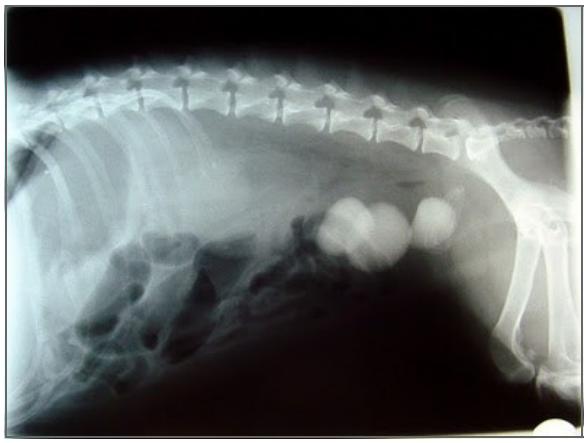
Pugs in a Bug
By Carolyn Crimi; Stephanie Buscema (Illustrator)
(Dial, Hardcover, 9780803733206, 32pp.)



http://c.ymcdn.com/sites/www.nysvms.org/resource/resmgr/Docs/2013_NYSVC_Brochure_FINAL.pdf

Urolith Removal Techniques

Dr. Cathy Langston



http://dawgbusiness.blogspot.com/

Urinary stones are common problems in dogs and cats. The incidence of upper urinary tract stones, including nephroliths and ureteroliths, has been increasing in cats over the past decade. Advancements in less invasive methods of addressing both upper and lower urinary tract stones have become more commonly available, and will be described here.

UPPER URINARY TRACT STONES

Incidence and Clinical Presentation

About half of cats diagnosed with CKD in a recent study had evidence of nephrolithiasis, although nephrolithiasis did not affect survival or progression of CKD. Ureterolithiasis is also increasing in incidence in almost alarming fashion. Over 95% of nephroliths and ureteroliths in cats are composed of calcium oxalate (predominantly) or calcium phosphate. A common presentation is an acutely uremic cat with one large obstructed kidney and a contralaterally small kidney. Ureteroliths may spontaneously pass into the bladder over a few days, or with fluid therapy and alpha-adrenergic blockade (i.e., prazosin). If they do not, surgical removal or ureteral stenting is indicated. The 2 year survival rate for cats treated surgically is around 90%, compared to 66% with medical management.

Nephroliths and ureteroliths should be physically removed if they are causing obstruction to urine flow, progressive deterioration in renal function, recurrent urinary tract infection, or are enlarging despite preventative measures. Surgical removal or stenting of partial or completely obstructing ureteroliths may be prudent if the urolith does not pass within 1-24 hours. Reversibility of renal dysfunction is dependent on completeness and duration of obstruction. Studies in dogs have shown variable and permanent decrease in renal function after 7 days of acute ureteral obstruction, with no improvement after 40 days of obstruction, although there are reports of improvement after 70 days in people and cats.

All methods of stone removal should be followed by imaging to confirm complete urolith removal. Appropriate management to prevent growth of uroliths is recommended following removal.

Lithotripsy

Lithotripsy has the goal of fragmenting uroliths into pieces small enough to pass spontaneously or be removed by non-invasive methods.

Intracorporeal laser lithotripsy can be applied to nephroliths and proximal uretereoliths via percutaneous nephrolithotomy, in which laparoscopy is used to enter the renal pelvis. A laser or ultrasonic lithotripter is used to fragment the nephrolith followed by removal of urolith fragments through the endoscope channel. Because urolith fragments do not pass through the ureter for removal, this technique may be superior for large nephroliths.

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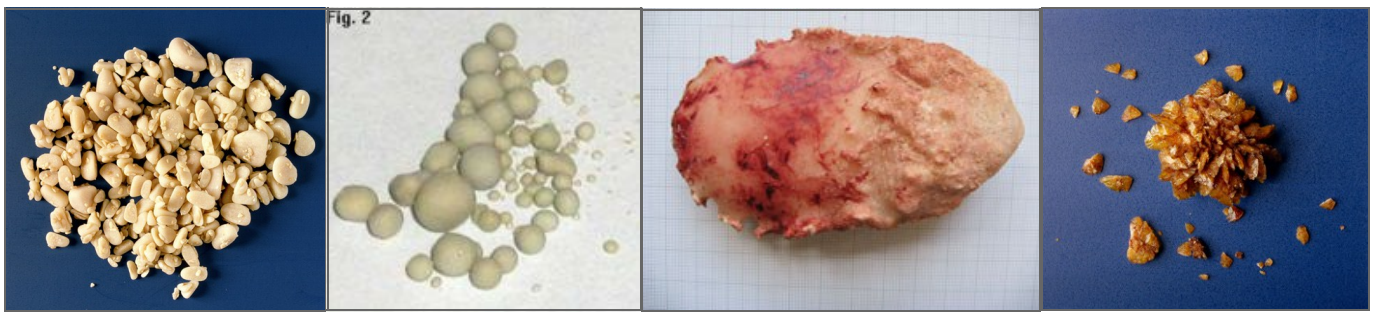

There are two types of extracorporeal shockwave lithotripters: wet and dry. A "wet" lithotripter requires partial submersion of the patient in a water bath. A "dry" lithotripter couples the shockwaves to the patient through a water-filled cushion. Shockwave lithotripsy (SWL) is better suited for immobile uroliths (nephroliths and ureteroliths) than cystic calculi that tend to shift out of the focus of the shockwave path.

Using a wet lithotripter, successful fragmentation of canine nephroliths was achieved in 90% of dogs after one or two treatments. Retreatment was necessary in about 30% of these patients, compared to about 50% retreatment rate after lithotripsy using a dry lithotripter. Fragments begin to move out of the renal pelvis within 24 hours but may take several weeks to months to clear the upper urinary tract. The amount of renal damage induced in cats by wet lithotripters causes an unacceptable decline in renal function, but successful resolution of ureteroliths has been accomplished with dry lithotripters.

Transient hematuria is common after SWL. Transient increases in creatinine occurred in half of dogs treated with SWL in one report, but remained within the normal range. Ureteral obstruction with fragmented uroliths may occur, which may spontaneously resolve or require additional lithotripsy treatment. Other complications include abdominal pain, renal or perirenal hemorrhage, diarrhea, and pancreatitis.

Nephrotomy/Pyelotomy/Ureterotomy

Although nephrotomy can be used to remove nephroliths, concerns exist about the long-term effects on renal function from this procedure. Pyelotomy, an incision into the renal pelvis, may be performed if the renal pelvis and proximal ureter are sufficiently dilated. This procedure avoids trauma to the renal parenchyma associated with nephrotomy. Ureterotomy may be considered for ureteroliths in the proximal ureter. Distal ureteroliths may be milked into the bladder and retrieved through a cystotomy. The distal ureter may also be excised and reimplanted into the bladder. Major complications associated with ureterotomy include strictures at the surgical site and surgical dehiscence with subsequent urinary leakage. In a study of cats with ureteral calculi, 31% had post-operative complications, and 18% died. However, in the cats surviving more than 1 month, 88% were still alive 2 years after surgery.

Ureteral Stents and Bypass Procedures

If there are many ureteroliths, multiple ureterotomies increases the risk of leakage or stricture formation, in addition to markedly increasing the surgery time. Additionally, the risk of recurrence is fairly high in many cats. If a distal ureteral stricture is present, ureteral resection and reimplantation is possible, but if the stricture is proximal to mid-ureter, there is not enough ureter for reimplantation without placing undo tension on the ureter. In these situations, a ureteral stent may be a better option. A double pig-tail stent can be placed cystoscopically in female dogs and large female cats, and in some male dogs. Using cystoscopy through the urethra, a guidewire is passed into the ureter and up to the renal pelvis. After progressive dilation, a double pig-tail stent can be passed through the ureter, with one curl of the pig-tail resting in the dilated pelvis and the other curl remaining within the lumen of the bladder. These stents can remain in place for years. Because of multiple fenestrations throughout the stent, urine will continue to drain even if more stones form. In patients too small for a cystoscopic approach, the same procedure can be performed via an abdominal approach. If the ureter is completely occluded by a stricture and a guidewire cannot be placed, a bypass procedure may be indicated. A single pigtail catheter is placed into the renal pelvis through the renal parenchyma, and the straight end of the catheter is tunneled through the body wall into the subcutaneous space. A separate single pigtail catheter is placed in the bladder lumen and the straight end is also tunneled through to the body wall into the subcutaneous space. The ends of both catheters are connected in the subcutis with a metal adaptor (similar to subcutaneous vascular access ports). Using sterile technique and a special Huber needle, urine can be sampled from the metal port by subcutaneous puncture, and if needed, a retrograde pyelogram can be repeated as needed. Although the metal port is palpable under the skin, subcutaneous bypass procedures are well tolerated by the cats and their owners.

Continued next page

LOWER URINARY TRACT STONES

Indications for physical removal include obstruction of the urethra, failure of dissolution therapy, or unacceptable clinical signs associated with urolithiasis. Physical removal of cystic calculi provides benefits including rapid resolution, definitive diagnosis of urolith type (via quantitative urolith analysis), and reduced risk of urinary obstruction. In asymptomatic patients, removal of cystic calculi is not mandatory, particularly if there are relative contraindications to anesthesia or surgery. If a urolith is suspected to be composed of struvite, urate, or cystine, medical dissolution can be attempted if no indication for more immediate removal is present.

Stone Dissolution

Certain stone types are amenable to dissolution without a need for physical removal. Struvite (magnesium ammonium phosphate) uroliths are amenable to dissolution using diet and antibiotics to eliminate urease-producing bacteria. A calculolytic diet (Hill's s/d, Hill's Pet Nutrition, Inc.®, Topeka, Kansas) is magnesium and phosphorus restricted, reduces urine pH and protein catabolism, and facilitates diuresis through sodium naturesis. Biochemical changes may be noticed with dietary adjustment, including reduction in serum urea nitrogen concentrations and occasionally mildly reduced albumin and phosphorus may be noted in the first month of therapy. Occasionally, elevations in alkaline phosphatase are recognized; the cause is unknown. Another diet (Royal Canin Veterinary Diet™ canine urinary SO 13™, Royal Canin USA, Inc. St. Charles, Missouri) has shown to be effective in dissolving struvite calculi in an ex-vivo model. High sodium chloride content of calculolytic diets may be contraindicated for animals with hypertension and cardiac disease as they may cause volume expansion and exacerbation of these diseases. The reduced protein content may be inappropriate for young and old animals. The increased lipid content associated with protein restriction creates concerns regarding hypercholesterolemia and the induction of pancreatitis in at-risk patients.

Appropriate antibiotic therapy must be used in conjunction with calculolytic diets. Struvite stones that form in the presence of infection are layered with bacterial colonies and mineral. Dissolution therapy results in a sustained release of bacterial pathogens as the outer mineral layers dissolve. Common causes of treatment failure include inability to control urinary tract infection, mixed or non-struvite stone composition, or poor dietary compliance.

The average duration of dissolution therapy in dogs is 3 – 3.6 months for bladder stones, with a range from 2 to 5 months. Larger calculi provide a reduced surface area relative to small calculi and therefore take longer to dissolve. Clinical signs are variable but often improve during the first 10 days of therapy in accordance with infection control. Serial radiographs are recommended at 4 week intervals to detect changes in calculi number, location and size. Medical therapy should be continued 1 month beyond radiographic clearance as calculi < 3 mm cannot be accurately detected. Abdominal ultrasound may provide a way of detecting small calculi without the invasiveness or risk of iatrogenic infections associated with contrast cystography.

The mean dissolution time for cats was 36 days (range of 14-141 days) with sterile and 44 days (range of 12-92 days) with infected struvite uroliths using Hill's s/d (Hill's Pet Nutrition, Inc.®, Topeka Kansas). Dissolution diets are not recommended for immature cats, cats with acidemia, and cats with volume expanded states.

Urate urolith dissolution involves a combination of dietary modification, urine alkalization and control of secondary infections. Protein restriction, particularly purine restriction, is the foundation of medical management. Currently there are the only two veterinary diets marketed for this purpose in dogs (Prescription diet u/d, Hills Pet Nutrition, Topeka, Kansas; Canine Vegetarian Formula, Royal Canin Veterinary diet, Royal Canin USA, St. Charles, Missouri). These diets are formulated to maintain alkaline urine. Indirectly, protein restriction alters renal medullary tonicity, by lowering blood urea nitrogen content, which limits concentrating ability. Feeding a canned diet or adding water to dry formulations further increases urine volume. Diets severely restricted in protein content are contraindicated in growing or lactating animals. Potassium citrate (initial dose 40-90 mg/kg PO q12hr) may be used to alkalinize the urine. Urine pH values over 7.5 may predispose to the formation of calcium phosphate uroliths.

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Xanthine oxidase inhibitors are used to decrease uric acid production. Allopurinol inhibits the conversion of hypoxanthine to xanthine and of xanthine to uric acid. The bioavailability of allopurinol is not affected by food. Caution should be used with allopurinol in animals with hepatic or renal dysfunction. The initial dose of allopurinol is 15 mg/kg PO BID for 4 weeks followed by evaluation of calculi size, shape and number. On average, dissolution occurs over 3.5 months (range 1-18 months). Allopurinol should not be used in patients with portosystemic shunts. Allopurinol should only be used in conjunction with a protein-restricted diet. Excessive purine precursors in the diet may predispose to xanthinuria and the formation of xanthine uroliths. If xanthine urolithiasis occurs, allopurinol should be discontinued for 1 to 2 months with continued dietary therapy to allow for xanthine dissolution.

Cystine stones can be dissolved with a combination of diet (i.e., Hill's U/D), urine alkalinization, and thiol-containing drugs. The side effects encountered with D-penicillamine make it undesirable. 2-MPG (Thiola, tiopronin) can be used at a dose of 20 mg/kg PO q 12 hr.

Dissolving stones in the upper urinary tract can be accomplished, but it generally takes far longer than dissolving bladder stones. It may take 6 to 12 months for complete dissolution of larger kidney stones.

Non-surgical techniques

Voiding urohydropropulsion is used to evacuate small to moderate size urocystoliths by flushing them out through the urethra. A catheter is used to fill the bladder with saline, the patient is held up to allow stones to settle to the bladder neck by gravity, the catheter is removed and the bladder is expressed while still holding the patient up. A general guideline is that uroliths less than 5 mm can usually be removed from male and female dogs over 8 kg and from female cats, and uroliths 1 mm or smaller can be removed from male cats. Voiding urohydropropulsion should not be used in patients with a urethral obstruction and is not ideal for patients that have recently undergone bladder surgery. Anesthesia is not needed in all animals but facilitates performing the procedure. Agents that provide analgesia and muscle relaxation are recommended. Antibiotics should be used for 3-5 days after the procedure is performed to prevent iatrogenic urinary tract infection.

Retrograde urohydropropulsion does not remove uroliths from the urinary tract; it relocates them from the urethra into to the bladder where they can be removed via cystotomy or dissolved by medical therapy. With this technique, a catheter is placed in the distal urethra and saline is used to flush the stones retrograde into the bladder. Concurrent rectal palpation to occlude the urethra allows more pressure to build up in the urethra; when the occlusion is removed, the stones will move toward the bladder.

Catheter-assisted retrieval of uroliths through a urinary catheter by aspiration is mainly used for diagnostic purposes, to collect small cystic calculi for mineral analysis. Anesthesia is not needed if the patient will allow urinary catheterization. Once the catheter is in place, saline is infused and the bladder gently agitated. The saline is removed, with small uroliths suspended in the saline. The procedure is repeated until sufficient sample has been retrieved for analysis. Use the largest catheter possible, and carefully enlarging the ports without compromising the strength of the catheter may allow larger stones to be aspirated.

Cystoscopic retrieval has been described for small uroliths (or urolith fragments following lithotripsy). These may be aspirated through the rigid cystoscope sheath after the telescope has been removed. This technique allows for retrieval of larger uroliths then catheter assistance but is limited by the inner diameter of the cystoscope sheath. During cystoscopy, a urolith basket can be used to snare urocystoliths smaller than the diameter of the distended urethra. The cystoscope and basket with urolith are then slowly withdrawn while visualizing the urethra to ensure that the urolith does not become lodged in the urethra. Transurethral rigid cystoscopy is generally limited to female patients or male patients with a perineal urethrostomy.

Laparoscopic Assisted Cystotomy

Calculi too large to be removed via voiding urohydropropulsion can be removed with laparoscopic assisted cystotomy. Stay sutures are placed in the bladder wall through a small incision in the abdominal body wall just large

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enough to pull the bladder up to the incision using a one or two fingers. Once the bladder is stabilized with the stay sutures, a small incision in the bladder wall allows entrance of the laparoscope. The bladder is inspected, and graspers or a urolith basket is introduced through the instrument sheath of the laparoscope. A stone is grasped and the entire laparoscope and stone are removed. The entire procedure is repeated until all stones have been removed. The small bladder wall incision is closed, the stay sutures released and the bladder is replaced in the abdomen, and the body wall incision is closed. Many animals can go home the same day as the procedure.

Laser Lithotripsy

Laser lithotripsy involves using cystoscopy to place a laser in direct contact with uroliths for fragmentation. Holmium:YAG laser energy is absorbed in minimal volumes of fluid with limited risk of damage to the urothelium. Following lithotripsy, cystoscopic evacuation or voiding urohydropropulsion is performed to remove fragments. Urolith composition does not influence the efficacy of fragmentation. In one report of treatment of cystic and urethral calculi, all of the female dogs, female cats and approximately 80% of male dogs were rendered urolith free using a Holmium:YAG laser. Some male dogs were too small for the procedure and some dogs had to have follow-up cystotomy to remove the larger uroliths. Laser lithotripsy is limited by procedural time. With large uroliths or a large urolith burdens, the time required for this procedure may be lengthy, and cystotomy may be a better approach.

Cystotomy/Urethrotomy

Cystotomy is a commonly used method to retrieve uroliths from the bladder. Complications with cystotomy are rare; however, urine leakage is possible. Post-operative imaging is recommended because up to 20% of uroliths were not removed after the cystotomy was performed.

If urethroliths cannot be retropulsed into the bladder or removed via voiding urohydropropulsion, a temporary urethrotomy may be required. In male dogs with frequent obstruction from small uroliths despite medical management (i.e., Dalmatian with urate urolithiasis), a permanent urethrostomy may be performed. The main complication of urethrotomy is hemorrhage, which may persist up to seven days postoperatively. Urethral stricture is uncommon.

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Dan McManus and his service dog, Shadow, hang-glide together outside Salt Lake City, Utah on July 22. The two have been flying together for about nine years with a specially made harness for Shadow.

Jim Urquhart / Reuters

A man rides a bicycle as he carries his dog on his shoulders in Mumbai, India on July 9.

Danish Siddiqui / Reuters

In the fall of 2011, photographer Theron Humphrey and his beloved coonhound Maddie set off on a year-long, 65,000 mile journey across the United States. Dubbed "a super serious project about dogs and physics," the document of Humphrey and Maddie's epic journey is photographically captured in "Maddie on Things" (Chronicle Books).

Theron Humphrey / Chronicle Books

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Tern Chick, Sri Lanka
The progeny, a solitary chick amidst the adult great crested terns, taken from a prone position with a wide-angle lens at a breeding site on a Sri Lankan island in northwestern seas.
Photograph by Lalith Ekanayake

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