

Central Connection

Your Connection to Valley Central - WINTER 2010



Leaders in Specialty Care

Greetings to you all:

As we enter a New Year we will strive to continue to enhance our partnering efforts and communications with our referring practices. As we look back over the past year, we have witnessed a year of some growth even with challenges in the economy. A few highlights in 2010 included Dr. Salvador Galindo and Dr. Ezra Steinberg joining our Surgical Department and the joining of Susan Bulanda our Behaviorist.

In this first quarterly issue of CENTRAL CONNECTION, we have included articles written by Drs. Candace Carter, Carlos Hodges, Robert Peiffer and Veterinary Nurse Lauren Kelchner. Our newsletter will keep you updated on medical topics, as well as new services being offered at VCVRC as a part of our ongoing commitment to our clients and the veterinary community. The doctors and staff at Valley Central want to thank you for your sustained and continued support. Our goal is to provide the highest standard of veterinary care for your clients. We understand that our success as a referral center is directly linked to your confidence in our veterinary service for your clients and patients. Please do not hesitate to contact any doctor or staff member with questions or concerns regarding any aspect of our veterinary hospital services.

Allyson Tolliver, Hospital Administrator

IN THIS ISSUE:

- **INTERNAL MEDICINE**
Status Epilepticus
- **SURGERY**
Minimally Invasive -
Minimal Drawbacks
- **OPHTHALMOLOGY**
Intraocular Lenses
in Canine Cataract
Surgery
- **VETERINARY NURSE TIP**
Techniques for Dextrose
Supplementation

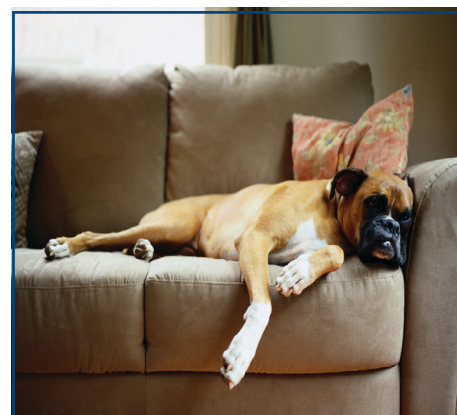
VCVRC
210 Fullerton Avenue
Whitehall, PA 18052
Phone 610-435-1553
Fax 610-435-6378
www.vcvrh.com

Welcome Dr. Ezra Steinberg to our Surgical Department:

We are very pleased to announce Dr. Ezra Steinberg has joined our surgical team at Valley Central Veterinary Referral Center. Dr. Steinberg grew up in Orange County, NY and went to college at Wesleyan University in Middletown, CT where he majored in neuroscience.

He graduated cum laude from the University Of Pennsylvania School Of Veterinary Medicine in 2006 and completed a one-year small animal internship in medicine and surgery at the Oradell Animal Hospital in Paramus, NJ. He then returned to the University of Pennsylvania and completed a 3 year residency in small animal surgery.

Dr. Steinberg's professional interests include minimally invasive surgery such as laparoscopy, thoracoscopy, and arthroscopy. He has lectured at several international orthopedic conferences on the subject of Tibial Tuberosity Advancement for dogs with cranial



cruciate ligament injury. He is published in the Journal of Small Animal Practice and has also worked as an instructor in wet labs at the Penn Annual Conference.

Dr. Ezra Steinberg is currently on leave for board preparation for the February Exam. He will be back in the office the second week of February.

Dr. Ezra Steinberg surgical schedule consist of seeing patients Monday through Thursday. To refer a patient to Dr. Steinberg please have your client(s) call 610-435-1553.



INTERNAL MEDICINE UPDATE

By Candace Carter, DVM, PhD, DACVIM

Status Epilepticus

Seizures are a common emergency seen in small animal practices. Owners are understandably alarmed when their pet seizes and for good reason as it requires immediate medical intervention to avoid neurologic morbidity. A patient in status epilepticus (SE) presents a difficult challenge, as it is imperative to stop the seizure to prevent significant repercussions to the brain. SE is defined as two or more discrete seizures with incomplete recovery of consciousness between the events. SE can be confused with cluster seizures, which are two or more seizures occurring over a brief period of time with complete recovery of consciousness between events.

Generally speaking, seizures are caused by a disruption in GABAergic function. GABA typically functions to inhibit post-synaptic potentials in the hippocampus by hyperpolarizing synaptic membranes. Loss of inhibition of excitatory input from other regions of the brain creates an imbalance that results in a seizure. SE results when the mechanisms that stop an isolated seizure fail. Numerous mechanisms are likely to contribute to this failure.

Interestingly, a study of 156 dogs admitted to Ontario Veterinary College revealed that primary epilepsy was the cause of SE in 26% of hospital visits while a structural cause of epilepsy within the brain was identified in 35% of the visits. Reactive epilepsy defined as a seizures caused by systemic disease, intoxication and metabolic derangements was only identified in 6.7% of hospital visits. This suggests that diagnostic CNS imaging of our first time seizure patients may be the most rewarding diagnostic step.

The goal of treating SE is to stop the abnormal cerebral electrical activity and thereby minimize cerebral damage. The severity of brain damage correlates best

with hypoxia and while a metabolic acidosis is common, a respiratory acidosis needs immediate medical attention. Hypotension, fever and duration of the seizure are also associated with the propensity for more substantial brain damage.

Medical treatment for SE generally includes short acting control of seizure with diazepam or propofol while waiting for longer-acting anti-epileptic drugs, historically, phenobarbital to reach steady-state levels and control seizures.

Levetiracetum (Keppra[®]) is an alternate, effective, injectable option for the treatment of SE. While its mechanism of action is not completely understood it is an ideal drug to use in combination with other anti-epileptic medications as it

undergoes minimal hepatic metabolism in dogs and more than 80% of the drug is excreted unchanged by the kidneys. It is not plasma protein bound and side effects are minimal. To control SE it can be given by slow IV push at 20 mg/kg and repeated for a total dose of 60 mg/kg at one time. It can be continued at 20 mg/kg PO t.i.d. for ongoing seizure control. Food does not affect absorption and side effects, including sedation, are minimal. A generic form is available making it much more affordable. We have successfully treated SE with Keppra[®] and it is a much more desirable option than a CRI of propofol which often needs to be used at anesthetic doses to accomplish seizure control.

¹ Bateman & Parent, JAVMA 1999, 1463-1468





SURGERY UPDATE

By Carlos Hodges, DVM, MS, PC

Practice Limited to Surgery

Minimally Invasive - Minimal Drawbacks

We are pleased to announce our partnership with Karl Storz in launching our minimally invasive program at Valley Central Veterinary Referral Center. Storz's goal and focus is to develop Valley Central into a training center for minimally invasive procedures in the Northeast (Fig. 1).

With more clients choosing laparoscopic surgery for their own medical procedures, it is only natural that they are drawn to minimally invasive surgery (MIS) for their own pets. Compared with traditional surgeries, which require large incisions and can cause collateral tissue damage, MIS offers smaller incisions, which can greatly reduce the surgical insult to patients. The end result is decreased morbidity and pain and faster recovery times.

A recent study (Culp '09 Vet Surg) performed to examine the proven benefit of MIS compared laparoscopic and open ovarioectomy in dogs. Dogs were randomized into two groups and their levels of pre and post-operative activity were measured using activity monitors placed on their collars. The MIS group showed activity levels that were close to pre-operative levels almost immediately after surgery. The dogs that had the open surgery did not return to their normal activity level for 4-5 days. Laparoscopic spays offer up to 65% less pain than traditional surgery. This study documents the difference in pain levels in open versus MIS. Our sealing cutting device is the Force Triad by Valley Lab. It fuses vessels up to 7mm.

Another area where MIS makes a big difference is in the chest. Pain levels that animals experience after a thoracotomy have been documented. Avoiding a thoracotomy incision and the benefit of relieving the magnitude of that animals pain can be significantly diminished using a minimally invasive approach.

Types of laparoscopic procedures that we perform include but are not limited to gastropexy (Fig. 2), ovariohysterectomy (Fig. 3), ovarioectomy, gastropexy, organ biopsies, enterostomy tube placement, cryptorchid castration, cystotomy for calculi removal, bladder polyp removal, cholecystectomy, adrenalectomy, nephrectomy, abdominal exploratory and cancer diagnosis.

Types of thorascopic procedures that we perform include but are not limited to pericardectomy for pericardial effusion, lung biopsy, lung lobectomy, persistent right aortic arch and thoracic duct ligation for chylothorax.

Types of cystoscopic procedures that we perform include but are not limited to ectopic ureter repair with the diode laser, debulking urethral & bladder cancer, and transcervical insemination.

Types of arthroscopic procedures that we perform include but are not limited to OCD (Fig. 4), FCP, UAP, meniscal repair, osteoarthritis diagnosis, septic joint lavage, shoulder instability, and biceps tendon injuries.

The cost of MIS for your clients and their pets will be the same as for conventional surgical procedures currently being performed. There will be no price increases. I encourage you to please call to schedule a CE day with us to observe MIS. Schedule your own pet or pets for a OHE, gastropexy, or both and assist with the procedure!! We are performing two OHE gastropexies weekly for the LCHS.

Shoulder OCD along with stifle and elbow explorations have been performed. All of the surgeons at Valley Central perform MIS. Feel free to call any of the surgeons with any questions.

Total Hip Update

Our total hip replacement program is off and running. Since August we have implanted nine total hips in animals with early or advanced hip dysplasia and varying stages of osteoarthritis. I would like to thank Dr. Hassinger for his support.

Over five months out, all dogs have normal clinical function and no complications have been encountered. One dog with a 7 year cranio-dorsal hip luxation required implant removal as his muscle memory continued to displace the femoral head cranio-dorsally despite good positioning of the implants. He's doing very well with his FHO.

The owners have been amazed at the pre and post-op clinical function in all animals. One dog "Tucker", a 9 yr yellow lab with bilateral severe hip osteoarthritis jumped the kitchen barrier the second week after his total hip. Mrs. Carroll said "If I had realized how active he would have become I would have done this a long time ago." Thank you for your continued support.



Fig. 1: Tower



Fig. 2: Gastropexy

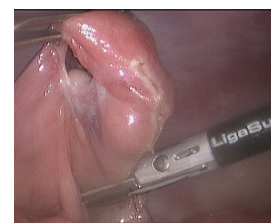


Fig. 3: Spay (Ligasure)



Fig. 4: OCD



OPHTHALMOLOGY UPDATE

By Robert Peiffer, DVM, PhD, DAVCO

Intraocular Lenses in Canine Cataract Surgery

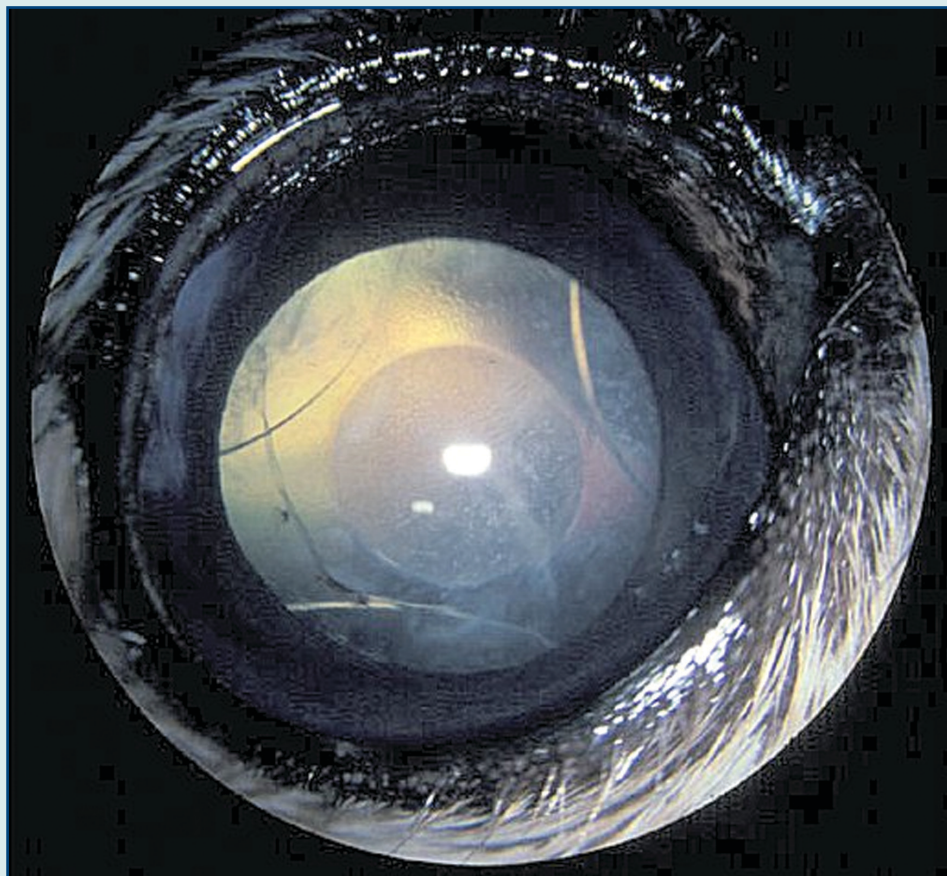
Perhaps the single most exciting advance in veterinary ophthalmology over my 30 year career has been the technologies that have made cataract extraction a predictably reliable out-patient procedure with a 90-95% success rate. These advances include the routine use of microsurgery; the availability of high quality, minimally reactive ophthalmic suture; the concepts of closed chamber surgery with the use of ultrasound, irrigation and aspiration to facilitate total removal of cataractous lens material through a small incision; understanding of the role of the vitreous and automated vitrectors; and the availability of intraocular lenses to optimize visual rehabilitation of our patients. These advances in veterinary ophthalmology have paralleled their application in human ophthalmology; this short discussion will focus on the latter.

I was privileged to have been involved in the early development of canine intraocular lenses (IOLs) in the mid-1980s; in collaboration with my French friend and colleague Jacques Gaiddon we determined the required optical and physical properties, notably the requirement of a 41 diopter implant (AJVR 52:781-783, 1991), developed the first polymethylmethacrylate canine IOL, and published the first large series of cases which documented the safety of the technique (JAAHA 27: 453-462, 1991). Subsequently Jacques developed the first soft acrylic implant, the Cani JAG; we subsequently published a series of cases (JAVMA 216:875-877, 2000) and this IOL was my implant of choice over the years that it was produced.

Performing cataract surgery without implanting an IOL leaves a canine patient quite far-sighted and without correction these patients while reasonably functional (they see large and distant objects well and indeed experience a very reasonable quality of life, compared to an animal with dense cataracts), they have difficulty with near vision, such as playing with their toys and negotiating stairs. To get an idea of what an aphakic canine sees, ask your ophthalmologist to put a +14 diopter lens in front of your best corrected vision when you go for your next annual ophthalmic examination, then try to read the chart.

IOL implantation has become the standard of care in human ophthalmology and in my opinion should be in veterinary

ophthalmology as well. There is good scientific data that supports the safety of the procedure-in less than 2% of canine cases IOL-associated inflammation or dislocation of the pseudophakos may occur, and these are almost always manageable problems (although an occasional IOL will require explantation). There is evidence that IOLs may limit fibrosis of the posterior capsule post-operatively. The small risk and minimal additional cost (about \$300/eye) are offset by the quality-of-life benefits provided by the procedure. I offer this option to all of my cataract patients, and both surgeon and client have been pleased with the outcome when IOL implantation is elected.





VETERINARY NURSE TIP

By Lauren Kelchner, Veterinary Nurse

Techniques for Dextrose Supplementation

Sometimes patients come to our hospital due to hypoglycemia or low blood sugar and are in need of glucose supplementation. We also have patients that present with extremely high blood glucoses (hyperglycemia) and have a need to be placed on an insulin CRI (Continuous Rate of Infusion) with dextrose added. The numbers and percentages of adding dextrose to an intravenous fluid drip can be confusing. The easiest way to add the correct amount of dextrose to your drip or CRI is to think about the amounts in percentages.

For Example: If you take a liter of NaCl and add 100mL of 50% Dextrose you will end up with a 5% solution. If you take a liter of NaCl and add 50mL of 50% Dextrose you will end up with a 2.5% solution, and so on. Here is a chart to make things a little clearer.

Solution:	50% Dextrose added:	Fluid Amount:
5% =	100mL in	1 Liter bag
2.5% =	50mL in	1 Liter bag
5% =	50mL in	500mL bag
2.5% =	25mL in	500mL bag

For every 5% solution needed you would add another 100mL of 50% Dextrose, or half that amount in a smaller bag, and continue to half the amount as needed.

There are also times when we use 50% Dextrose as a CRI for our cases of hyperglycemia and Diabetes Mellitus. This chart has become very useful for an insulin CRI, especially in patients that are not eating well or at all in some cases.

Use an insulin dose of 2 units per kilogram for canine patients and 1.1 units per kilogram for feline patients.

If blood glucose is (mg/dl):	Fluids:	Insulin in 250 mL (mL/hour):
> 250mg/dl	0.9% NaCl	10
200-250	0.45% NaCl and 2.5% Dextrose	7
150-200	0.45% NaCl and 2.5% Dextrose	5
100-150	0.45% NaCl and 5% Dextrose	5
<100	Stop Insulin Infusion	0

(Plunkett, 2000)

In most of these cases a blood glucose is taken every 2-6 hours, and an indwelling catheter is placed to reduce the stress of constant blood draws on the patient.

If you notice in this chart, for a blood glucose of 150-250mg/dl a bag of 0.45% NaCl and 2.5% Dextrose (or "1/2 and _" as it is commonly referred to in veterinary medicine) is used. However, for glucoses from 100-150 mg/dl the dextrose in the drip changes from 2.5% to 5%. How much 50% dextrose do you need to add? If we refer to the first chart in this tip, in a liter solution every 2.5% = 50mL, so you would add 50mL of 50% Dextrose to a liter of "1/2 and _" to make a 0.45% NaCl and 5% Dextrose solution. In this case though, they use 250mL of fluids as a reference or 1/4 of a liter, so you would take 50mL and divide by 4. So, to make 0.45% NaCl and 5% Dextrose in a 250mL bag you would add 12.5mL of 50% Dextrose (plus e.g. Humulin R as your insulin). If you keep track of the percentages and what they equal, your numbers are less likely to become confusing.

If you are using the above method of making up an insulin CRI, remember to change your insulin bag and line every 24 hours to insure efficacy of insulin. Make up insulin bags when you need them, as you may not use every bag each day especially in patients starting out with a very high blood glucose.

References:

1) Plunkett, Signe J, D.V.M. (Emergency Procedures for the Small Animal Veterinarian), pg. 199.

Continuing Education Schedule

Monthly Case Conferences:

The last Thursday of the Month from 12 PM-1 PM

Discussions about clinical cases with medicine and surgical implications.

Lunch will be provided, courtesy of Hills, by Dr. Kristin Dance

Until our new web-site is launched, please refer to our Facebook page for updates to our CE schedule. You may also email Dr. Carlos at Carlos@vcvrh.com with any questions about upcoming lectures.



www.vcvrh.com



VALLEY CENTRAL

VETERINARY REFERRAL CENTER

210 Fullerton Avenue
Whitehall, PA 18052

VCVRC has been serving the Lehigh Valley and surrounding areas since 1996.
We are dedicated to providing state-of-the-art veterinary care for your patients.

Doctors at Valley Central Veterinary Referral Center

SURGERY

Carlos Hodges, DVM, MS, PC

Practice Limited to Surgery

Salvador Galindo, DVM

Practice Limited to Surgery

Ezra Steinberg, VMD

Practice Limited to Surgery

INTERNAL MEDICINE

Ronald Hodges, DVM, PC, DACVIM

Candace Carter, DVM, PhD, DACVIM

OPHTHALMOLOGY

Robert Peiffer, DVM, PhD, DACVO

Mary Landis, VMD, MA

Practice limited to Ophthalmology

CARDIOLOGY

Dennis Burkett, VMD, PhD, DACVECC, DACVIM

Ellen Davison, VMD, DACVIM

NUCLEAR MEDICINE

Ronald Hodges, DVM, PC, DACVIM

BEHAVIOR

Susan Bulanda, MA

Certified Animal Behavior Consultant