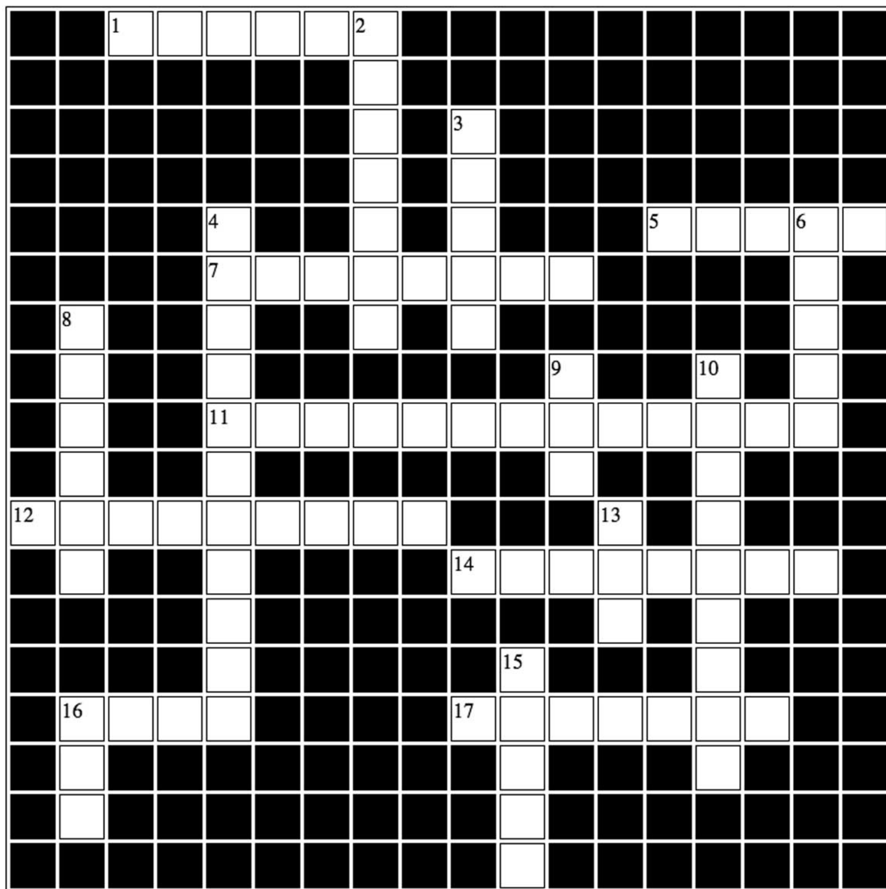
Issue 15. October 2009

The Next Step

E X P E R T I S E • T E C H N O L O G Y • C O M P A S S I O N

Imaging Crossword - by Chris Warman



Across

1. "........... Harris", growth plate fracture
5. On a ventrodorsal adbominal radiograph, the question mark shaped structure "......... intestine"
7. Lung pattern characterised by ill-defined, poorly marginated, amorphous infiltrates
11. Mirror image organ arrangement
12. Abnormal vertebra more common in brachycephalic breeds
14. Absence of internal echoes
16. Archiving system used for electronic storage of images (acronym)
17. Radiopaque structures in the bladder

Down

2. Accidentally discovered x-rays on 8 November 1895
3. NZ veterinary family headed by esteemed veterinary pathologist
4. One cause of shifting lameness in juvenile large breed dogs characterised by increased medullary radiopacity in long bones
6. "Ground .... appearance", loss of serosal detail on abdominal radiograph
8. "........... excavatum", funnel chest
9. Contrast study of choice for evaluation of the renal pelvis and ureters (acronym)
10. Small nodules of pulmonary calcification
13. Cardiac disease characterised by increased ventricular size and impaired function (acronym)
15. Surname of premiere NZ batsman and hair transplant recipient
16. Autosomal dominant renal disease common in Persian cats (acronym)

Please fax, email or post your answers to VSG® by 31 October, and ensure you include your name, and clinic. All correct answers go into the draw for a bottle of Dom Perignon or a veterinary imaging textbook (choice at discretion of Chris Warman). Answers available at www.vsg.co.nz from 1 November 2009. Congratulations to Michael Hardcastle of Massey Heights Veterinary Clinic in Auckland, who won the prize for the Medicine Crossword in our July newsletter. Michael chose the bottle of Bollinger as his prize.

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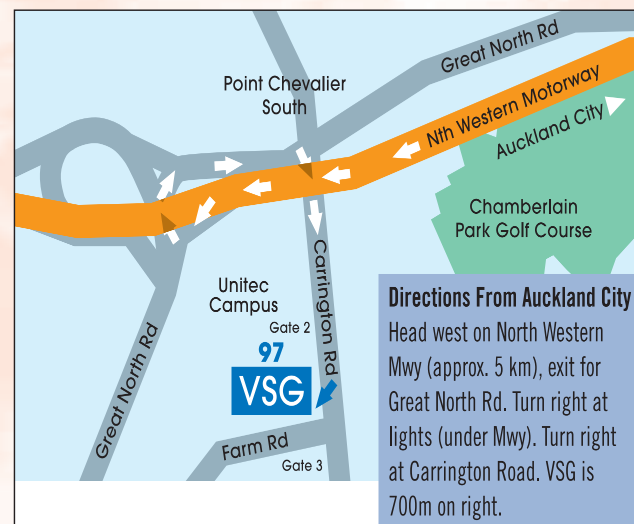
The Veterinary Specialist Group hospital is located on the Unitec campus situated between Gates 2 and 3 on Carrington Road.



Spreading The Word

Mark addressing local referring vets at a VSG® seminar.

Achieving specialist status in the veterinary profession is a great honour that takes considerable sacrifice and hard work. This status comes with many responsibilities including the requirement to be at the "cutting edge" of your chosen field with all of the latest scientific knowledge, techniques and equipment. One of the other responsibilities taken on by a veterinary specialist is that of dispersing the skills and knowledge we have learned and hopefully cerebrally maintained.

Since its inception, the specialists and clinicians at VSG® have been very active in supporting the Continuing Professional Development of New Zealand's veterinarians. Many readers may not be aware of the breadth of continuing education modalities available to veterinarians in this age of instant information from local, regional and national meetings to online courses and forums.

At VSG®, we provide the local referring veterinary public with three in-house seminars per year (The VSG® Seminar Series). These seminars are proudly supported by Hill's and Pfizer with perhaps the high quality food and drink as the main reason we have no trouble filling the room. Usually, two or three interactive talks are given, often with a general theme followed by plenty of time for questions and answers. The final seminar of the series also provides an opportunity for the Pfizer VSG® intern to present the findings of their research project.

Every year, VSG® specialists present 2-3 times at the regular and active Auckland Veterinary Society meetings. These occasions provide an opportunity for us to get out of the hospital and chat with local vets. Many of the presentations have involved sharing some recent knowledge from the international specialist symposia we attend in Europe and the United States.

A representative of VSG® has presented at every one of the NZVA Annual Conferences that the Companion Animal Society (CAS) has been involved with since 2004. Richard Jerram is the Chairman of the CAS Technical Advisory Group responsible for organizing the conference scientific structure and approaching speakers. Despite disappointing attendance by New Zealand veterinarians at some of these meetings, with topics ranging from Fluid Therapy to Renal Transplantation, the quality of both the conference content and speakers (national and international) has been the equal of any international conference. More recently, VSG® specialists have tutored topics in medicine, surgery, and nursing in the popular VetScholar online courses. This allows participants to contribute their views and ask questions through online forums.

Over the last eight years VSG® has received a number of grants from the Companion Animal Health Foundation for clinical research projects including "Pancarpal arthrodesis in working dogs", "Veterinary attitudes to FIV vaccination", "Owners perception of quality of life in patients receiving carboplatin", "Evaluation of six-lead electrocardiograms obtained from dogs in a sitting position or sternal recumbency" and "Lumbosacral stabilization". These studies have been or are being prepared for publication in peer-reviewed journals including the New Zealand Veterinary Journal.

VSG® Assists With The Successful WSAVA Conference Bid

In July 2009, Richard Jerram and CAS President Pieter Verhoek travelled to Brazil, where they bid for and won the right for New Zealand to host the World Small Animal Veterinary Association (WSAVA) World Congress in Christchurch in March, 2013. This will be the largest veterinary conference ever held in this country with around 2000 delegates expected to attend from all over the world. A tremendous amount of support is being sought from the New Zealand veterinary community to help make this event a success and showcase our beautiful country to the veterinary world.

VSG® And The Australian College Examinations - by Mark Robson

Dr Mike Coleman and Dr Danielle Bowles have been heavily involved in the Australian College Fellowship and Membership examination process. Mike has served as an examiner for medicine Fellowship candidates and for two years has been chairman of the Chapter Education and Examination Committee. Mike was also head Membership examiner in 2008. Much of this considerable undertaking is done in his spare time!

Danielle spent many hours working on both the written and oral components of the medicine Membership exam and spent two days on the Gold Coast for the oral examination.

These efforts from the Medicine team in Australian College examination activity together with Dr Darren Fry's previous work reflect VSG®'s long term commitment to continuing education.

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Meet The Radiology Team

Radiology is the smallest of the Veterinary Specialist Group departments consisting of 1 Radiologist and 3 Nurses.

A man of many talents, from your basic D.I.Y. boss man, to I.T. guru, Chris hides his talents well. When something in the department breaks down, the noise of someone rummaging through the cupboards can be heard down the corridor, an indication that he's onto the problem. Shortly after this, the clank and clatter of machine parts being taken off the automatic processor or out of a computer hard drive can be heard, with the odd muttering here and there. For R & R away from the practice, Chris likes to indulge in a little fly fishing while on family holidays.

Pam, or Pammy as everyone likes to call her, is our longest serving nurse to have worked with Chris. Since taking up Pilates at the beginning of the year, Pam has been well disciplined with her attendance to her early morning classes before coming into work. Pam has just welcomed the arrival of her first homo-sapien grandchild from son Paul and his wife Megan, and also the return of daughter Heather from Scotland with partner, Jaime. But wait, there's more, Pam also loves to attend teddybear classes on Wednesday evenings where her talents at teddybear making have been displayed to members of the staff.

Leash is second in the line of long serving nurses, having worked an arduous 8 years with Pam and Chris. In this 8 years she has been known to turn up on time on at least three separate occasions. A talented amateur photographer in her own right, she also enjoys cooking for friends, holidaying in the far north at her parents property, and spending time with her partner, their two dogs Kura and Pete, three cats, and Noah the rabbit. A dedicated Pearl Jam fan, Leash will be attending their concert in November with family and friends. Leash is the only Maori girl we know of that has 24 hours of non-stop Pearl Jam on her computer, or was it iPod, well it was one of them. Her passion for this rock band doesn't stop there; she has, with no doubt, all the Pearl Jam compilation albums, and the live versions too!

Rau is the newest, youngest and prettiest of the Radiology team and comes all the way from the tiny island of Rarotonga. Most weekends you can catch her playing netball (aka drinking) with her friends or watching a game of rugby league. When not out with friends, Rau likes to spend time with her Labrador cross, "Boss".

The radiology team from the left: Leash, Chris, Rau and Pam.

Meet Our New Internal Medicine Specialist Robyn Gear BVSc, DSAM, Diplomate ECVIM-CA

Robyn graduated from Massey University in 1997 and spent a couple of years in small animal first opinion practice before venturing overseas. She completed an internship at the Royal Veterinary College before commencing a Small Animal Medicine Residency at Cambridge University. She obtained the Royal College of Veterinary Surgeons Diploma in Small Animal Medicine and became a Diplomate of the European College of Veterinary Surgeons in Small Animal Medicine in 2004. Robyn continued to work at Cambridge University as a Clinical Oncologist and Physician. She is interested in all aspects of internal medicine and especially oncology, haematology, immunology and endocrinology.

Robyn has published articles on primary hyperparathyroidism and immune mediated polyarthritis. She has ongoing research interests in multidrug resistance and multiple myeloma and is hoping to set up research projects in New Zealand.

After spending 9 years overseas it was time to come home. Robyn works for the Veterinary Specialist Group on Thursdays and Fridays. The rest of her time is spent in negotiation with two preschoolers and enjoying the beautiful New Zealand outdoors.

Robyn has now been recognized by the VCNZ as a registered specialist.

Reconstruction of Antebrachial Tumour Resections - Oz - by Alex Walker

Surgical excision of tumours from the antebrachial region offers both advantages and challenges to the surgeon. We frequently encounter soft tissue sarcomas and mast cell tumours in the antebrachial location and these tumours require wide local excision which results in large defects to close. One of the advantages of this area is that there is a deep fascia present on all surfaces of the antebrachium proximal to the carpus and distal to the elbow. This acts as an excellent barrier to tumour penetration and can be removed deep to the tumour. Proximal to the elbow the lateral fascia of the triceps can be removed without any post-op dysfunction. The challenge here is that skin is in short supply and wide excision leads to defects that cannot be closed primarily. The options for closure include:

1. Axial pattern flaps are pedicle flaps that incorporate a direct cutaneous artery and vein into the base. The choices for this location are thoracodorsal flap or the superficial brachial flap.
2. Axillary fold flap which is a subdermal plexus flap that can be advanced or rotated into the defect.
3. Pouch flap where the limb is positioned beside the thorax and a bipedicle flap is raised and placed over the defect. The pedicles are partially transacted at 10-14 days post-op and then gradually (every two days) released and the flap sutured to the medial aspect of the defect.
4. Healing by second intention with mesh or punch free skin grafts placed in the granulation bed.

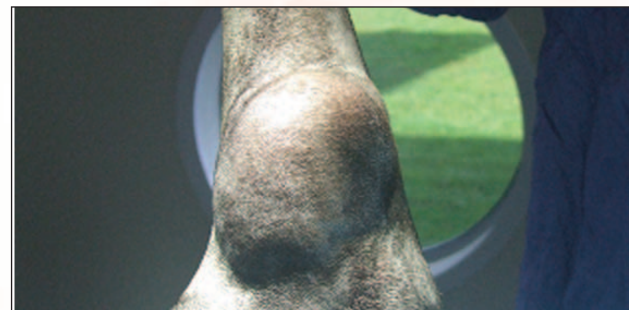


Photo 1. *Large soft tissue sarcoma on the lateral elbow/antebrachium.*

Oz was referred by Dr Julia Giles of FVC Thames for removal of a large soft tissue sarcoma on the lateral aspect of the proximal antebrachium (see photo 1). I chose a superficial brachial axial pattern flap because of the ability to resect and complete with one procedure and without the major dissection of a thoracodorsal flap. This flap is raised from the cranial elbow to the shoulder with the lateral and medial borders determined by the humerus. The superficial brachial is a small direct cutaneous artery that is relatively fragile so meticulous dissection is required in the flexion angle of the elbow. The mass was removed with 2cm margins

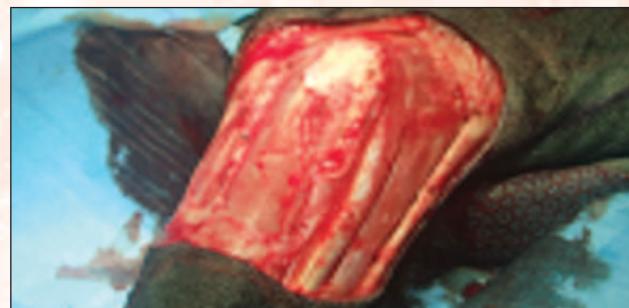


Photo 2. *Resultant defect with removal of deep fascia.*

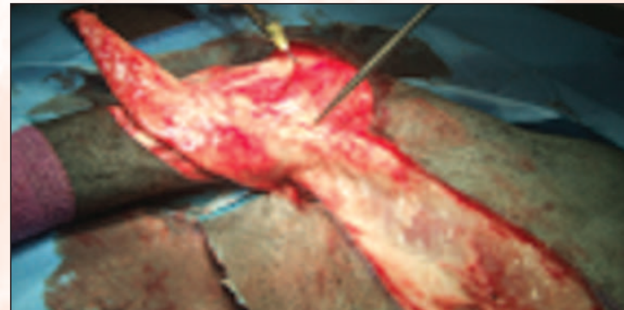


Photo 3. *Flap raised from the elbow to shoulder. Superficial brachial vessels identified.*

and including the deep antebrachial fascia (see photo 2). The flap was raised and rotated into the defect – note the small brachial artery (see photo 3-4). Bandaging was avoided because of potential occlusion of the blood supply in the base of the flap. A seroma developed on day four post-op and this required the placement of a penrose drain. This problem resolved and we had 100% flap survival. This is a photo at sutures out (see photo 5). The histopathology showed a grade one soft tissue sarcoma with close but clean margins.

Photo 4. *Flap rotated and sutured in place.*

Recently there have been studies questioning the need for 3cm margins during excision of these tumours. In some papers the completeness of surgical margins has not been predictive of local recurrence. In these papers curative intent surgery was still attempted and local recurrence rates were not significantly worse if the margins were "dirty". This has lead to some discussion of redefinition of wide surgical margins from the 2-3cm to a more conservative 1-2cm. It is important to recognise that there is a difference between curative intent surgery with dirty margins and marginal intent surgery with gross tumour burden left behind. Curative intent surgery should always be attempted and reconstruction planned preoperatively. Remember, these cases are won or lost in the planning, long before the blade is fitted to the scalpel handle.

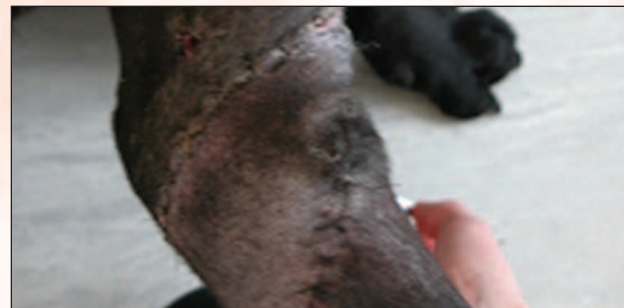


Photo 5. *Flap at suture removal showing 100% survival.*

Dutch Courage Pays Off For Oz - by Jane Finlayson, Backbone Marketing Ltd

When Mario & Jeanien van de Geer first arrived in New Zealand from Holland one of the first things they got was a dog. They, along with their pre-school son René, couldn't refuse the cute black Labrador puppy sitting in the pet store and so Oz joined their family. As Oz grew so did the family with the addition of daughter Gabrielle, who is now 6 years old.

Now 8 years old Oz has retained his playful, if not sometimes clumsy, personality. Jeanien says "He is such a wonderful family pet, careful and caring with the children yet protective as well and will always let us know if anyone comes to the house."

Recently when Jeanien noticed a lump on his stomach she took him to the vet to have it checked out. This turned out to be a benign cyst common in Labradors and they were told to expect more.

Shortly after this the van de Geers moved to Thames and they noticed another lump, this time on his elbow. Reassured from the previous vet visit they didn't take him to the vets in the first instance. However the lump continued to grow and Jeanien's gut instinct told her that something was not right.

When they arrived at FVC Veterinary Services in Thames Dr Julia Giles was suspicious that the now 4.5cm lump may be bad news. She performed a biopsy, checked the cells under the microscope then not liking what she saw sent the sample to the laboratory. The results confirmed soft tissue sarcoma, and unwilling to attempt the removal of such a large tumour in such a tricky location Julia recommended referral to VSG®.

Julia says "I always refer when I feel that it's in the best interests of the animal and I've found that owners really appreciate that. They become great clients because they know you're doing what's best for their pet."

The practice rang VSG® and the van de Geers saw Alex Walker the next day. Julia believes having Oz seen so promptly was great and made the prognosis for Oz that much better.

Having discussed the options and viewed the x-rays, Jeanien says the decision to proceed with the surgery was easy because Oz was so fit and healthy in every other way. So surgery proceeded with the tumour being successfully removed.

"Oz was great through all this, with his usual positive attitude. It has been a challenge to keep him quiet for the wound to heal but we can start walking him now. He can't wait to get back into the bush and water so he's back to his old self."

The van de Geers were impressed with the experience at VSG®, because the people were warm and caring and really understood how much Oz means to their family. "We're really grateful to VSG® and FVC for everything they've done to get rid of Oz's tumour – he was too full of energy and life to give up on."

Use of The Term "Cardiologist" in Veterinary Medicine - by Mark Robson

Recently there has been some blurring of the lines when it comes to using terms such as specialist, cardiologist and dermatologist. Obviously specialists have invested years of hard work in the training needed to achieve specialist status and feel strongly that only a registered specialist should be able to claim such a title.

The Veterinary Council of New Zealand (VCNZ) has indicated strongly on at least 2 occasions that terms such as cardiologist and dermatologist are strongly associated in the public mind with specialist status, parallel to the situation in human medicine. The VCNZ has clearly stated that such terms should not be used in our profession unless the individual concerned is in fact registered as a specialist in that discipline.

At this time there are NO VETERINARY CARDIOLOGISTS practising in New Zealand.

The discipline of cardiology has two main aspects; the medical knowledge to manage heart patients and the imaging expertise to obtain accurate echocardiograms to properly diagnose the underlying condition. At VSG® and Massey University there exists a level of expertise that comes closest to matching that of a true cardiologist. With the combined skills of experienced ultrasonographers and the medical expertise of Internal Medicine Specialists the majority of heart patients can be diagnosed and treated. Dr Mike Coleman's research interest and one of his peer-reviewed papers was in the discipline of cardiology.

Where appropriate we have access to certified cardiologists overseas for advice and are constantly working to improve the services on offer for the pet-owning public. We encourage you to examine the qualifications and certification of any individual who claims expertise in cardiology or any other veterinary discipline. Please ensure that your clients do not find out after the fact that the person you referred them to had no post-graduate qualifications at a specialist level.

Tabitha - Defying The Odds - by Mike Coleman

Tabitha

Tabitha is an 18 year old speyed female domestic cat that presented to the medicine team at VSG® last December with a history of lethargy and weight loss. She had been presumptively diagnosed with inflammatory bowel disease and treated with oral budesonide. An abdominal ultrasound showed a thickened, nodular pancreas with irregular margins. The leading differential diagnoses included neoplastic and chronic inflammatory disease.

Cytology of the pancreas can often be helpful. As we were interested in Tabitha's intestine as well, surgical biopsies of the pancreas and gastrointestinal tract were performed. Interestingly the pancreas appeared grossly normal at surgery. Histopathology however gave a diagnosis of pancreatic carcinoma. This goes to show that you cannot make a microscopic diagnosis with your eyes! Mild-moderate chronic inflammatory changes were seen in the biopsies of the small intestine. Thoracic radiographs showed no evidence of neoplastic disease in the lungs.

The prognosis for pancreatic carcinomas has been reported to be uniformly bad. In most cases it has metastasised before it is diagnosed. This was not the case with Tabitha. In one recent case series all cats had died or were euthanased within 7 days of diagnosis. However, as often is the case in veterinary medicine, case numbers are very low and it is not always possible to draw statistical conclusions from the data we have.

Tabitha has a strong will to live and a very dedicated owner and the decision to trial IV carboplatin chemotherapy and oral piroxicam was made. Tabitha ended up having at least five doses at three week intervals over the following few months. She initially had problems with myelosuppression and gastrointestinal upset. Myelosuppression is a common side effect of carboplatin use in cats. The gastrointestinal upset occurred early in the course of treatment and may have been a result of the underlying disease (pancreatic carcinoma or inflammatory bowel disease), carboplatin administration or the piroxicam. The piroxicam was discontinued and the intensity of the carboplatin reduced. The gastrointestinal signs resolved and did not recur.

Follow up abdominal ultrasound in April showed complete ultrasonographic resolution of the pancreatic changes. Tabitha has had monthly checks since then and has continued to maintain her weight and eat well.

This month we have seen some nodular changes to the pancreas returning on ultrasound examination. This could indicate tumour recurrence. Despite this change Tabitha is still doing very well, now 8 months after the original diagnosis.

This has been a great case and it has been very rewarding to see Tabitha defying the odds.

Attitude and Gratitude Pay Off For Tabitha - by Jane Finlayson, Backbone Marketing

As a tiny kitten Tabitha was adopted from the SPCA by Sandra & Alister Bassett of Auckland, who took a shine to the runt of the litter who was small in size but big in attitude.

That was 16 years ago and during that time a strong bond has developed between Tabitha and Sandra. "Tabitha is a loyal cat who really interacts with you. She's always had a strong sense of determination and would always climb the tallest tree. She is a little eccentric but always comes when you call and greets you when you get home" Sandra says.

Just before Christmas last year Sandra noticed her faithful tortoiseshell had lost weight and become listless. Understandably Sandra attributed these changes to her age; however during a visit to Unitec Vet Hospital to investigate some spots on her nose, Dr Angela Young was so concerned about the weight loss that she referred her to VSG®.

The news at VSG® was not good and following the biopsies Sandra faced the news that Tabitha had pancreatic cancer. "Mike (Coleman) was really great; he explained our options which included chemotherapy" Sandra recalls. "I liked the way VSG® were really upfront about costs and prognosis so that we had the facts to work with".

Sandra had no hesitation opting to proceed with further care. "Because Tabitha has always been really resilient and still had a good quality of life we decided we'd stick with her and give her the best chance of survival. We are so glad we did – she is a real inspiration", she says.

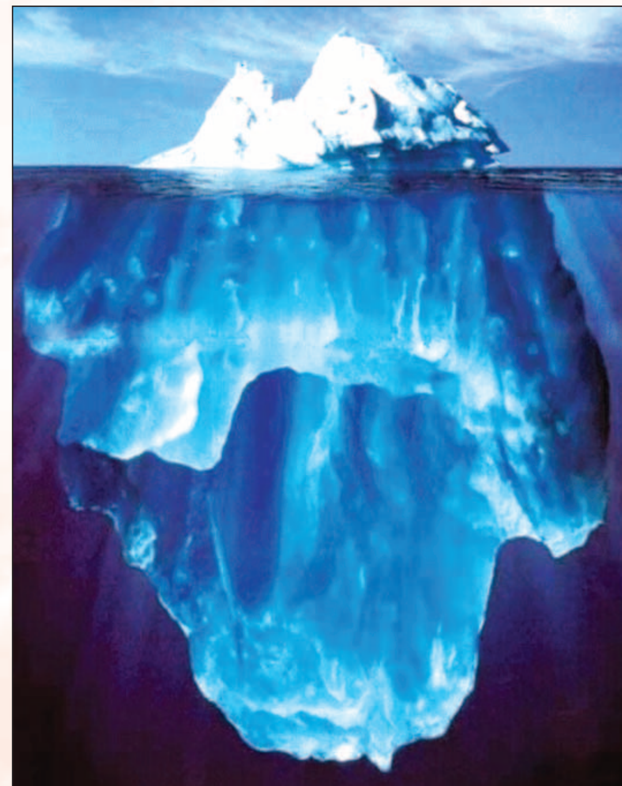
It took a while for the drugs to kick in but by mid-February Tabitha really bounced back surprising everyone with her rediscovered energy and enthusiasm for life.

Sandra can't talk highly enough of VSG® staff "The staff were all so caring – everyone has been so delighted that Tabitha has come through this so well."

Sandra says "She's in uncharted territory now, but she's a hardy and positive soul and we're just pleased we were able to give her extra time to enjoy her spot in the sun. And you know what – she seems to appreciate everything we do for her. What more can you ask?"

Watching Out For Icebergs - by Chris Warman

When I think of icebergs, three things spring to mind. The first is the Titanic, the second is Chris Dickson sailing in the Southern Ocean in the round the world yacht race and finally, the third, thoracic wall lesions in canine patients. In her maiden voyage, the Titanic was crossing the North Atlantic in an area known to contain icebergs. The owner's and captain's desire to capture the speed record for the North Atlantic crossing ultimately resulted in the ship's demise with the loss of 1523 lives when she collided with an iceberg. Ignorance of the dangers of icebergs, even relatively small ones as in the Titanic's case, destroyed not only the supposedly unsinkable Titanic but ended the dreams of many souls.



Only a small portion of the real threat is immediately obvious.

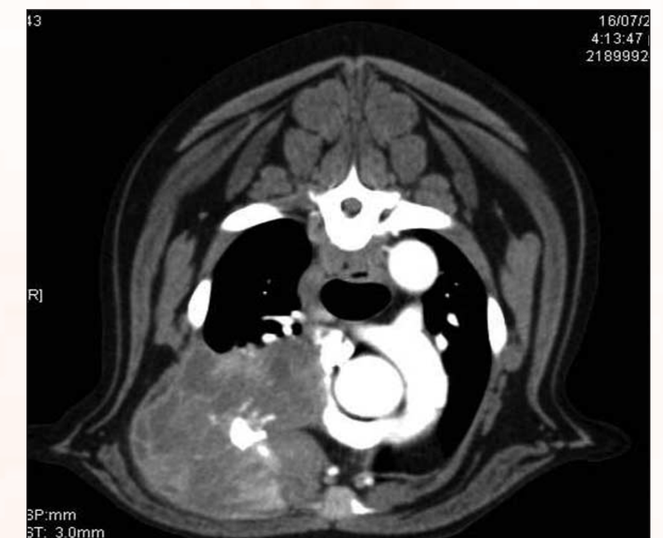
Sailing deep in the Southern Ocean in the Whitbread race, television cameras aboard Chris Dickson's boat revealed the presence of icebergs in relatively close proximity to his fragile sailing craft. To camera Dickson says, "How nice it is that they go in at night". Whether his attitude reflected true bravado or just wishful thinking, ultimately he and his crew avoided danger that was both very real and potentially catastrophic.

Thoracic wall lesions in canine patients are our potential "icebergs". Many of these lesions belie the true extent of the depth of the lesion on clinical examination. Surgical planning for the removal of any thoracic wall lesion that is not pedunculated or very superficial should include some form of diagnostic imaging to accurately evaluate the extent of a lesion. Mobile thoracic wall lesions are typically, but not always, reflective of the lesion that is likely to be external to the thoracic wall itself. Any lesion that is sessile or one that appears fixed on palpation may invade the thoracic wall and extend to the pleural space itself. A failure to appreciate the true extent of the thoracic wall lesion can lead to our own potentially catastrophic situation.

Diagnostic ultrasound can be of some use when examining thoracic wall pathology. Ideally using a linear transducer, one can often define the margins of the lesion and makeup of the lesion. Ultrasound however frequently underestimates the size of the lesion even in the best of hands. Ultrasound can be extremely useful in obtaining guided biopsy samples prior to surgery.

Diagnostic radiology is a far superior tool than diagnostic ultrasound to evaluate the size of the lesion. It is important to obtain images in multiple planes when evaluating any thoracic wall lesion. Several ventrodorsal oblique views may be required to identify rib involvement or any subtle extra-pleural involvement. If extensive pleural effusion is present it is often necessary to repeat the radiographic series subsequent to thoracic drainage to better determine the extent of the lesion. If on initial radiographic examination the lesion appears to be external to the rib cage, thoroughly evaluate the adjacent ribs for any evidence of subtle periosteal new bone production or evidence of osteolysis. Computed tomography represents the gold standard for evaluating any thoracic wall mass lesion. Multi-planar reconstruction of axial images allows the clinician to thoroughly examine the composition and extent of the lesion. Of all the imaging modalities available to us, computed tomography most accurately defines the degree of surgical resection required to potentially obtain clear margins. Post-contrast imaging of the lesion is also required to determine vascular supply. Computed tomography is also necessary to define the potential size of any thoracic wall defect that may be created following surgical resection and to assist the surgeon in determining the most appropriate reconstructive technique to repair this defect.

Successful surgical outcomes are not solely dependent on the manipulative skill set of the surgeon at the time of surgery. Pre-surgical planning is a major factor in successful surgical outcomes. Appropriate diagnostic imaging is a foundation stone in the pre-surgical planning process. If you wish to avoid your own iceberg and the subsequent disastrous consequences of meeting one, do not forget the importance of diagnostic imaging in pre-surgical planning, especially when it comes to the thoracic wall lesions.



CT postcontrast axial image of a thoracic wall osteosarcoma invading the pleural space and compressing the cranial vena cava and right atrium.