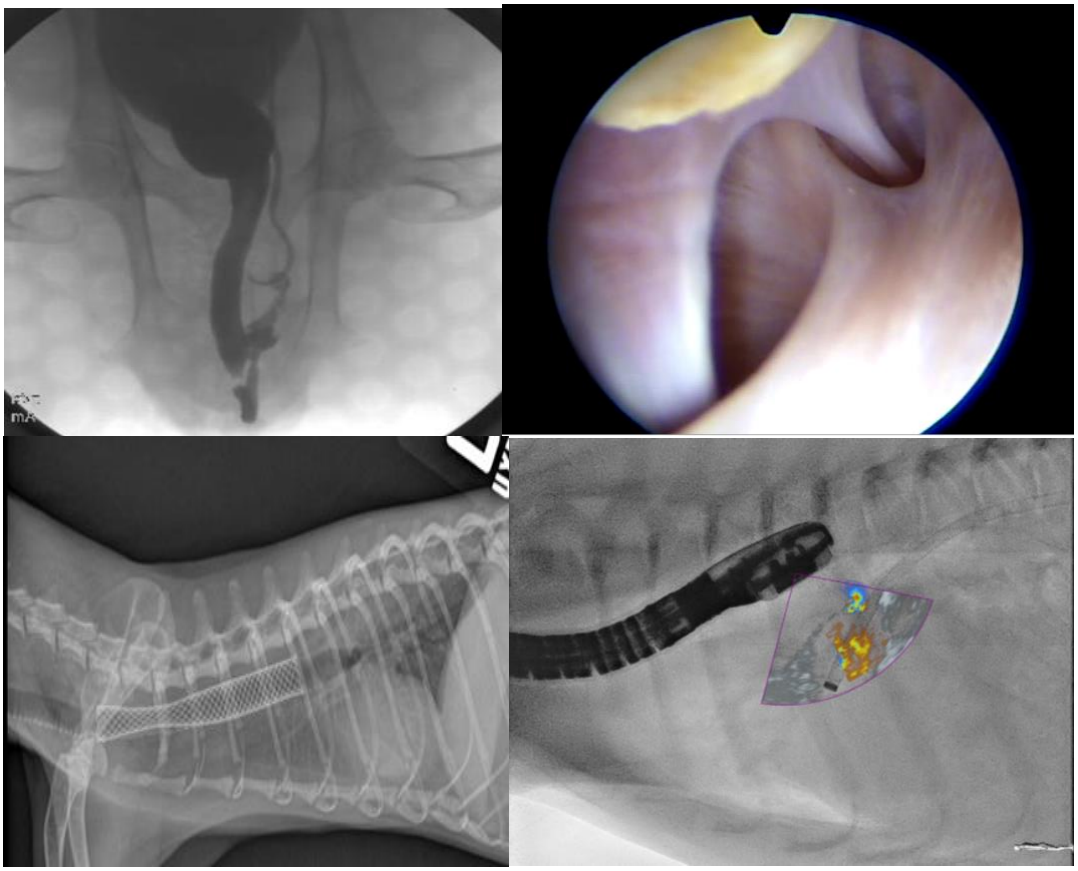
VETERINARY INTERVENTIONAL RADIOLOGY AND ENDOSCOPY SOCIETY THIRD ANNUAL MEETING

VIRIES



Lisbon, Portugal
Vila Gale Opera
May 23-25th , 2018

3rd ANNUAL MEETING, Lisbon, Portugal
May 23-25th, 2018

WELCOME TO OUR THIRD MEETING!

VIRIES MISSION: *Advancement of the art and science of veterinary interventional radiology and interventional endoscopy*

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Wednesday May 23rd		Thursday May 24th		Friday May 25th	
14h00-14h20	**WELCOME**	**8h00-8h45**	**SCIENTIFIC ABSTRACTS (12min with roundtable discussion to follow)** A Cléroux - data on SUB cats C Vachon – pelvis SUB cats A Berent - SUB dogs	**8h00-8h30**	**VIRIES BOARD MEETING**
14h20-14h30	**VENDOR INTRODUCTIONS**				
14h30-15h30	**NASAL INTERVENTIONS** **LATE, Nasal Tumors** GU Oechtering	**8h45-9h45**	**SUB COMPLICATIONS ROUNDTABLE** A Berent, M Dunn, B Culp	**8h30-8h55**	**SCIENTIFIC ABSTRACTS (7min with 3min discussion)** A Fox-Alvarez - Gastric decompression dogs **(5min with 2min discussion)** A Janiszewski - LA retrieval A Laborda - Angioseal arterial access
15h30-16h00	**BRONCHIAL STENTING** G Kramer	**9h45-10h05**	**SCIENTIFIC ABSTRACT (7min with 5min discussion)** Nicoli - Paramesonephric ENSEAL **CASE REPORT (5 min)** A Laborda - urokinase Blood clot bladder	**8h55-9h20**	**SCIENTIFIC ABSTRACTS (12min with 3min discussion)** D Clarke- Protein C in IHPSS **(5min with 2min discussion)** A Lapshin - Cavalfilter for IHPSS
16h00-16h25	**SCIENTIFIC ABSTRACTS (12min with 3min discussion)** D Clarke - laryngeal stent **(7min with 3min discussion)** J Wray - tracheal stent 4 cats	**10h05-10h20**	**BREAK (15 min)**		
16h25-16h40	**BREAK (15 min)**	**10h20-10h50**	**SCIENTIFIC ABSTRACTS (12min with 3min discussion)** C Weisse - chemo IA/IV U tumors **(7min with 3min discussion)** G McLauchlan - IA vinblastine urinary tract neoplasia		
16h40-17h10	**RESPIRATORY ROUNDTABLE** GU Oechtering, G Kramer, D Clarke, J Wray , C Weisse				
17h10-17h50	**BEGINNING AN IR SERVICE** (20 mins) N Buote and N Petersen **DESIGNING A CATH LAB** (20 mins) B Scansen	**10h50-11h35**	**SCIENTIFIC ABSTRACT (15min with roundtable discussion to follow)** B Culp - Transrectal US prostatic carcinoma size B Culp - Prostatic embolization C Weisse - Neobladder	**9h20-9h40**	**SCIENTIFIC ABSTRACTS (7min with 3min discussion)** N Petersen - septostomy for PHT S Ryan - AV fistula PHIL agent

				9h40-10h15	**ROUNDTABLE** A Fox-Alvarez, A Janiszewski, A Laborda, N Petersen, S Ryan, D Clarke, A Lapshin
				10h15-10h30	**BREAK (15 min)**
				10h30-11h00	**CUTTING & SCORING BALLOONS FOR CARDIAC INTERVENTIONS** B Scansen
17h50-18h00	**ROUND TABLE** N Buote, N Petersen, B Scansen, G McLaughlan			**11h00-11h30**	**OPEN FORUM** A Berent, C Weisse, B Scansen, M Dunn
19h00-	**GALA DINNER**	**11h35-12h00**	**ROUND TABLE** G McLauchlan, B Culp, C Weisse		
				11h30-12h00	**Closing Remarks/ Meeting Round-up**
		18h00-19h30	**COCKTAIL HOUR MEET THE VENDORS**		

SOCIAL EVENTS

Wednesday May 23rd 7pm
Gala Opening Dinner with VES at Doca de Santo restaurant, a very short walk from the hotel address: Armazém CP - Doca de Santo Amaro, 1350-353 Lisboa

Thursday June 22nd 6h00-7h30 pm
Cocktail Reception at te hotel-meet the vendors, hors d'oeuvres and drinks.

SCIENTIFIC ABSTRACTS - Oral Presentations

NASAL LANDMARKS REVISITED - A COMPARATIVE CONSIDERATION OF CLINICALLY RELEVANT ENDOSCOPIC AND CT-ANATOMY. Oechtering GU. College of Veterinary Medicine, University of Leipzig, Leipzig, Germany.

Objective: To provide an update of current knowledge of clinically relevant canine nasal anatomy with special emphasis of landmarks necessary for interventional procedures.

Study Design: Comparative interpretation

Results: In modern ENT-Medicine the combination of CT followed by rigid endoscopy is regarded as an indispensable diagnostic tool for the nasal-pharyngeal airway. For both techniques distinct anatomical landmarks are defined (ETTINGER, 2017). However, character and purpose of landmarks in either modality vary considerably.

CT-landmarks are determined primarily by the anatomy of intranasal structures and the surrounding bony framework. Their primary clinical task is guiding the examiner through all nasal chambers to discriminate physiological from pathological patterns. Nearly all visible structures can serve as "CT-landmark".

In contrast, the number of endoscopic landmarks is much smaller. They serve primarily as signposts, essential for guiding the examiner's endoscope through complex nasal structures. Endoscopic landmarks are predominantly determined by the fact how easy and atraumatic they can be accessed. They help to evaluate 1. whether there is a patent nasal-pharyngeal airway and 2. whether there are pathological patterns visible.

Conclusions: The combination of CT-examination followed by endoscopic exploration is regarded as gold standard in nasal-pharyngeal diagnostic. While CT-landmarks are covering nearly the complete visible anatomy, endoscopic landmarks are defined by their guiding character. CT-anatomy and thorough knowledge of the relevant landmarks constitute the indispensable basis for intranasal interventional procedures.

ENDOSCOPIC INTERVENTIONAL CYTOREDUCTION OF NASAL TUMORS – FIRST EXPERIENCES. Oechtering GU, Roesch S. College of Veterinary Medicine, University of Leipzig, Germany

Objective: To describe and evaluate a new endoscopic interventional cytoreductive approach to nasal tumors in dogs.

Study Design: Prospective study

Animals: Client-owned dogs with nasal tumors. Inclusion criterion was the owner-rejection of radiation therapy, exclusion criterion a tumor category T4 (Adams 2009).

Methods: Nasal tumors were confirmed by means of computed tomography and rigid endoscopy (Hopkins-Optic, Storz). If endoscopic discrimination was possible, surrounding inflammatory tissue was removed using a high-power suction and traction with various forcepses. Now, tumor mass was repeatedly biopsied under direct visual control. Interventional cytoreduction by means of alternating high-power suction, traction and ultrasonic aspiration followed to ablate the visible tumor tissue. Intranasal structures like turbinates or vomerine ala were resected if obviously involved.

Results: Between Jan 2015 and Dec 2017, 20/39 dogs were included and successfully treated. A patent nasal airway could be restored, and all visible tumor mass removed. 18 tumors were malignant (90.5%) and two benign (9.5%). Mean survival times of dogs with malignant tumors were at the time of data collection for T-Category 1 (n=3) 1100 days, T2 (n=1) 379 days and T3 (n=14) 318 days.

Conclusions: After this preliminary outcome study we regard the opportunity to combine diagnostic and therapeutic maneuvers within one single procedure as an outstanding advantage if multiple radiation therapy is not applicable. Survival times after the here firstly reported endoscopic interventional cytoreduction are comparable with radiation therapy.

BRONCHIAL STENTING IN DOGS AND DEVELOPMENT OF A NEW BIFURCATED BRONCHIAL STENT AND DELIVERY SYSTEM

Kramer G, Ozer D, Williams B, Gaudette N

Atlantic Coast Veterinary Specialists, Bohemia, NY

Bronchial stents (Dextronix) were placed in 17 dogs with severe bronchial collapse over a 23 month period from March 2016 to February 2018. All dogs had grade 4 collapse of LB2. Sixteen dogs had grade 3-4 collapse of LB1, one had grade 1 collapse. There was grade 3-4 collapse of the right bronchi in two dogs and mild collapse of the right bronchi in 5 dogs. Tertiary bronchi appeared normal in 11 of the 17 cases. Eight of 17 dogs also had tracheal stents placed for grade 3-4 tracheal collapse. Concurrent valvular heart disease was a frequent comorbidity in this population. Thirteen of 17 dogs had severe chronic valvular disease, two had mild valvular disease, two had no structural heart disease. Two dogs were ACVIM Stage B1, nine were Stage B2, three were Stage C, one was Stage D. All dogs survived the procedure; one dog died the following day from acute respiratory distress, 16 dogs were discharged the day after the procedure. At the time of abstract submission 9/17 dogs were alive. Due to the high frequency of concurrent severe collapse of both LB1 and LB2, a bifurcated stent was developed. CT data was used to print 3-D models of the tracheobronchial tree from the carina to the terminus of LB1 and LB2 and prototypes of the stent were fashioned from nitinol wire. A unique guide-wire based delivery system was developed. The stents were then successfully placed into cadaveric bronchi. Future testing in clinical cases will need to follow.

USE OF A NOVEL LARYNGEAL STENT TO TREAT IDIOPATHIC LARYNGEAL PARALYSIS IN DOGS

Clarke D[1], Ward R[2], Riina H[2], Holt D[1]

[1]Veterinary Hospital of the University of Pennsylvania, Philadelphia, PA

[2]New York University Langone Medical Center, New York, NY

Objective: To evaluate a novel laryngeal stent as a minimally invasive treatment alternative for idiopathic laryngeal paralysis in dogs.

Study design: Prospective clinical trial.

Methods: Dogs with endoscopically diagnosed laryngeal paralysis were eligible for study enrollment. All dogs had endoscopic laryngeal examination and computed tomography (CT) of the head and neck. Measurements of the larynx were obtained from the CT to determine stent size. A novel laryngeal stent was placed in the larynx, caudal to the vocal folds, under constant endoscopic visualization. Stent placement was confirmed with fluoroscopy or digital radiography.

Results: Seven dogs with laryngeal paralysis were enrolled (4 Labrador Retrievers, 1 Golden Retriever, 1 Brittany Spaniel, 1 Greyhound). Their median age was 13 years (range = 9-14) and their median duration of clinical signs was 8 months (range = 1-12). One dog had radiographic evidence of pre-operative aspiration pneumonia. All dogs had a 23mm stent placed based on CT measurements. The stent was successfully placed in all 7 dogs. One dog developed aspiration pneumonia 5 months after stent placement. Unilateral arytenoid lateralization was performed at a median of 1.7 months after stent placement (range = 1-3.2) in 4/7 dogs due to recurrence of clinical signs (4/4) and stent migration (1/4).

Conclusions: A novel laryngeal stent was created to provide a minimally invasive alternative to surgical treatment of laryngeal paralysis. The device is technically easy to use and requires minimal imaging equipment. A larger range of stent sizes is needed to improve device success.

OUTCOME AND LONG-TERM FOLLOW-UP OF INTRALUMINAL TRACHEAL STENTING IN FOUR CATS

Wray, J. , Tappin, S., van den Steen, N. and Rasotto, R.

Dick White Referrals

Cambridgeshire

United Kingdom

The placement and outcome of five endoluminal NiTiNOL self-expanding metallic stents (SEMS) in four feline patients is described. The indication for placement in three cats was severe tracheal stenosis due to stricture (after road traffic accident in two cases, endotracheal intubation injury in one case) and in one cat was trachea collapse. The procedure was successful in all three stenosis cases with rapid resolution of clinical signs. In the case of tracheal collapse, although initial placement temporarily resolved clinical signs, further tracheal collapsing necessitated placement of a second stent 1 month later. This was due to technical / sizing error with the first procedure. Case follow-up, available for all cases was 49, 44, 4 and 24 months respectively. All cases required continuous corticosteroid medication to control coughing. One cat is still alive at present (24 months post-placement). Cause of death in the remaining cats (time post-placement) was pyothorax and death at primary clinic (49 months), euthanasia due to worsening cough (44 months) and renal lymphoma with failure of response to chemotherapy (4 months). In all patients stent placement was undertaken as an emergency in the setting of acute respiratory distress using a combination of endoscopic assessment and fluoroscopic assessment / sizing and guidance. One patient (tracheal collapse and two stent placement) was available for necropsy and gross and histologic findings of the trachea and stent site are described (death unrelated to tracheal pathology or stent).

LONG TERM URINALYSIS, URINE CULTURE, AND ULTRASONOGRAPHIC FINDINGS IN CATS TREATED WITH SUBCUTANEOUS URETERAL BYPASS (SUB)

Cléroux A, Clarke D

Veterinary Hospital of the University of Pennsylvania, Philadelphia, PA

Objective: To evaluate urinalysis, urine culture, and ultrasonographic findings in cats before and after SUB placement.

Study design: Retrospective study.

Animals: Twenty five cats with SUBs.

Methods: Cats with benign ureteral obstruction treated with SUB between October 2014 and February 2018 for whom recheck examinations where a SUB flush was performed were included. For recheck examinations, kidney and pelvis measurements were excluded if the SUB was not patent.

Results: SUBs were placed in 31 kidneys (19 unilateral, 6 bilateral). The mean kidney and pelvis size were 4.7cm (3.2-6.8cm) and 7.7mm (2.2-15mm), respectively, at the time of SUB placement and 3.9cm (2.6-5.5cm) and 2mm (<2-6.1mm), respectively, at first SUB flush (performed 4-261d post SUB placement). On initial urinalysis, a median of 5-10 RBC/hpf on sediment analysis were noted. On recheck examinations, a median of 21-30 RBC/hpf were seen, with 15/41 samples having too numerous to count RBC noted. One (1/24) urine culture was positive at the time of SUB placement, and 3/59 on recheck examinations.

Conclusion: Increased red blood cell count appears to be a frequent finding when evaluating urinalysis results in cats with SUBs. Modification of the urinalysis reference ranges may be required for this population of cats. Successful SUB placement and patency of the device allows for kidney and pelvis size to decrease, regardless of the etiology of the obstruction, which is in agreement with previous studies.

MINIMAL PELVIC DILATION IN CATS DIAGNOSED WITH BENIGN URETERAL OBSTRUCTION AND TREATED BY SUB PLACEMENT

Vachon C, Dunn M

Clinical studies, Veterinary Hospital of the University of Montreal, St-Hyacinthe, Quebec, Canada

Introduction: Renal pelvic size varies with the underlying cause of outflow ureteral obstruction (UO). The purpose of the study was to describe a population of cats with absence to minimal pelvic dilation despite benign UO treated by placement of a sub-cutaneous ureteral bypass (SUB).

Materials & Methods: The renal pelvis and ureteral width of 62 cats with unilateral (n=36) or bilateral (n=26) UO were measured ultrasonographically prior to SUB placement. Intraoperative antegrade pyelogram confirmed the UO. Cats were divided into 2 groups based on the size of their renal pelvis (group 1: renal pelvis size > 4mm; group 2: renal pelvis size ≤ 4 mm) at the time of SUB placement.

Results: Fifty-eight kidneys (65%) were included in group 1 and and 31 (35%) were included in group 2. The mean pelvic size of group 1 and group 2 were 10.5 mm (range: 4.2-37.0 mm) and 2.9 mm (range: 1.1-4.0 mm), respectively. Eight kidneys (26%) in group 2 had a pelvic size of 2 mm or less. The mean ureteral size of group 1 and 2 were 4.1 mm (range: 1.8-11.0 mm) and 3.1 mm (range: 1.0-11.0 mm), respectively. The mean pelvic ($p<0.0001$) and ureteral ($p=0.02$) size were smaller for group 2 compared to group 1. Conclusion: Ureteral obstruction should be considered in cats in the absence of pelvic

dilation. Ureteral size along with other sonographic parameters may aid in the diagnosis of UO when only minimal or absent pelvic dilation is noted.

Title: Use of a Subcutaneous Ureteral Bypass Device for Treatment of Benign Ureteral Obstructions in Dogs.

Authors: Melissa Milligan (The Animal Medical Center, New York, NY), Allyson Berent (The Animal Medical Center, New York, NY), Chick Weisse (The Animal Medical Center, New York, NY)

Subcutaneous ureteral bypass (SUB)™ device placement is an alternative to traditional ureteral surgery. However, outcomes have not been described for treatment of benign ureteral obstructions in dogs. The purpose was to evaluate pre-operative, peri-operative (< 7 days), short (7-30 days) and long-term (> 30 days) parameters in dogs treated with SUBs for benign ureteral obstructions. The hypothesis was SUBs were associated with favorable technical outcomes when compared with alternatives.

SUBs™ were placed using fluoroscopic- and surgical-assistance. Medical records were reviewed for pre-, intra-, and post-operative data.

Twelve SUBs were placed in nine dogs(3 bilateral). Causes of obstruction included: ureterolithiasis (9/12;75%), extraluminal compression (2/12;17%), and stricture (1/12;8%). Eleven of 12 ureters had a stent placed prior and needed a SUB™ for: recurrent stricture (4/11;36%), ureteritis (4/11;36%), or stent migration (3/11;27%). Placement was successful in all ureters.

The median creatinine pre-operative and 3 months post-operative was 2.1mg/dL and 1.2mg/dL, respectively. Seven dogs(7/9;78%) had a history of urinary tract infection(s) prior to SUB placement.

Long-term complications included infection (5/9;55%) and mineralization (6/12;50%). Dogs that mineralized their device had a history of urolithasis. Historical pre-operative infections commonly had post-operative infections (5/7). There were no peri-operative or procedure-related deaths. No dog had worsening azotemia in the short-term. The median survival time was >774 days, with 5/9 still alive.

Use of the SUB™ device in dogs is a safe and effective treatment option for benign ureteral obstructions and associated with a good prognosis. The high rate of mineralization and infections should be considered in the long-term.

RESECTION OF PARAMESONEPHRIC SEPT USING ENDOSCOPIC GUIDED LigaSure or ENSEAL

Nicoli S[1], Caccamo R[1], Vannozzi I[2]

1. Istituto Veterinario Novara, Novara, Italy 2. Faculty of Veterinary Medicine, University of Pisa, Pisa, Italy

Introduction: Among the congenital anomalies that may accompany ectopic ureter in female dogs, the presence of the paramesonephric sept is the most represented. During endoscopic laser treatment for ectopic ureter, the vaginal sept should be cut in the same surgical session using laser. Sometimes, however, the sept length and thickness make the procedure extremely long and challenging. The purpose of the study is to describe the use of devices such as ENSEAL or LigaSure for septal cut.

Materials and methods: 90 female dogs of various breeds with diagnosis of ectopic ureter, were submitted to cystoscopic evaluation and 69 of these showed paramesonephric sept. In 14 patients the sept was longer than 4 cm and 9 of them were treated with endoscopic guided diode laser ablation, while the remaining 5 with Ligasure (n=2), or Enseal (n=3), inserted coaxially to the endoscope.

Results: The five patients treated with ENSEAL or LigaSure were represented by 2 Golden Retrievers, 1 English Bulldog, 1 Border Collie and 1 Beagle. weight ranged from 10 to 27 Kg and age from 3 months to 5 years. The average time of sept resection with ENSAEL or LigaSure was 2 minutes while the average time with laser was 18 minutes. No complications were recorded during the use of the described technique.

Conclusions: The use of devices such as ENSEAL or LigaSure has proven effective for the reduction of resection time of paramesonephric sept in the tested subjects. Further studies are needed to assess the actual benefits.

TREATMENT OF A LARGE INTRAVESICAL CLOT WITH INTRACAVITARY UROKINASE IN A DOG

Laborda A, Mitjana M, Bonastre C, Falceto MV

Veterinary Hospital of the University of Zaragoza

A 4-year-old male Boxer dog was referred to our hospital suspecting a urinary bladder rupture after a cystotomy performed two days before for stone extraction. The rupture was confirmed, and the animal stabilized in the ICU and re-intervened for bladder closure. After 4 days of hospitalization, his evolution was favorable and the animal was discharged. Four days later it was referred again by with impossibility to urinate. A large intravesical clot was diagnosed by ultrasonography. The animal was kept under observation, and it was confirmed that it was not able to urinate by himself due to the position of the clot, although there was no difficulty in catheterizing and emptying the bladder. As a new surgery was not indicated, we proposed a minimally invasive approach to dissolve the clot with

intracavitary administration of a fibrinolytic (urokinase) using a three-day protocol, and monitoring the clot daily with ultrasound. On the fourth day after fibrinolysis the clot was completely dissolved and the bladder showed a normal appearance.

Pilot Study Comparing Chemotherapy Levels Following Intra-Arterial Versus Intravenous Administration in Dogs with Naturally-Occurring Urinary Tract Tumors

Primary Investigators: Meghan Kirsch, DVM[1], Chick Weisse, VMD, DACVS[1]
Co-Investigators:
Allyson Berent, DVM, DACVIM[1] (SAIM)
Craig A. Clifford, DVM, DACVIM[2] (Oncology)
Nicole Leibman, DVM, DACVIM[1] (Oncology)
Luke Wittenburg, DVM, PhD, DACVCP[3]
Stephen Solomon, MD[4]
Kenneth E. Lamb PhD[5]

1. Animal Medical Center, NY, NY.
2. Hope Veterinary Specialists, Malvern, PA.
3. University of California-Davis, Davis, CA.
4. Memorial-Sloan Kettering Cancer Center, NY, NY.
5. Lamb Consulting, West St. Paul, MN.

From the Animal Medical Center, New York City, NY (Kirsch, Weisse, Berent, Leibman), Hope Veterinary Specialists, Malvern, PA (Clifford). Work completed at the Interventional Radiology and Oncology Services at the Animal Medical Center.

Background: The proposed advantages of intra-arterial chemotherapy (IAC) are based upon the premises of local tumor dose escalation and reduced systemic drug availability. There is a deficit in objective pharmacokinetic data to confirm the advantage of IAC in dogs with naturally-occurring urogenital tumors.

Objective: To determine if IAC administration in urogenital tumors will result in decreased systemic drug exposure when compared to intravenous routes.

Animals: Twenty-three dogs with naturally occurring urogenital tumors.

Methods: A prospective case-controlled study. Mitoxantrone, doxorubicin or carboplatin were administered by IAC and intravenous routes (intravenous awake [IVC] and under anesthesia [IVGAC]) three weeks apart. Serum assays were used to determine the extent of systemic exposure. Dose-normalized peak systemic serum concentration (C_{max}) and area under the serum drug concentration-time curve (AUC) were used to quantify systemic exposure.

Results: Twenty-nine mitoxantrone treatments were performed in twelve dogs. There was no significant difference in C_{max} however the AUC was significantly lower for IAC compared with IVGAC. Ten doxorubicin treatments were performed in five dogs. There were no significant differences in C_{max} or AUC. A

total of fourteen carboplatin treatments were performed in seven dogs. The C_{max} was significantly lower for IAC compared to IVC while the AUC values were equivocal.

Conclusion: This study demonstrates certain lower serum values may be achieved following IAC delivery of carboplatin and mitoxantrone. These chemotherapy agents may have a preferred pharmacological profile for regional chemotherapy delivery in dogs with urogenital tumors.

INTRA-ARTERIAL VINBLASTINE AS A TREATMENT FOR URINARY TRACT NEOPLASIA – INITIAL ASSESSMENT OF TOLERABILITY

McLauchlan G, Carvalho S, Bacon N

Fitzpatrick Referrals Oncology and Soft Tissue, Guildford, United Kingdom

Introduction: Treatment options for lower urinary tumours tumours includes intravenous chemotherapy, surgical excision, radiotherapy, stenting and intra-arterial (IA) chemotherapy. Chemotherapeutic agents commonly administered include Mitoxantrone, Carboplatin and Vinblastine in combination with non-steroidal anti-inflammatory drugs. Vinblastine has been associated with a median survival time of 147 days (range 28-476 days) from 1st treatment to death and 299 days (range 43-921 days) from diagnosis to death when administered intravenously. The purpose of this pilot study was to assess the tolerability of intra-arterial Vinblastine in the treatment of lower urinary tract neoplasia.

Material and methods: Dogs diagnosed with either prostatic carcinoma or bladder / urethral urothelial cell carcinoma were eligible to be enrolled in this study. A carotid artery approach was used to obtain super-selective access and delivery of intra-arterial Vinblastine at a dose of 2mg/m$^{2.}$

Results: 4 dogs were treated with IA Vinblastine (N=2 bladder urothelial carcinoma and N=2 prostatic carcinoma). All cases were administered intravenous Maropitant the day of the IA procedure and discharged with an additional three day course to be administered at home. Both dogs with a bladder urothelial carcinoma also underwent partial cystectomy due to the apical location of the tumours. Neutropaenia was documented in 3 dogs at day 7 (VCOG Grade 3 in one dog, Grade 2 in one dog and Grade 1 in one dog) and had resolved in all dogs by day 14. Mild gastrointestinal toxicity (VCOG Grade 1) was reported in three dogs at day 3.

Conclusion: IA Vinblastine was associated with a mild neutropaenia but appeared well tolerated in this small number of cases

USE OF TRANSRECTAL ULTRASOUND IN ASSESSMENT OF PROSTATIC CARCINOMA SIZE AND LOCATION IN DOGS

Culp WTN, Johnson EG, Giuffrida MA, Palm CA,

Mayhew PD, Kent MS, Rebhun RB, Burton JH

University of California-Davis, School of Veterinary Medicine

Objective: Evaluation of transrectal ultrasound (TRUS) as a diagnostic and interventional tool in veterinary patients has not been reported. The study objectives were to describe the use of TRUS in the assessment of prostatic tumors in dogs and to compare TRUS with other imaging modalities.

Study Design: Prospective clinical trial

Animals: 10 client-owned male dogs

Methods: Client-owned dogs with a diagnosis of prostatic carcinoma were enrolled. Imaging performed in all cases included fluoroscopy, transabdominal ultrasound (TRAU), TRUS and MRI. MRI was considered the gold-standard. Tumor measurements, urethral penetration and tumor extension were recorded for all imaging modalities. Statistical analysis was performed to compare agreement between MRI and other modalities.

Results: Ten dogs were enrolled in the study. Median weight was 26.3 kg (range, 9.4 - 49.5 kg). No intra- or post-procedural complications were encountered with TRUS. Statistically significant moderate to good agreement (intraclass correlation coefficients 0.60 to 0.86) between TRAU, TRUS, and MRI were noted for tumor length and height measurements. TRUS assessments of urethral penetration, bladder extension of tumor, and lymph node status did not significantly differ from those made by MRI, and exhibited superior absolute agreement with MRI when compared to TRAU.

Conclusions: TRUS was successfully and safely utilized in this cohort of dogs, demonstrated moderate to good agreement with MRI for tumor height and length measurements, and was found to be superior to TRAU for some assessments. TRUS can be considered as an adjunctive imaging modality for performing interventional procedures or assessing response to a treatment.

PROSTATIC EMBOLIZATION: PROSPECTIVE EVALUATION OF SHORT-TERM OUTCOME AND CT-BASED TUMOR RESPONSE

Culp WTN, Johnson EG, Giuffrida MA, Palm CA, Skorupski KA,

Burton JH, Rebhun RB, Willcox J, Kent MS, Glaiberman CB

University of California-Davis, School of Veterinary Medicine

Objective: The objective of this study was to evaluate the effect of prostatic artery embolization on clinical signs and CT-based tumor volume in dogs with prostatic carcinoma.

Study Design: Prospective clinical trial

Animals: 20 client-owned dogs

Methods: Dogs with prostatic carcinoma were enrolled and an owner questionnaire designed to record clinical signs was completed. Under general anesthesia, a CT scan followed by prostatic artery embolization was performed. At approximately 4 weeks post-embolization, a second CT scan was performed and an owner questionnaire was completed for all dogs. Tumor volumes were compared pre- and post-embolization. Statistical analysis compared these results.

Results: Twenty dogs were enrolled. Mean dog age was 9.6±2.1 years, and mean body weight was 20.1±10.9 kg. Tenesmus and stranguria were noted in 9 and 10 dogs, respectively, pre-embolization. After embolization, tenesmus and stranguria resolved in 7/9 and 9/10 dogs, respectively, and clinical signs such as tenesmus, stranguria, and lethargy were statistically significantly less likely to be noted. Median pre-embolization and post-embolization prostatic volumes were 21.7 cm^3 (range 2.9 – 77.7 cm^3; interquartile range 11.0 – 35.1 cm^3) and 14.8 cm^3 (range 0.4 – 48.1 cm^3; interquartile range 6.7 – 19.5 cm^3). Pre- and post-embolization volumes differed significantly (p=0.0001), and all dogs had a reduction in post-embolization volume. Median percent volume loss was 39.4% (95% CI 20.3% to 59.3%).

Conclusions: Prostatic embolization significantly decreased tumor volume and improved clinical signs in this cohort of dogs. The short-term response to prostatic embolization appears to be promising, and evaluation of long-term impact on survival is needed.

RADICAL CYSTOPROSTATECTOMY, BILATERAL SUBCUTANEOUS URETEROVESICULAR BYPASS PLACEMENT, AND ARTIFICAL NEOBLADDER PLACEMENT FOR CANINE UROTHELIAL CARCINOMA.

Weisse C, A. Berent.

The Animal Medical Center, New York, NY.

Canine urothelial carcinoma remains a disease with poor response to therapy. Contrary to theoretical advantages, radical surgical resections have not provided prolonged survival times; Reported complications including incontinence and infections may dissuade owners from these procedures. The authors' hypothesized that radical surgery and artificial neobladder placement would permit more aggressive tumor resections and avoid persistent incontinence and urinary tract infections.

An 11yr male castrated west highland white terrier with transitional cell carcinoma had previously received multiple chemotherapies over 2 years with subsequent progressive disease resulting in greater 75% filling of his urinary bladder and prostate. He was incontinent on physical examination. The client consented to total prostatocystectomy, bilateral partial ureterectomies and placement of bilateral SUBs with a custom made 3-D printed silicone neobladder attached to a low-profile drainage tube in the body wall for drainage. There were no complications and the patient was discharged 2 days later. Incomplete surgical margins were identified at the urethral site.

The patient received 2-3 daily bladder drainages performed by the owner followed by instillation of a locking solution. A subclinical corynebacterium urinary tract infection was identified 2 weeks post-operatively that resolved with antibiotics and increased locking solution infusions. Adjuvant metronomic chemotherapy and palliative radiotherapy to the pelvic lymph nodes and remaining urethra was administered. The patient remains disease free on repeat CT scan 4 months post-operatively.

Total cystectomy with SUB and artificial neobladder placement is a potential option for dogs with TCC in order to achieve wide tumor excisions and possibly reduced infections.

Description of a Novel Technique for Gastric Decompression in Dogs Using an Iatrogenic Gastric Dilatation Model: Temporary Percutaneous Gastropexy and Continuous Decompressive Gastrostomy, A Pilot Study

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Abstract:

Objective: To describe and evaluate a novel, percutaneous, continuous gastric decompression technique using a temporary T-fastener gastropexy and self-retaining, decompression catheter.

Study Design: Prospective pilot study

Animals: Male dogs (n=6), at-risk breeds for GDV

Methods: Dogs were anesthetized, placed in dorsal recumbency with slight left-lateral obliquity, and their gastric lumen insufflated endoscopically using room air until tympany was present. Three T-fasteners were placed percutaneously into the gastric lumen via the right-lateral abdomen, caudal to the 13th rib, lateral to the rectus abdominis. In the center of the T-fasteners, a 5fr locking pigtail catheter was placed into the gastric lumen, and then attached to a device to measure outflow and intra-gastric pressure. The stomach was insufflated to 23mmHg and allowed to passively drain from the catheter until intraluminal pressure reached 5mmHg for a total of three cycles. After removal, the gastrostomy site was evaluated endoscopically and laparoscopically. Patients were hospitalized for 72 hours.

Results: Mean catheter placement time was 3.3±0.47 minutes. The mean time to reach ≥ 50% reduction in intra-gastric pressure and ≤6mmHg was 2.1±1.3 and 8.4±5.1 minutes, respectively. After catheter removal, no evidence of gas or fluid leakage at the catheter site was visible laparoscopically or endoscopically. All dogs were clinically normal at 72 hour post-operative.

Conclusions: The described technique can be performed rapidly, and provides continuous gastric decompression with no evidence of post-operative leakage in normal dogs. This technique may be an effective method for sustained gastric decompression in clinical GDV patients but clinical investigation is required.

Evaluation of a Novel Technique for Sustained Gastric Decompression in Dogs with Gastric Dilatation and Volvulus: Temporary Percutaneous Gastropexy and Continuous Decompressive Gastrostomy Catheter

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Abstract:

Objective: Evaluate a technique for ultrasound-guided, percutaneous gastric decompression in dogs with gastric dilatation-volvulus (GDV) using a temporary T-fastener gastropexy (TTG) and decompressive gastrostomy catheter (G-cath), and to compare this method to trocarization.

Study Design: Prospective clinical trial

Animals: Dogs with naturally occurring GDV (n=16).

Methods: Dogs were randomly assigned to a gastric decompression group: Trocar, in which trocarization was performed (n=8) or G-cath, in which a TTG and G-cath were performed (n=8). Success rate, procedure time, intra-gastric pressure (IGP), decompression efficacy and complications were compared between groups.

Results: Successful decompression was achieved in 75% (6/8) of G-cath dogs and 87.5% (7/8) of trocar dogs, (p=0.24). Median time to perform trocarization and G-cath placement was 3.3 (IQR, 2.5–4.8) and 3.7 minutes (IQR, 3.0–4.2) respectively (p=0.52). Median initial IGP for 14 dogs with successful gastric access was 12.6 mmHg (range: 4.2 – 20.2). There was a significant drop in IGP within both groups by 5 minutes (P=0.0008) but no difference between groups (P=0.66). There was no difference in IGP between 5 and 60 minutes in the G-cath group (P=0.24) demonstrating continuous efficacy after catheter insertion. Complications included one splenic and jejunal puncture in the G-cath group, and one malpositioned and ineffective trocar in the trocar group. All dogs survived beyond 14-days of follow-up.

Conclusions: Use of a percutaneous TTG and G-cath was safe and effective at providing continuous gastric decompression in dogs with GDV. Sustained decompression makes the G-cath ideal for cases in which surgical delays are anticipated or unavoidable.

REMOVING OF COMPLETE FRACTURED GUIDING CATHETER FROM THE HEART RIGHT ATRIUM

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An 10 month old female Labrador Retriever was presented with systolic heart murmur and mild exercise intolerance. Ultrasonographic examination showed a severe pulmonary valve stenosis and right ventricle hypertrophy. It was decided to perform pulmonary valve valvuloplasty. The dog was anesthetized and the left jugular vein was accessed with 8 Fr. introducer vascular sheath. A 6 Fr. RCB non-braided guiding catheter was used for contrast injection and intracardiac pressure measurement. During catheter removing his approximately 7 cm distal tip was broken inside the right atrium and jugular vein. Because the foreign body retrieval snare was not available on cathlab, author's method was perform to remove broken catheter. Vascular sheath was exchanger to 11 Fr. diameter. An 0,025" 200 cm length PTFE guidewire was compound on a half and passed thru 9 Fr. 60 cm long catheter. During moving forward thru the distal tip of catheter compounded guidewire loop was spontaneously opened similarly to retrieval snare. After many attempts broken catheter was fixed inside the loop, but too much forced was used and 4mm catheter tip was cuted down by the loop. Second attempt allowed successfully remove catheter from the right atrium. Pulmonary valvuloplasty was finished routinely. The next day after discharge referring veterinarian reported episode of haematuria which was successfully treated by multiple iv fluids infusions and antibiotic administrations.

FEASIBILITY OF A VASCULAR CLOSURE DEVICE (ANGIOSEAL) FOR PERCUTANEOUS ARTERIAL ACCESS IN ANIMALS

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Introduction: Since the 1990s, different types of commercial vascular closure devices have been developed for its use in humans. They avoid the necessity of an open access, reducing intervention time, allowing quick patient ambulation and maintaining vessel patency. The aim of this study is to describe the feasibility, safety and efficacy of a commercial device (Angioseal) for closure of percutaneous arterial accesses in animals.

Materials & methods: The Angioseal system was prospectively studied in 10 pigs and 4 dogs (femoral artery) and 10 horses (carotid artery) after performing a percutaneous arterial access for different purposes (3 diagnostic angiographies, 1 aortic valve dilation, 2 presurgical tumor embolizations, 8 guttural pouch embolizations and 10 carotid stenting for research purposes). Assessment of efficacy was based on bleeding absence by visual inspection and ultrasound examination, immediately after closure device deployment, 10 minutes after anesthetic recovery and 5 and 10 days after arterial access.

Results: In the short term, sign of bleeding was not observed and ultrasound examinations were normal in all dogs, 7 pigs and 8 horses. Due to the superficiality of the artery in two of the dogs the external part of the device was over the skin. A small incision was needed to bury it. One horse and 2 pigs showed some bleeding at the immediate visual inspection that was controlled with manual compression. The dispositive failed in two animals, in a pig because of a excessive pull away maneuver, and in a horse due to inadvertent puncture of the jugular vein. The mid and long time follow up showed absence of hematomas and vessel patency in all the technical success cases.

Conclusion: The use of the Angioseal vascular closure system in animals is easy, feasible and effective, with the inconvenient of its cost. Different systems should be tested. Their use may be a major advantage in equine medicine and could be interesting for small animals in the future.

PROTEIN C ACTIVTY IN DOGS WITH INTRAHEPATIC PORTOSYSTEMIC SHUNTS (IHPSS) BEFORE AND AFTER PERCUTANEOUS TRANSVENOUS COIL EMBOLIZATION (PTCE)

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Objective: To evaluate protein C activity in dogs with IHPSS before and after shunt attenuation via PTCE.

Study design: Retrospective study.

Animals: Thirteen dogs undergoing PTCE.

Methods: Medical records were searched for dogs undergoing PTCE for minimally invasive repair of IHPSS from January 2015 to December 2017. Cases for whom protein C activity assays were performed prior to shunt repair and post-operatively were included. Spearman's rank correlation was used to evaluate for association with change in protein C activity and stepwise estimation was used to create a linear regression model.

Results: Between January 2015 and December 2017, thirteen (13) dogs underwent PTCE and had pre- and post-attenuation protein C activity levels performed. The mean age of dogs was 12.7 months (+/- 1.7). Mean protein C activity pre-shunt attenuation was 45.4% (+/- 6.8) and the mean post-shunt attenuation protein C activity was 64.5% (+/- 21.0), for a mean change in protein C activity of 21.8% (+/- 22.2). Four of 13 dogs (31%) had post-attenuation protein C activity percentage within the reference range. Using liner regression, age was the best predictor for post-PTCE protein C activity ($p = 0.006$) and change in protein C activity ($p = 0.002$).

Conclusions: It is difficult post-PTCE to objectively assess residual IHPSS blood flow. Protein C activity is non-invasive measure of portal blood flow, making it a potential marker to assess for IHPSS completeness of closure after PTCE. Protein C activity increased after PTCE and age was the best predictor for increased post-attenuation protein C activity.

THE TECHNIQUE OF INTRAHEPATIC PORTOSYSTEMIC SHUNTS OCCLUSION WITH USING A MODIFIED CAVA-FILTER IN DOGS

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Introduction: Intrahepatic shunts are often diagnosed in young dogs of large breeds. Transvenous embolization with the stent support and embolic coils is the best proven surgery. However, due to financial factors, owners may not always afford the surgery.

Materials & methods: The modified partial covered cava filter was installed under fluoroscopic control in two dogs with a diagnosis of intrahepatic portosystemic shunt.

Results: We have received a temporary improvement of clinical condition in 2 cases (observation period of more than 6 months). After 6 months in one dog (aged 4 months at the time of cava filter installation) a residually shunt was identified, which required the installation of one embolisation coil behind the cava filter. The control study in 2 months revealed complete closure of the shunt. In the second dog (aged 2 years old at the time of the cava filter installation) after 10 months the same residually shunt was identified and the symptoms were identical to the first study. Installation of the embolisation coil was also recommended.

Conclusion: The technique of endovascular occlusion using a modified cava filter is certainly promising and requires further study.

However, given the poor understanding of the surgery results, the need for additional intervention, at the moment this technique cannot be considered as a method of choice in animals whose owners are experiencing financial difficulties and also requires improvement.

GRADED BALLOON ATRIAL SEPTOSTOMY FOR PALLIATION OF CONGENITAL PULMONARY HYPERTENSION

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A 6-month-old intact female Maltese dog presented for acute onset of syncope. On initial examination, the dog was bright and alert without evident clinical disease. Upon becoming excited at discharge, the dog collapsed and suffered cardiopulmonary arrest. Echocardiography following resuscitation revealed severe pulmonary hypertension. Contrast studies revealed no evidence of intracardiac or extracardiac shunting, thus a presumptive diagnosis of congenital pulmonary hypertension was made. Initial treatment with Sildenafil was effective at relieving syncope, however, the degree of pulmonary hypertension as determined by serial echocardiography was unchanged. Graded balloon atrial septostomy was performed as a palliative procedure. The right external jugular vein and carotid artery were isolated surgically via cut-down. A 4 F Berman was advanced into the aortic root and contrast was administered to define the aortic root and rule out

pulmonary arteriovenous fistulae. A 21 g pediatric Brockenbrough transseptal needle was advanced across the septum and a small bolus of agitated saline was administered to confirm placement in the LA via TEE. A 4 mm cutting balloon was inflated across the atrial septum, followed by 6 mm and 8 mm balloon inflations. Follow-up echocardiography revealed a patent interatrial communication with bidirectional shunting. The patient remains asymptomatic at the time of report submission. To our knowledge, this is the first report in the veterinary literature of graded balloon atrial septostomy performed for therapeutic purposes. Balloon atrial septostomy may represent a promising treatment option for patients with congenital, severe and/or refractory pulmonary hypertension.

EMBOLIZATION OF A HEPATIC ARTERIOVENOUS FISTULAS USING PRECIPITATING HYDROPHOBIC INJECTABLE LIQUID (PHIL) EMBOLIC AGENT

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A 7-month-old male Dachshund dog presented for marked ascites and hepatic encephalopathy. A complex hepatic arteriovenous malformation (HAVM) with multiple acquired portosystemic shunts was diagnosed by abdominal contrast CT scan. Ultrasonography demonstrated portal vein hepatofugal blood flow. The celiac artery and hepatic artery branches were selectively catheterised from the right femoral artery. Contrast angiography under DSA demonstrated arterio-portal communication around gall bladder arising from 4 branches of the hepatic artery. Retrograde filling of portal vein and superior mesenteric vein noted. A Microvention Scepter XC compliant balloon microcatheter and traxcess 0.014 wire combination was advanced through a 5Fr Chaperone outer catheter and the microcatheter balloon inflated to prevent backflow of embolic agent. Embolization was performed with precipitating hydrophobic injectable liquid (PHIL) liquid embolic agent to completely fill the vascular AV bed. Injection was terminated when PHIL could be seen entering the left portal vein beyond the fistula. Ascites resolved within 3 days. Six weeks after the embolization procedure, ultrasonography and CT imaging found increased hepatic volume with hepatic arterial, portal venous and hepatic venous supply. There was no communication between the hepatic artery branches and the portal venous circulation. Blood flow in the portal vein was now hepatopetal. Mild elevation of hepatic enzymes was noted. Treatment of HAVMs has been described with surgical or glue or coil embolization interventional radiographic approaches. PHIL is a recently introduced iodinated dimethyl sulfoxide-based embolic agent for endovascular use. This case is the first reported use of PHIL embolic agent for treatment of a hepatic AVM.