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College of Veterinary Medicine

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Clinical Investigators' Day 2024

Cornell University
College of Veterinary Medicine

Welcome to the 2024 Clinical Investigators' Day, sponsored by the Cornell University College of Veterinary Medicine. The primary goal of this forum is to provide an opportunity for residents and interns to showcase ongoing investigations carried out at Cornell University College of Veterinary Medicine. It is our hope that greater insights will be gained in the breadth and depth of clinical investigations conducted at the College and will serve as a catalyst to promote greater interactions among colleagues with clinical and basic science research interests.

Organizing Committee

Dr. Robert Goggs, Co-Chair
Dr. Kelly Hume, Co-Chair
Dr. Elizabeth Moore, Co-Chair
Dr. Tracy Stokol, Co-Chair
Mr. Doug Fink

The organizing committee thanks the following individuals who contributed to the success of the Day:

Dr. Manuel Martin-Flores
Mr. Dave Frank
Mr. Drew Kirby
Dr. John Parker
Dean Lorin Warnick

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Program Schedule

Friday, March 15, 2024 ● Yarnell Lecture Hall 4

9:00 am **Welcome & Introductions** – Clinical Investigator's Day Organizing Committee

9:00 am – 9:30 am **Keynote Presentation**

- **EQUINE ENDOMETRITIS: DIAGNOSTIC CHALLENGES AND JOURNEY TO BIOMARKERS DISCOVERY**

  Mariana Diel de Amorim, DVM, DVSc, PhD, DACT, Assistant Professor of Theriogenology, Cornell University Department of Clinical Sciences

9:45 am – 10:45 am **Resident Presentations** – Moderated by Dr. Stephanie Hon

- **ANTIMICROBIAL PRESCRIBING IN AN EQUINE TEACHING HOSPITAL**

  Pamela Velarde – Large Animal Internal Medicine Resident Pg. 1

- **MORPHOLOGICAL STUDY OF PULP CAVITY ANATOMY OF CANINE TEETH IN DOMESTIC CATS USING MICRO-COMPUTED TOMOGRAPHY**

  Emilia Chrostek – Dentistry and Oral Surgery Resident Pg. 2

- **POST-MORTEM CHARACTERIZATION OF SUBCLINICAL INFLAMMATION OF NUCHAL BURSAE AND NUCHAL LIGAMENTS IN HORSES**

  Hanna Sfraga – Large Animal Internal Medicine Resident Pg. 3

- **VENIPUNCTURE SITE INFLUENCES BLOOD DROP VOLUME IN C57BL/6 MICE**

  Elizabeth Lavin – Laboratory Animal Medicine Resident Pg. 4

10:45 am – 11:00 am **Break**

11:00 am – 12:00 pm **Resident Presentations** – Moderated by Megan Fahey, Combined DVM/PhD Student

- **INVESTIGATION OF THE EFFECTS OF PRE-STRETCHING ON LAPAROSCOPIC WORKING SPACE IN DOGS**

  Colin Chik – Small Animal Surgery Resident Pg. 5

- **CHANGES TO PACEMAKER PROGRAMMING PARAMETERS OVER TIME IN DOGS**

  Kailah Buchanan – Cardiology Intern Pg. 6

- **STERNAL RECUMBENCY FOR LAPAROSCOPIC RIGHT LATERAL LIVER LOBECTOMY WITH THE USE OF TRANS-DIAPHRAGMATIC PORT. DESCRIPTION OF SURGICAL APPROACH AND CADAVERIC STUDY**

  Alberto Oramas – Small Animal Surgery Resident Pg. 7

Schedule (cont.)

- **AMBULATORY SACROCOCCYGEAL EPIDURAL INJECTION PROVIDES SUPERIOR POST-OPERATIVE ANALGESIA AFTER FELINE OVARIOHYSTERECTOMY (OVH)**

  Shana Wong – Anesthesiology and Pain Management Resident Pg. 8

12:00 pm – 1:30 pm **Lunch**

1:30 pm – 2:30 pm **Resident Presentations and Proposals** – Moderated by Kimaya Bakhle (combined DVM/PhD student)

- **COMPARISON OF TWO LOCATIONS FOR EXTERNAL JUGULAR VEIN CANNULATION IN A PIG MODEL – PROPOSAL**

  Rachel Mandelbaum – Anesthesiology and Pain Management Resident Pg. 9

- **CHARACTERIZATION AND ASSESSMENT OF BIOLOGIC BEHAVIOR OF CANINE SPLENIC STROMAL SARCOMAS - PROPOSAL**

  Corene Bruhns – Medical Oncology Resident Pg. 10

- **ENHANCING POSTOPERATIVE RECOVERY IN RATS (RATTUS NORVEGICUS) AGAINST EXTENDED-RELEASE BUPRENORPHINE SIDE EFFECTS – PROPOSAL**

  Dahihm Kim – Laboratory Animal Medicine Resident Pg. 11

- **REFINEMENT OF CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) THERAPY IN DOGS – PROPOSAL**

  Victoria Albano – Anesthesiology and Pain Management Resident Pg. 12

2:45 pm – 3:00 pm **Award Presentations**

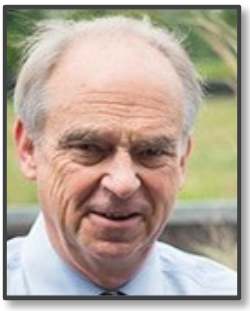
Dr. Lorin Warnick, Dean, College of Veterinary Medicine

Keynote Speaker

Mariana Diel de Amorim, DVM, DVSc, PhD, DACT
Assistant Professor of Theriogenology, Cornell University Department of Clinical Sciences

Dr. Diel de Amorim earned her DVM from Federal Rural University of Pernambuco, Brazil and completed both her PhD and residency in Theriogenology from University of Guelph, Canada. Her research interest is on equine theriogenology, especially pertaining to equine maternal recognition of pregnancy and equine endometritis. She has focused her efforts on looking at the molecular level on the endometrium, corpus luteum and embryo interaction.

2024 Judges



Doug Antczak, , VMD, PhD
Dorothy Havemeyer McConville Professor of Equine Medicine, Department of Microbiology and Immunology, Cornell University

Dr. Antczak's research program is focused on the health of horses. Through the Baker Institute's Equine Genetics Center, the Antczak laboratory has a long history of advancing basic knowledge and applying that knowledge in equine genetics, immunology, and reproduction. The cord that links these three distinct areas of science together is the intimate relationship between mother and fetus during pregnancy in mammals.

Galina Hayes, BVSc, DVSc, PhD, DACVECC, DACVS
Associate Professor of Small Animal Surgery, Department of Clinical Sciences, Cornell University

Dr. Hayes' research interests include the Surgical Techniques Initiative: Clinical trials evaluating changes in surgical methods that can reduce incisional pain and inflammation, reduce infection rates and improve healing in canine surgery. Other areas of interest include predictive scoring systems in clinical medicine, minimally invasive surgery, and trauma management.

2023 Judges (cont.)

Margaret McEntee, DVM, DACVIM, DACVR
Professor of Medical and Radiation Oncology, Department of Clinical Sciences, Cornell University

.

Dr. McEntee earned her DVM from Cornell University and completed residencies at North Carolina State University in both Medical Oncology and Radiation Oncology. Her research interests include Contrast Enhanced CT scanning, advancing the technical aspects of radiation therapy, and linear accelerator/3D treatment planning.

Peter V. Scrivani, DVM, DACVR
Professor and Section Chief of Diagnostic Imaging, Department of Clinical Sciences, Cornell University

Dr. Scrivani earned his DVM from Cornell University and completed his residency at The Ohio State University. His research uses imaging and epidemiologic techniques for investigating and establishing the best clinical practices in animal health care. His specific research focus is advancing the understanding of head and neck disorders, with emphasis on the role of the underlying morphology.

Moderators

Kimaya Bakhle
Combined DVM/PhD Student, College of Veterinary Medicine, Cornell University

Kimaya worked at a small animal clinic during high school, which sparked her interest in veterinary medicine. She pursued this interest through a pre-veterinary biochemistry program at Purdue University and is now enrolled in the Cornell Combined DVM/PhD Program. In the future, Kimaya hopes to use her background in veterinary medicine and cancer biology research to improve outcomes for animals and humans with cancer.

Megan Fahey
Combined DVM/PhD Student, College of Veterinary Medicine, Cornell University

Meg is a fifth-year Combined DVM/PhD student currently working in Dr. Gerlinde Van de Walle's lab. Her research focuses on the secreted products (i.e., secretome) of mesenchymal stromal cells and their potential as an anti-microbial and pro-regenerative therapeutic. Meg is passionate about translational research and aspires to be a clinician-scientist who studies stem cell-derived therapeutics for humans and veterinary species alike.

Stephanie Hon, DVM, DACVAA
Assistant Professor, Section of Anesthesiology and Pain Medicine, College of Veterinary Medicine, Cornell University

Dr. Hon completed her veterinary training at the University of Florida, her rotating internship at Rood and Riddle Equine Hospital, and her anesthesia residency at Cornell University. Her research interests include locoregional and vascular access techniques in pigs, with an emphasis on supporting translational research efforts and bringing those skills and improvements to the clinic.

Pamela S. Velarde, DVM

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Institution and Location	Degree	Year
Universidad Cientifica del Sur, Lima, Peru	DVM	2008
Peterson and Smith Equine Hospital, Ocala, FL	Internship	2021
Hagyard Equine Medical Institute, Lexington, KY	Fellowship	2022
Cornell University, Ithaca, New York	Residency	2022-Present

Current Position

2nd Year Resident, Large Animal Internal Medicine

Abstract Title:

ANTIMICROBIAL PRESCRIBING IN AN EQUINE TEACHING HOSPITAL

Authors Names:

Pamela S. Velarde[1], Kevin J. Cummings[2], Charisse Lapointe[1], Mariajose Cervantes[1], Sadie Hubler[1], Gillian A. Perkins[1]

[1]Department of Clinical Sciences, Cornell University, Ithaca, New York
[2]Department of Public and Ecosystem Health, Cornell University, Ithaca, New York

Project Mentor:

Mentor: Gillian A. Perkins DVM DACVIM, Department of Clinical Sciences, gap7@cornell.edu
Co-Mentor: Kevin J. Cummings DVM PhD, Department of Public and Ecosystem Health, kjc39@cornell.edu

Abstract:

Antimicrobial resistance is a global veterinary and human health concern. There is potential for bacteria to become resistant whenever an antimicrobial is administered, and therefore veterinarians should practice judicious use. Recent studies have shown that equine practitioners may over-prescribe antimicrobials, and antimicrobials classified as critically important by the World Health Organization (WHO) may be given when a first-line antimicrobial would be sufficient. The objective of this retrospective study was to describe the antimicrobial prescribing practices in an equine teaching hospital over a one-year period to highlight possible areas of improvement in antimicrobial stewardship. Electronic medical records from the Cornell University Equine Hospital were searched from January 1st to December 31st, 2021, data collected, and descriptive statistics performed. A total of 33.5% (543/1622) of equine patients were prescribed systemic antimicrobials in 2021. The most common antimicrobial drug classes used were penicillins and aminoglycosides. Most horses (75%) were prescribed ≤ 2 antimicrobials. About 24% of non-surgical patients were given antimicrobials when there was no evidence of infection on clinical exam and diagnostic testing. Surgical patients accounted for around 58% of those receiving antibiotics and many (about 33%) were clean surgeries. Cultures were only submitted about 16% of the time. In conclusion, antimicrobial prescribing practices could be improved at the equine teaching hospital.

Emilia Chrostek, DVM

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Institution and Location	Degree	Year
Colorado State University	DVM	2021
VCA Canada Calgary Animal Referral and Emergency Centre, Calgary, Alberta, Canada	Internship	2019
Cornell University, Ithaca, New York	Residency	2021-Present

Current Position

2nd Year Resident in Dentistry and Oral Surgery

Abstract Title:

MORPHOLOGICAL STUDY OF PULP CAVITY ANATOMY OF CANINE TEETH IN DOMESTIC CATS USING MICRO-COMPUTED TOMOGRAPHY

Authors Names:

Emilia Chrostek[1], Santiago Peralta[1], Nadine Fiani[1]

[1]Department of Clinical Sciences, Cornell University, Ithaca, NY, USA

Project Mentor(s):

Mentor: Nadine Fiani, BVSc, Dipl. AVDC, FF-AVDC-OMFS, AVDC-ZWD, Department of Clinical Sciences, nf97@cornell.edu

Co-mentor: Santiago Peralta, DVM, Dipl. AVDC, FF-AVDC-OMFS, Department of Clinical Sciences, sp888@cornell.edu

Abstract:

An understanding of the pulp cavity anatomy of individual teeth is essential for success during endodontic therapy. The primary objective of this study was to document pulp cavity anatomy and summarize numerical data of maxillary and mandibular canine teeth of domestic cats using micro-computed tomography (micro-CT). Thirty-nine canine teeth from eleven domestic cat cadaveric specimens were extracted and scanned. Segmentation of the pulp cavity was performed using the Avizo (v2022.2) software. The morphological features of the pulp cavity including configuration, presence of apical deltas and lateral canals was recorded. A quantitative analysis was performed on thirty-one teeth to explore associations between variables using a linear mixed model. Correlation between pertinent continuous variables was assessed using a Pearson's correlation test. Most pulp cavities exhibited a cylindrical configuration in the coronal third to an ovoid configuration in the middle to apical third. A ribbon-like canal was observed in 6/31 teeth (19%). All teeth depicted an apical delta, except for two teeth that showed a single canal exiting at the apex. In 15/31 teeth (48%), the primary root canal within the apical delta could be clearly identified and in 16/31 (52%) the primary root canal was indiscernible. Additionally, the pulp cavities of maxillary canine teeth were significantly larger and longer and the cusp-to-tip length was longer, when compared to mandibular teeth. The apical delta length was negatively correlated to pulp cavity volume. This study revealed that the canine tooth pulp cavity in cats varies considerably and should be a consideration during endodontic therapy.

Hanna R.M. Sfraga, DVM

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Institution and Location	Degree	Year
Colorado State University, Ft. Collins, Colorado	DVM	2021
Cornell University, Ithaca, New York	Residency	2022-Present

Current Position

2nd Year Resident in Large Animal Internal medicine

Abstract Title:

POST-MORTEM CHARACTERIZATION OF SUBCLINICAL INFLAMMATION OF NUCHAL BURSAE AND NUCHAL LIGAMENTS IN HORSES

Authors Names:

Hanna RM Sfraga[1], Elena A Demeter[2], Toby L Pinn-Woodcock[2], Cassandra Guarino[2], Marta Cercone[1]

[1]Department of Clinical Sciences, Cornell University, Ithaca, New York

[2]Department of Population Medicine and Diagnostic Sciences, Cornell University, Ithaca, New York

Project Mentor(s):

Mentor: Marta Cercone, DVM, PhD, DACVIM-LA, Department of Clinical Sciences, mc957@cornell.edu

Abstract:

Nuchal bursitis is an uncommon and challenging cause of pain and decreased performance in horses. Radiographic identification of nuchal bursae and/or ligament mineralization is often considered an incidental finding in the absence of swelling and pain. Historically, the etiologic agent of main concern in septic bursitis was Brucella abortus/suis. Recently, increasing cases of nuchal bursitis associated with Borrelia burgdorferi infection have been reported.

The aims of this prospective study were to investigate the incidence of subclinical nuchal bursitis, characterize its histopathologic features and its association with Borrelia burgdorferi.
This cadaver study used a convenient population of horses in a B. burgdorferi endemic region undergoing euthanasia and tissue donation without history or clinical signs of nuchal bursitis and/or ligament pathology.

Fifteen horses, 4-29 years old, (5 geldings, 10 mares, various breeds) were enrolled. Serum and post-mortem nuchal bursae, synovial fluid and nuchal ligament were collected. The bursae and ligament were evaluated via histopathology score system, grading inflammation, edema, fibrosis, and mineralization (0-normal to 18-severe). Lyme Multiplex assay on serum and Borrelia burgdorferi PCR on bursae were performed.

Inflammation of the bursa was detected in four horses, and six more showed other mild changes (edema, fibrosis, mineralization). The overall histopathology score ranged from 1 to 7 (mean 2±1.65). Five horses had positive Lyme Multiplex assay antibody titers, while all tissue samples were negative on B. burgdorferi PCR.

Our study suggests a high incidence of mild/moderate nuchal bursae and ligament histopathologic changes (67%), warranting further investigation of their causes and implications.

Elizabeth S. Lavin, DVM
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Institution and Location	Degree	Year
Cornell University, Ithaca, New York	DVM	2021
Cornell University, Ithaca, New York	Residency	2021-Present

Current Position
3rd Year Resident in Laboratory Animal Medicine

Abstract Title:
VENIPUNCTURE SITE INFLUENCES BLOOD DROP VOLUME IN C57BL/6 MICE

Authors Names:
Elizabeth S Lavin1, Erica R Feldman1, Scott M Soprano1, Elizabeth S Moore1,2

[1]Center for Animal Resources and Education, Cornell University, Ithaca, New York
[2] Meinig School of Biomedical Engineering, Cornell University, Ithaca, New York

Project Mentor(s):
Mentor: Elizabeth Moore, DVM, PhD, Center for Animal Resources and Education, esm84@cornell.edu

Abstract:

Many experiments require the collection of blood samples from mice. However, the size of mice limits the volume that may be safely collected. In IACUC protocols, investigators may report the amount of blood they collect from mice as a number of drops. Many institutions use an anecdotal conversion factor (1 blood drop = 25 µl) to ensure that research protocols remain in compliance with institutional guidelines. Previous work has not experimentally determined the volume of a murine blood drop. In this 10-week crossover experiment, two phlebotomists bled thirty C57BL/6J mice from three sites (facial, saphenous, and tail). Male and female mice were weighed weekly and divided amongst 5 groups (n=6): left and right tail vein, left and right saphenous vein, and facial vein. A single blood drop from each site was weighed, and the volume of each drop was calculated using the average blood density determined from 8 mice bled at the end of the study. Site and side significantly influenced drop weight and thus calculated volume. Facial venipuncture produced the largest drop volume (mean: 21.7 µl), followed by the saphenous (mean: 9.97 µl) and tail (mean: 4.96 µl) sites. Left-sided venipuncture was associated with slightly larger-volume drops, though effect size was small. The results of this study may be useful in more accurately estimating blood loss via conversion of drops to volume. Additionally, collection from saphenous and tail veins apparently minimizes blood loss relative to facial venipuncture and may optimize serial collection of small-volume samples and animal welfare.

Colin Chik, DVM

cpc77@cornell.edu

Institution and Location	Degree	Year
Cornell University, Ithaca, New York	DVM	2020
Cornell University, Ithaca, New York	Residency	2021-Present

Current Position

3rd Year Resident in Small Animal Surgery

Abstract Title:

INVESTIGATION OF THE EFFECTS OF PRE-STRETCHING ON LAPAROSCOPIC WORKING SPACE IN DOGS

Authors Names:

Chik C[1], Hayes G[1], Martin-Flores M[1], Buote NJ[1]

[1]Department of Clinical Sciences, Cornell University, Ithaca, New York

Project Mentor(s):

Mentor: Nicole Buote DVM DACVS-SA (MIS Founding Fellow), Department of Clinical Science

Abstract:

Laparoscopy is increasingly used in veterinary patients because it decreases surgical trauma, improves cosmetic appearance, and has fewer surgical complications such as hemorrhage, dehiscence, and infection. Standard laparoscopy uses carbon dioxide (CO2) insufflation to expand the abdomen, allowing for visualization and introduction of instrumentation. An inability to achieve adequate working space during laparoscopy can result in unnecessary tissue trauma, surgical error, prolonged surgical times, and the need to convert to an open procedure. Several methods can improve the surgical working space. Pre-stretching of the abdominal wall has shown the most promise in human and porcine studies. The goal of our prospective study was to determine if transient pre-stretching of the abdominal wall would provide improved working space during canine elective laparoscopic procedures. In fifty healthy client-owned dogs, we pre-stretched the abdominal wall prior to laparoscopy by insufflating to an intraabdominal pressure of 10 mmHg for three minutes. We then carried out the laparoscopic procedure at a desufflated pressure of 6 mmHg. We measured changes in skin and intraabdominal working length every 30 minutes intra-operatively. We found a median increase in intra-abdominal working length of 4.44% (IQR 5.74%) and intra-abdominal working volume of 6.92% (IQR 5.36%) after abdominal pre-stretching compared to initial 6 mmHg IAP measurements ($p < 0.001$). Distance measurements at the end of surgery were similar to those obtained immediately after pre-stretching. In conclusion, pre-stretching of the abdominal wall improved working space and volume and the effects of pre-stretching persisted throughout the laparoscopic procedure.

Kailah M. Buchanan, DVM
kmb386@cornell.edu

Institution and Location	Degree	Year
St. George's University, Grenada	DVM	2021
University of Illinois, Urbana, Illinois	Internship	2022
Kansas State University, Manhattan, Kansas	Internship	2023
Cornell University, Ithaca, New York	Internship	2023-Present

Current Position
Intern in Cardiology

Abstract Title:
CHANGES TO PACEMAKER PROGRAMMING PARAMETERS OVER TIME IN DOGS

Authors Names:
Kailah M. Buchanan[1], Shana B. Mintz[1], Weihow Hsue[1]

[1]Center of Animal Resources and Education, Cornell University, Ithaca, New York

Project Mentor(s):
Mentor: Shana B. Mintz, DVM, DACVIM (Cardiology), Department of Clinical Sciences, smb33@cornell.edu
Co-mentor: Weihow Hsue DVM, DACVIM (Cardiology), Department of Clinical Sciences, wh446@cornell.edu

Abstract:

Background and Objectives
Although permanent pacemakers are routinely used to treat symptomatic bradyarrhythmias, long-term changes in interrogated and programmed parameters are not well characterized. The primary goal is to identify pacemaker parameters that significantly change over time. Secondary aims include comparing patient or pacemaker characteristics, such as body weight, generator brand, lead fixation type, etc., in relation to these changes and to complications.

Methods
Seventy-three client-owned dogs who received a pacemaker and had at least two subsequent interrogations were retrospectively included. Patient characteristic and pacemaker parameters were documented. Timing of recheck interrogations were binned for analysis in a linear mixed effects model. Complication frequency was compared between characteristics.

Results
Pulse width, battery life, and battery impedance significantly changed over time. Patients under seven years old had less battery life overall (P=0.0014) as well as at multiple time points. Patients with endocardial leads with active fixation had a higher amplitude threshold (P=0.0013), programed amplitude (P=0.0073), and sensitivity (P=<0.0001) compared to passive fixation, but there was no difference in the frequency of complications between types of fixation. Medtronic generators had more programming complications (P=0.0102) and required a higher programmed sensitivity (P=0.0018). A higher sensitivity (P=<0.0001) was also programmed in those with bipolar leads.

Conclusions and Clinical Importance
Some pacemaker parameters changed over time, highlighting the necessity for evaluation of the individual patient. Certain patient or pacemaker characteristics may influence pacemaker function, with lead fixation type showing particular importance but may not lead to more complications.

Alberto Oramas, DVM
ao374@cornell.edu

Institution and Location	Degree	Year
University of Las Palmas De Gran Canaria	DVM	2013
Cornell University, Ithaca, New York	Residency	2022-Present

Current Position
2nd Year Resident in Small Animal Surgery

Abstract Title:
STERNAL RECUMBENCY FOR LAPAROSCOPIC RIGHT LATERAL LIVER LOBECTOMY WITH THE USE OF TRANS-DIAPHRAGMATIC PORT. DESCRIPTION OF SURGICAL APPROACH AND CADAVERIC STUDY

Authors Names:
Alberto Oramas[1], Nicole J. Buote[1]

[1]Department of Clinical Sciences, Cornell University, Ithaca, New York

Project Mentor(s):
Mentor: Nicole J. Buote, DVM, DACVS, MIS Founding Fellow, Department of Clinical Sciences, njb235@cornell.edu

Abstract:
Introduction:
The primary objective of this study is to evaluate the feasibility of laparoscopic right lateral liver lobectomy in canine cadavers positioned on sternal recumbency with the aid of an intrathoracic trans-diaphragmatic trocar (ITT). We hypothesized that right lateral liver lobectomies would be successfully performed with the suggested laparoscopic approach regardless of patient size.

Methods:
Ten canine cadavers euthanized for reasons unrelated to the study underwent laparoscopic right lateral liver lobectomies in sternal recumbency with an ITT. After liver lobectomy all livers were harvested. Distance from the transection to the hilus was recorded. Total surgical time, liver lobectomy surgical time, weight of the liver lobes, and complications were documented for each cadaver.

Results:
The median cadaveric weight was 19.5 kg (range 10.4-38). Median total surgical time was 34.1 minutes (range 25.1- 62.8). Median liver lobectomy surgical time was 17.8 minutes (range 7.2-42.9). The median weight of the right lateral liver lobe resected was 52.5 grams (range 15- 250). The mean distance to the hilus was 19.8 mm (STD +/- 9.4). All liver lobectomies were successfully completed.

Conclusion:
In conclusion, laparoscopic right lateral liver lobectomy is feasible in canine patients of different sizes in sternal recumbency. The use of a trans-diaphragmatic port can help to evaluate proximity to the hilus and manipulation of the liver lobes.

Shanna Wong, DVM

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Institution and Location

North Carolina State University, Raleigh, North Carolina
The Animal Medical Center, New York, New York
Cornell University, Ithaca, New York
Cornell University, Ithaca, New York

Degree	Year
DVM	2020
Internship	2021
Sp. Intership	2022
Residency	2022-Present

Current Position

2nd Year Resident in Anesthesia and Pain Management

Abstract Title:

AMBULATORY SACROCOCCYGEAL EPIDURAL INJECTION PROVIDES SUPERIOR POST-OPERATIVE ANALGESIA AFTER FELINE OVARIOHYSTERECTOMY (OVH)

Authors Names:

Shanna Wong[1], Richard Muto[1], Kailey Tobin[1], Stephen Parry[2], Manuel Martin-Flores[1] Luis Campoy[1], Robin Gleed[1], Jordyn Boesch[1]

[1]Department of Clinical Sciences, Cornell University, Ithaca, New York
[2]Cornell Statistical Consulting Unit, Cornell University, Ithaca, New York

Project Mentor(s):

Mentor: Jordyn M. Boesch, DVM, PhD, DACVAA, Department of Clinical Sciences, jmb264@cornell.edu

Abstract:

An effective ambulatory sacrococcygeal epidural technique could improve recovery of cats after OVH. We hypothesized that, in cats administered a standard anesthetic and analgesic drug protocol, an epidural injection would improve post-operative analgesia compared to the standard protocol alone. Healthy female cats undergoing OVH were assigned randomly to control or epidural groups (n = 29 each). After surgery and immediately before recovery, an electrolocation-guided sacrococcygeal epidural injection was administered to the epidural group (0.75 mL/kg injectate volume, 0.1 mg/kg PF morphine, 1 mg/kg PF bupivacaine, remainder 0.9% saline). Using the Feline Grimace Scale (FGS), a blinded anesthesiologist assessed pain after extubation (T0) at T1, 2, 4, 6, 8, 12, and 20 hours. Whenever FGS score exceeded 3, rescue analgesia (2 mg/kg robenacoxib SC) was provided. Kaplan-Meier survival curves demonstrated a significant (log-rank test, $p < 0.0001$) difference between groups in time to rescue analgesia, with robenacoxib required in 24/29 cats (83%; all at T1) and 6/29 cats (21%; 4 cats at T1, 2 cats at T2) in the control and epidural groups, respectively ($p < 0.0001$). A linear mixed effect model showed a significant effect of the interaction of time and group; mean FGS scores (mean ± standard deviation) at T1 were 5.3 ± 2.5 and 1.8 ± 1.8 in the control and epidural groups, respectively ($p < 0.0001$). Adding an ambulatory sacrococcygeal epidural injection of morphine and bupivacaine to a standard drug protocol provided superior analgesia for up to 20 hours after OVH.

Rachel P. Mandelbaum, DVM

rpm247@cornell.edu

Institution and Location	Degree	Year
Michigan State University; East Lansing, Michigan	DVM	2021
The Animal Medical Center; New York, New York	Internship	2022
The Animal Medical Center; New York, New York	Specialty Intern.	2023
Cornell University, Ithaca, New York	Residency	2023-Present

Current Position
1st Year Resident in Anesthesiology

Abstract Title:
COMPARISON OF TWO LOCATIONS FOR EXTERNAL JUGULAR VEIN CANNULATION IN A PIG MODEL

Authors Names:
Rachel P. Mandelbaum[1], Cristina de Miguel Garcia[1], Barbara Delvescovo[1], Shanna Wong[1], Julia Bledsoe[1], Kailey Tobin[1], Jordyn Boesch[1], Stephanie Hon[1]

[1]**Department of Clinical Sciences, Cornell University, Ithaca, New York**

Project Mentor(s):
Mentor: Stephanie A. Hon DVM DACVAA, Department of Clinical Sciences, sar299@cornell.edu
Co-Mentor: Barbara Delvescovo, DVM, DACVIM, Department of Clinical Sciences, bd382@cornell.edu

Abstract:

Background/Rationale
Research pig models often require external jugular vein (EJV) cannulation to accomplish intricate study design elements. Although historically surgically placed, EJV cannulation via minimally invasive, ultrasound guidance techniques has been described; however, optimal placement location has not. This project aims to compare two locations for EJV cannulation based on two factors associated with successful placement: introducer insertion angle (INA - angle between introducer needle trajectory and superficial EJV wall trajectory) and maximum vessel diameter (MVD - the maximum distance measured from superficial to deep vessel wall in longitudinal plane).

Hypothesis and Scientific Design
The primary hypothesis is that the INA will be more acute in the caudal neck compared to the middle neck, the secondary hypothesis is that the MVD will be larger in the caudal neck compared to the middle neck. Eight pigs will be anesthetized and placed into standard positioning for cannulation. The caudal and middle neck will be marked via anatomical landmarks. At each location, INA and MVD will be recorded. Data will be tested for normality using a Shapiro–Wilk test and compared using a Student's t-test or Wilcoxon rank sum test, based on normality.

Expected Outcomes
From clinical experience, the authors are consistently able to place EJV cannulas in the caudal neck, and anecdotally the difference in success between operators seems to be placement location. Cadaver dissection and initial pilot work support the hypotheses, and expected outcomes are a more acute INA and larger MVD in the caudal neck compared to the middle neck.

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Institution and Location	Degree	Year
Cornell University, Ithaca, New York	DVM	2021
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Current Position

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Abstract Title:

CHARACTERIZATION AND ASSESSMENT OF BIOLOGIC BEHAVIOR OF CANINE SPLENIC STROMAL SARCOMAS

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Abstract:

Background/Rationale

The diagnosis splenic stromal sarcomas (SSS) is applied to a variety of spindle cell tumors of the spleen, but there can be considerable histologic crossover with other primary splenic sarcomas. Histologic nomenclature has revised the former diagnosis of fibrohistiocytic nodules into more specific subtypes, including SSS, in the last decade. Clinical data regarding specific treatment and outcome for SSS is not well described. Developing an understanding of the tissue of origin to determine if these tumors represent distinct subtypes is clinically important. If a subset of SSS represent poorly defined counterparts of more common malignancies, such as hemangiosarcoma or histiocytic sarcoma, this significantly impacts patient prognosis, outcome, and treatment recommendations.

Hypothesis, Scientific Design, and Expected Outcomes

The hypothesis of this study is that a panel of immunohistochemical (IHC) stains applied to previously diagnosed SSS cases will alter the histologic diagnosis in a subset of cases and better characterize this group of tumors. To investigate this hypothesis, electronic medical records will be searched for cases of canine splenic masses diagnosed as SSS and fibrohistiocytic nodule(s). All cases with tissue samples identified will have IHC markers applied to confirm mesenchymal origin (vimentin) and characterize poorly-differentiated hemangiosarcoma (vWF/CD31), histiocytic sarcoma (IbA1), and leiomyosarcoma (alpha smooth muscle actin). The tumors will then be evaluated to determine if IHC alters the diagnosis, and the distribution and frequency of tumor subtypes in the population. Medical records will be reviewed to determine if any histologic characteristics impact patient outcomes, including progression free interval and overall survival.

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Abstract Title:
ENHANCING POSTOPERATIVE RECOVERY IN RATS (RATTUS NORVEGICUS) AGAINST EXTENDED-RELEASE BUPRENORPHINE SIDE EFFECTS

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Abstract:
The precise management of postoperative pain in laboratory animals is pivotal for enhancing animal welfare and ensuring reliable experimental results. This research aims to refine the application of extended-release buprenorphine (Ethiqa), the only FDA-approved opioid for long-term analgesia in rodents, to optimize postoperative pain treatments. Despite and the advantage of the Ethiqa's long duration of action, there are significant adverse effects from its post-operative administration, including pica behavior, consuming non-food substances and compromised gastrointestinal (GI) motility. Preliminary studies have identified a substantial post-operative mortality rate linked to pica behavior following Ethiqa administration. Here, I propose a dual-pronged approach to refine pain management in Sprague-Dawley rats, addressing the adverse effects of Ethiqa: The first prong involves inhibiting pica behavior, and the second prong focuses on improving reduced GI motility. I hypothesize that these adjustments in analgesic regimen will both alleviate the side effects and ensure sustainable, long-term pain management, advancing animal welfare. The first aim seeks to attenuate pica behavior through the co-administration of the serotonin antagonist ondansetron with Ethiqa. I will employ quantitative measures such as kaolin consumption to assess pica behavior. The second aim is to enhance GI motility to prevent Ethiqa-associated GI complications using low-dose naloxone without reversing analgesia. This will involve monitoring GI transit times and overall recovery post-treatment. The successful implementation of this research will align with the Three R's of animal research and will set a new standard in analgesic care operating procedures, contributing to the refinement of pain management strategies and animal welfare.

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Abstract Title:

REFINEMENT OF CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) THERAPY IN DOGS

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Abstract:

Postoperative respiratory dysfunction is common in dogs. Continuous positive airway pressure (CPAP) is a non- invasive ventilatory technique that increases airway diameter and functional residual capacity (FRC) leading to improved overall ventilatory function. Despite its increased use, several variables, such as fresh gas flow (FGF) rate and CPAP levels are empirically selected, even though inappropriate settings could lead to hypoventilation, hemodynamic impairment, and suboptimal FRC maximization. Therefore, this proposal aims to evaluate the impact of 1) Three rates of FGF on reinhalation; 2) Three levels of CPAP on hemodynamic stability and FRC. Eight healthy research beagles will be sedated with a propofol controlled rate infusion. For Aim 1, dogs will be administered FGF rates of 10, 15, and 20 liters per minute (Lpm), in random order, at a fixed 5cmH2O CPAP level. The main outcomes will be the partial pressure of arterial CO2 (PaCO2) and the inspired pressure of CO2 (PiCO2) measured by arterial blood gases and side-stream capnography, respectively. For Aim 2, and after a washout period, dogs will be re-sedated, and CPAP will be randomly administered at 5, 8 and 12 cmH2O, at a fixed oxygen flow rate of 15 Lpm. The main outcomes will be cardiac output, measured by transpulmonary thermodilution, mean arterial blood pressure (MAP), and end-expiratory lung impedance (EELI), a surrogate of FRC, measured by electrical impedance tomography. We expect to generate relevant knowledge that will inform clinicians on how to optimize and individualize the rapidly expanding therapy with CPAP.