PROGRESSIVE RIB FRACTURES SECONDARY TO LARYNGEAL PARALYSIS IN A CAT: A CASE REPORT

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ABSTRACT

Rib fractures in animals are typically caused by trauma but can also result from respiratory, cardiac, metabolic, or neoplastic diseases. Laryngeal paralysis in cats is a rare condition that leads to upper airway obstruction, and to our knowledge, there have been no previous reports of secondary rib fractures caused by laryngeal paralysis in cats. This report presents a rare case of progressive rib fractures secondary to laryngeal paralysis, successfully treated surgically with a favorable outcome. A 13-year-old neutered male mixed-breed cat was referred for two rib fractures and respiratory distress. Physical examination revealed paradoxical movement of the left thoracic wall, consistent with flail chest. Although there was no history of trauma, radiography showed fractures in five ribs (left 8th to 11th and right 10th). Blood tests ruled out kidney disease and metabolic disorders, and ultrasound excluded heart disease. On day 2, CT confirmed eight rib fractures (left 8th to 13th and right 9th and 10th). Since the cause remained unknown, left-sided rib fracture, which was causing a flail chest, was repaired to improve breathing. However, on day 3, right-sided flail chest developed, and CT revealed further fractures (right 8th to 12th ribs). A second surgery was performed, resolving the flail chest. On day 8, the cat developed inspiratory distress without flail chest, and laryngeal paralysis was suspected from respiratory pattern. Laryngeal examination under sedation confirmed bilateral laryngeal paralysis, and unilateral arytenoid lateralization was performed. Postoperatively, the cat's breathing improved significantly, and it was discharged on day 13. At day 94, the cat remained stable without complications. This case suggests that increased respiratory effort due to laryngeal paralysis can cause fatigue fractures from repetitive mechanical stress. Flail chest complicated the diagnosis, delaying appropriate treatment. Clinicians should thoroughly investigate underlying conditions in non-traumatic rib fractures to ensure timely intervention.

KEYWORDS: Flail chest; Laryngeal paralysis; Rib fractures; Unilateral arytenoid lateralization

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DIGITAL OROTRACHEAL INTUBATION IN FOUR DOGS REQUIRING URGENT AIRWAY SECUREMENT

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ABSTRACT

A 9-year-old, 4.9 kg castrated male Poodle with a cough and a subcutaneous mass, and a 13-year-old, 5.7 kg castrated male Poodle with dyspnea were referred to a diagnostic imaging center for computed tomography (CT). During induction of anesthesia, a cyst obstructing the glottis was identified, making it invisible despite laryngoscope use. A 9-year-old, 8.0 kg castrated male Bichon Frise with bilateral submandibular masses was also referred for CT. Intubation for inhalant anesthesia was challenging due to limited mouth opening. A 14-year-old, 5.3 kg castrated male Miniature Pinscher with a cough developed dyspnea and cyanosis post-extubation, attributed to laryngeal edema, soft palate swelling, and sticky saliva, complicating reintubation with a laryngoscope. To facilitate digital intubation in these four dogs, the operator inserted the index finger of the non-dominant hand into the oral cavity, advancing along the midline of the tongue to reach the epiglottis. The epiglottis was then tilted forward, allowing palpation of the laryngeal inlet. Holding the endotracheal tube in the dominant hand, the operator guided it between the index finger of the non-dominant hand and the tongue. Once the tube's tip contacted the fingertip, it was carefully advanced into the larynx. Successful airway management in these cases allowed for completion of the CT scans and emergency treatments related to oxygenation and ventilation. While digital intubation is commonly used in large animal practice and human medicine, its detailed techniques and clinical applications have not been extensively documented in small animal practice. Given the advantage of tactile perception in recognizing anatomical structures without additional equipment, blind digital intubation may serve as a valuable strategy for emergency airway management in dogs.

KEYWORDS: Blind digital intubation; Difficult intubation; Dog; Tactile perception

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CYSTOURETHRAL ANASTOMOSIS AT THE APEX OF THE BLADDER FOR SURGICAL RECONSTRUCTION FOLLOWING IATROGENIC PROSTATECTOMY IN A DOG

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ABSTRACT

Primary surgical repair or urinary diversion is indicated for complete urethral transection. Urinary diversion procedures often lead to postoperative complications; therefore, primary surgical repair, which can better preserve function, is preferable. In this case, successful reconstruction was achieved by inverting the bladder and performing cystourethral anastomosis at the apex of the bladder following iatrogenic prostatectomy. This report provides an overview of the procedure.

An 11-month-old male Japanese Spitz was referred for surgical reconstruction of the urethra following iatrogenic prostatectomy. The referring veterinarian had performed urinary diversion using tube cystostomy to manage urinary ascites and urinary obstruction caused by the iatrogenic prostatectomy, resulting in a stable general condition for the patient. Our examination revealed a 4.6 cm urethral defect, left ureteral stenosis, and an intra-abdominal left cryptorchid testis. Surgery revealed that the ureteral stenosis was caused by suturing of the bladder neck. Additionally, severe adhesions at the bladder neck and a long urethral defect made cystourethral anastomosis difficult. To avoid nerve and vascular damage from further adhesion dissection, the adhesions at the bladder neck were left intact. Instead, the cranial portion of the bladder was inverted caudally and anastomosed to the distal urethra. Additionally, ureteroneocystostomy was performed at the left side of the bladder. Postoperatively, urinary incontinence was partially controlled with the administration of phenylpropanolamine. No evidence of urethral stricture, a known complication of cystourethral anastomosis, was observed. This was attributed to the preservation of blood flow and the absence of excessive tension at the anastomotic site, and precise mucosal apposition suturing of the urethra.

Cystourethral anastomosis at the apex of the bladder can be a viable option even in cases with relatively extensive urethral defects. Furthermore, proper case selection and precise surgical technique are crucial in preventing urethral stricture.

KEYWORDS: Cystourethral anastomosis; Prostatectomy; Urinary diversion

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APPLICATION OF WOUND RETRACTOR IN CYSTOTOMY FOR URINARY CALCULI REMOVAL IN DOGS: CASE REPORTS

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ABSTRACT

Cystotomy is a common surgical procedure for removing urinary calculi in dogs. Traditional cystotomy often requires a relatively large abdominal incision to ensure adequate visualization and manipulation. In these case reports, we describe the successful applications of a wound retractor to minimize the incision size while maintaining sufficient exposure for cystotomy in two canine patients. A 5-year-old intact female Spitz (7 kg) and a 12-year-old castrated male Jindo mix (15.8 kg) were presented with hematuria and dysuria. Abdominal imaging confirmed the presence of urinary calculi in both patients. A modified cystotomy approach was performed using a wound retractor, allowing for a smaller incision (approximately 1 inch) compared to conventional techniques. After minimal incision, a wound retractor was placed, and the bladder was exteriorized using stay sutures. Babcock forceps were used to manipulate the bladder, and wet lap sponges were applied to prevent tissue desiccation. Urinary calculi were successfully removed, with analysis revealing magnesium ammonium phosphate hexahydrate (struvite) in the Spitz and calcium oxalate in the Jindo mix. The bladder was closed using a two-layer suture technique. Both patients recovered without complications, and postoperative monitoring revealed normal urination without recurrence of calculi within the follow-up period. The application of a wound retractor facilitated a smaller incision while ensuring adequate visualization and access to the surgical site. This approach may provide advantages in reducing surgical trauma, promoting faster recovery, and increasing owner satisfaction with the surgical procedure.

KEYWORDS: Cystotomy; Wound retractor; Urinary calculi; Minimally invasive surgery; Canine bladder surgery

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EVALUATION OF VENTILATORY CHANGES DURING LAPAROSCOPIC SURGERY IN BRACHYCEPHALIC AND NON-BRACHYCEPHALIC DOGS

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ABSTRACT

Brachycephalic dogs have anatomical and physiological characteristics that may increase the risk of respiratory complications during anesthesia, particularly in laparoscopic procedures requiring pneumoperitoneum. This study retrospectively analyzed ventilatory changes in brachycephalic and non-brachycephalic dogs undergoing laparoscopic surgery. Ten dogs (five brachycephalic and five non-brachycephalic) were included, all receiving volume-controlled ventilation with a tidal volume (TV) of 8 mL/kg. Pneumoperitoneum was induced to an intra-abdominal pressure of 10 mmHg, and ventilatory parameters, including peak inspiratory pressure (PIP), TV, dynamic compliance, respiratory rate, and concentration of end-tidal carbon dioxide ($EtCO_2$), were recorded before and 15 minutes after intra-abdominal pressure elevation. Wilcoxon signed-rank test and Mann-Whitney U test were used for statistical analysis, with significance set at $p < 0.05$. In the brachycephalic group, the median (interquartile range) PIP significantly increased from 11 (9.5–12) to 14 (13–17.5) after pneumoperitoneum, while compliance significantly decreased from 10 (5–10.5) to 4 (3–6.5). No significant change was observed on TV. In the non-brachycephalic group, compliance decreased significantly from 8 (6–21.5) to 6 (4–15), whereas PIP and TV remained unchanged. Respiratory rate and $EtCO_2$ showed no significant differences before and after pneumoperitoneum in both groups. No statistically significant differences were observed between groups for any of the assessed parameters. These findings suggest that laparoscopic surgery may have a negative impact on respiratory mechanics in brachycephalic dogs, as evidenced by increased PIP and reduced compliance. Although no significant differences were observed between groups, likely due to the small sample size, further studies with larger populations are needed to better understand anesthetic and ventilatory considerations in brachycephalic breeds undergoing laparoscopic surgery.

KEYWORDS: Anesthesia; Brachycephalic dogs; Intra-abdominal pressure; Laparoscopic surgery; Ventilation

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Thoracic lateral cutaneous branch block using hit-rib technique in dogs: a non-randomized clinical trial

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ABSTRACT

The conventional serratus plane block has been performed by ultrasound-guided and the block covers only 4 to 5 range of ribs. The plane through which the thoracic lateral cutaneous branches pass can be termed the thoracic lateral cutaneous plane (TLC_{PLANE}). Through a cadaveric study, via the anatomical landmark-guided hit-rib technique, the solution distribution to the overall thorax was confirmed. The aim of this study was to evaluate the analgesic effect of the TLC_{PLANE} block using the hit-rib technique in patients undergoing thoracic surgery, and to compare its effectiveness with that of conventional regional anesthesia techniques. Fourteen patients were alternately assigned to either the hit-rib technique group (H-group) or the conventional regional anesthesia group (C-group) based on their order of presentation to the hospital. In the H-group, a 23- to 26-gauge hypodermic needle was selected according to the patient's body weight and body condition score. For the hit-rib technique, the needle was inserted perpendicularly through the skin until it contacted the target rib (R4, R7, or R10). For each injection, 0.13 mL kg^{-1} of 0.5% bupivacaine was administered. Pain was assessed using the Short Form of the Glasgow Composite Measure Pain Scale (GCMPS-SF) at 1, 2, 4, 6, and 8 hours postoperatively in both groups. The time required to perform each regional anesthesia technique was also recorded. Differences in pain scores between groups were analyzed using a linear mixed model, and the time required for each technique was compared using the Mann–Whitney test. Both groups demonstrated effective pain control, with no statistically significant difference in GCMPS-SF scores between groups (p=0.054). However, the hit-rib technique required significantly less time for anesthesia administration (p=0.017). Considering the simplicity, rapidity, convenience, and versatility of the technique, it is expected to apply to various clinical patients. It can also be useful in various conditions, such as desensitizing a large area of the thoracic wall, during time-limited situations, and in environments where ultrasound use is challenging. Furthermore, the high success rate and simplicity of the technique suggest that even someone relatively inexperienced with regional anesthesia could perform it.

KEYWORDS: analgesia, canine, landmark technique, plane block, regional anesthesia

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COMPARISON OF POSTINDUCTION ARTERIAL PARTIAL OXYGEN PRESSURE VERSUS DYNAMIC COMPLIANCE FOR PREDICTING POSTANESTHETIC HYPOXEMIA IN 168 MECHANICALLY VENTILATED DOGS

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ABSTRACT

Postoperative hypoxemia is a common and serious complication following anesthesia in both humans and dogs, with a recent study showing it affects 28% of dogs after general anesthesia. It is linked to increased mortality and arises from various lung-related causes. While arterial oxygen pressure (PaO2) and the PaO2:FIO2 ratio are standard predictors, they require invasive blood sampling. Respiratory system compliance (CRS), a non-invasive, continuously measurable parameter, may serve as an alternative predictor. Despite its potential, CRS lacks established reference values in small animals, limiting its use in clinical settings. The objective of this retrospective, single-cohort, and observational study was to evaluate the correlation of the postinduction ratio of arterial partial oxygen pressure-to-fractional inspired oxygen (PaO2:FIO2) and dynamic compliance (Cdyn) with the postanesthetic hypoxemia (PaO2 < 80 mmHg) in mechanically ventilated dogs, and to compare PaO2:FIO2 and Cdyn for predicting postanesthetic hypoxemia. 168 client-owned dogs anesthetized with isoflurane under pressure-controlled ventilation were reviewed. Arterial blood gas (ABG) analyses were conducted postintubation, following arterial catheterization on the left or right dorsal pedal artery. Postanesthetic ABG samples were collected postextubation under room air condition. Cdyn values obtained via spirometry closest in time to the postinduction ABG measurement were used. PaO2:FIO2 and Cdyn values were categorized using thresholds of 300 and 400 mmHg, and 1.0 and 1.5 mL $cmH2O^{-1}$ kg^{-1}, respectively. Linear-by-linear association was used to evaluate the correlation of the PaO2:FIO2 and Cdyn with the incidence of postanesthetic hypoxemia. The predictive performance of these two parameters was assessed using receiver operating characteristic (ROC) curve analysis. The optimal cutoff values for distinguishing hypoxemia were determined using the empirical quantile bootstrap method with a fixed sensitivity of 95%. Postanesthetic hypoxemia was observed in 22 dogs. Lower postinduction PaO2:FIO2 ($p = 0.033$) and Cdyn ($p = 0.002$) values were significantly associated with a higher incidence of postanesthetic hypoxemia. The area under the ROC curve of PaO2:FIO2 (0.696 [95% confidence interval (CI): 0.599–0.807]) and Cdyn [0.716 (95% CI: 0.602–0.824)] exhibited fair predictive performance, with no significant difference between the two parameters ($p = 0.432$). The optimal cutoff values were 332.80 (95% CI: 274.41–374.52) for PaO2:FIO2 and 1.01 (95% CI: 0.86–1.13) mL $cmH2O^{-1}$ kg^{-1} for Cdyn. In this retrospective analysis, postanesthetic hypoxemia was more frequently observed in canine patients undergoing pressure-controlled ventilation during inhalational anesthesia who had low postinduction PaO_2:FIO_2 and C_{dyn}. Both parameters demonstrated fair predictive performance for postanesthetic hypoxemia during recovery. ABG analysis remains the gold standard for assessing oxygenation, but continuous C_{dyn} monitoring during anesthesia may serve as a valuable predictive tool in clinical settings.

KEYWORDS: anesthetic recovery, canine, compliance, flow sensor-based spirometry, postoperative respiratory failure

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ACKNOWLEDGEMENTS: This research was supported by the Basic Science Research Promotion program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (2021R1F1A104546013), the New Faculty Startup Fund from Seoul National University, and the BK21 FOUR program and Research Institute of Veterinary Science, College of Veterinary Medicine, Seoul National University.

SURGICAL CORRECTION OF A PARTIAL ATRIOVENTRICULAR SEPTAL DEFECT WITH ANNULOPLASTY OF BOTH ATRIOVENTRICULAR VALVES IN A DOG

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ABSTRACT

A 4-year-old neutered male Bichon Frise dog was referred to the Hokkaido University Veterinary Teaching Hospital presenting with multiple syncopes. Physical examination revealed no heart murmur or cyanosis. Thoracic radiography revealed enlargement of the right heart and pulmonary artery. Echocardiography demonstrated an ostium primum atrial septal defect with left-to-right shunt, moderate-to-severe left atrioventricular valve regurgitation (AVVR) with a cleft, right atrial and ventricular dilation with mild right AVVR with a velocity of 3.0 m/s, and normal right pulmonary artery distensibility index (41%). The pulmonary-to-systemic blood flow ratio was calculated as 4.4. The case was diagnosed as partial atrioventricular septal defect. Open-heart surgery was performed using cardiopulmonary bypass and aortic cross-clamping via a right 5th intercostal thoracotomy. The cleft in the left atrioventricular valve was closed using polyvinylidene difluoride sutures. Bilateral annuloplasty with expanded polytetrafluoroethylene (ePTFE) sutures reduced the annular diameters to 13 mm (left) and 15 mm (right). After a saline test confirmed minimal leakage, the ostium primum defect with a diameter of 18 mm was closed using an ePTFE. An ostium secundum defect was also identified and closed with direct sutures. The postoperative recovery proceeded without complications, and the dog maintained a normal sinus rhythm. At the five-year follow-up, no clinical signs were observed, and no evidence of residual shunting or significant AVVR was found. In this case, successful closure of the defect and long-term management of AVVR were achieved through annuloplasty in combination with conventional surgical techniques.

KEYWORD: Annuloplasty; Atrioventricular regurgitation; Congenital heart disease; Open-heart surgery; Partial atrioventricular septal defect

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Short-term Outcomes and Radiological Evaluations of Biodegradable Magnesium Alloy Hemostatic Clips in Canine Ovariohysterectomy

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ABSTRACT

Magnesium (Mg) alloy is a novel biodegradable material for hemostatic clips, offering an alternative to conventional non-biodegradable titanium (Ti) alloy clips. As Mg clips undergo biodegradation, diagnostic imaging quality is enhanced due to the reduction in metallic artifacts. The safe application of Mg clips in canine cholecystectomy has been reported. This study aims to evaluate the feasibility and safety of Mg clips during canine ovariohysterectomy through a 14-day short-term follow-up, assessing clinical signs, blood analyses, radiography (XR), and computed tomography (CT) imaging. Twenty clinically healthy, immature dogs (2–4 months old) were recruited and randomly assigned to use either Mg or Ti clips for ligation of the vessels or uterus. Clip failure was the only intraoperative complication (Mg, 25%; Ti, 1.7%). No postoperative clip-related complications occurred. Hematological, biochemical, and serum magnesium level analyses revealed no significant differences between groups over 14 days. XR and CT images demonstrated that Mg clips exhibited significantly lower radiopacity, attenuation, and artifact degree compared to Ti clips, and a significant decrease in attenuation over time. Characteristic findings of Mg clips included a surrounding radiolucent halo (XR) and a hypoattenuated area (CT), while Ti clips exhibited persistent Uberschwinger artifacts (XR). Gas formation was substantial (XR, 90%, CT, 100%) with an average volume of 0.07 ± 0.02 cm³ per clip. No Mg clip dislocated, though fragmentations (XR, 15%; CT, 31.7%) were observed. In contrast, Ti clips had no incidence of gas formation, clip dislocation or fragmentation (XR, CT). All dogs recovered and discharged uneventfully. This study found that using Mg clips in ovariohysterectomy procedures is feasible, safe, and has less interference on XR and CT diagnostic imaging. However, caution is advised due to the fragility of Mg clips and the risk of breakage during use. Further studies are required to evaluate the long-term outcomes of implantation.

KEYWORDS: Computed tomography; Hemostatic clip; Magnesium; Ovariohysterectomy; Radiography

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SURGICAL CORRECTION OF CLEFT PALATE IN FRENCH BULLDOG USING TITANIUM SURGICAL MESH COATED WITH PMMA

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ABSTRACT

Cleft palate is a frequently congenital anomaly in brachycephalic breed dogs, primarily attributed to aberrant cranial development. This case report presents the clinical management of a one-year-old French Bulldog was diagnosed with huge cleft palate, exhibiting intermittent episodes of coughing, sneezing, and aspiration of food. The patient had two surgical interventions utilizing conventional mucosal flap techniques; however, both attempts resulted in postoperative recurrence of clinical signs, necessitating the investigation of an alternative approach to improve surgical outcomes and reduce the risk of recurrence. To enhance the efficacy of the surgical repair, titanium mesh coated with polymethyl methacrylate (PMMA) was selected as the reconstructive material due to its high mechanical strength, lightweight properties, and osseointegration potential, which contribute to superior structural stability and reduced implant displacement. Postoperative evaluations revealed complete resolution of clinical signs, with the patient exhibiting no recurrence of coughing, sneezing, or aspiration. Furthermore, there was no evidence of postoperative complications. Serial radiographic assessments confirmed that the titanium mesh remained securely positioned, reinforcing the efficacy, stability, and safety of this reconstructive approach. This cleft palate surgery reveals that the 3D-assist surgical planning is an importance for success of the result.

Keywords: Cleft palate; French Bulldog; PMMA; Surgery; Titanium mesh

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SUCCESSFUL SURGICAL MANAGEMENT OF AGGRESSIVE INTRAMUSCULAR INFILTRIATIVE LIPOMA IN A CANINE FORELIMB: TRICEPS BRACHII MUSCLE RECONSTRUCTION USING LATISSIMUS DORSI

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ABSTRACT

A 5-year-old castrated male Doberman Pinscher dog presented with recurrent lipomatous mass in the left forelimb. Despite multiple surgical excisions performed at a local veterinary hospital, the mass exhibited rapid and persistent recurrence. Physical examination revealed soft, non-movable mass involving the left antebrachium and brachium, contributing to progressive lameness. Ultrasonography and computed tomography identified an extensive, poorly demarcated, fat-attenuating mass aggressively infiltrating adjacent musculature. The antebrachial mass measured 19x7x8.5 cm, affecting multiple forearm muscles, particularly the extensor carpi radialis. The brachial mass measured 12.5x13x10 cm, extensively infiltrating multiple muscles including the triceps brachii long head and lateral head. The most severely affected muscles exhibited profound atrophy with extensive lipomatous replacement of muscle fibers, rendering them non-functional. Biopsy confirmed mature adipose tissue, consistent with infiltrative lipoma. To manage this aggressive lesion, two-stage surgical approach was performed separately for the antebrachium and brachium. Severely infiltrated, non-functional muscles were extensively excised while carefully preserving critical vascular and nervous structures. Following wide excision of the triceps brachii, the latissimus dorsi muscle flap was performed to fill the defect and reconstruct the functional and structural integrity. Segment of the latissimus dorsi was harvested at the level of seventh rib. The ventral portion was rotated to align with anatomical pathway of triceps brachii, and anchored to the infraspinatus muscle. Remaining distal portion of intact triceps brachii long head was then sutured to the rotated latissimus dorsi flap to restore structural and functional continuity. Postoperatively, the patient exhibited no significant impairment of limb function, and no recurrence was observed at 6-month follow-up. Intramuscular infiltrative lipomas, despite their benign histology, can cause marked functional deficits due to their aggressive muscle infiltration. This case shows the highly successful surgical strategy of extensive surgical excision combined with triceps brachii reconstruction using latissimus dorsi muscle flap, allowing preservation and restoration of limb functions in aggressive infiltrative lipoma involving the entire forelimb.

KEYWORDS: Infiltrative lipoma; Latissimus dorsi muscle flap; Triceps brachii muscle reconstruction

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MINIMALLY INVASIVE CORRECTION OF PENDULOUS CROP IN A HARLEQUIN MACAW (*ARA ARARAUNA* × *ARA CHLOROPTERUS*) CHICK USING CUSHING SUTURE PATTERN COMBINED WITH DIETARY MANAGEMENT: A CASE REPORT

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ABSTRACT

Pendulous crop is a condition commonly observed in hand-raised psittacine chicks, characterized by an abnormally enlarged and distended crop that fails to empty properly, leading to delayed digestion, regurgitation, and poor weight gain. Conventional surgical treatment typically involves resection of redundant crop tissue, which may increase surgical trauma, prolong anesthesia time, and delay recovery. This case report describes a minimally invasive surgical technique combined with dietary and medical management to treat a one-month-old female Harlequin macaw (*Ara ararauna* × *Ara chloropterus*) chick presenting with pendulous crop, weighing 780 grams with a body condition score (BCS) of 2/5 (thin). Under general anesthesia, the distended crop was internally reduced using an inverting continuous Cushing suture pattern with absorbable monofilament, without the need for tissue resection. The procedure was brief, effectively minimizing anesthesia duration and surgical trauma. Postoperative care included immediate transition from traditional hand-feeding formula to a hand-fed coarse chopped pellet and nut mixture (chunky formula), pre-soaked in warm water to improve digestion and reduce further distention. Medical management included administration of azithromycin and ceftiofur crystalline free acid as antibiotics, robenacoxib for anti-inflammatory support, and a combination of itopride and metoclopramide as prokinetics. At the 7-day follow-up, the surgical site had healed well, and the chick was accepting the modified diet without complications, allowing for the discontinuation of all medications. By week three, the body weight had increased to 1,280 grams, with a BCS of 3/5 (well-conditioned). At present, the bird continues to thrive on the hand-fed chunky formula, with no recurrence of clinical signs. This case highlights the effectiveness of a simple, time-efficient, and tissue-sparing surgical technique which, when combined with appropriate nutritional and medical management, can result in excellent recovery and long-term outcomes in the treatment of pendulous crop in psittacine chicks.

KEYWORDS: Chunky formula; Cushing suture; Harlequin macaw; Pendulous crop

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PRIMARY GALLBLADDER LEIOMYOSARCOMA IN A DOG MANAGED BY CHOLECYSTECTOMY USING NEAR-INFRARED FLUORESCENCE CHOLANGIOGRAPHY

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ABSTRACT

A 13-year-old castrated male Maltese dog was presented following incidental gallbladder abnormalities detected during routine abdominal ultrasonography, despite the absence of clinical symptoms. Ultrasonographic examination identified a mass at the gallbladder neck region, with no indications of metastatic spread. To address this finding, the dog underwent cholecystectomy utilizing intraoperative near-infrared fluorescence cholangiography facilitated by indocyanine green (ICG). This advanced imaging modality provided precise real-time delineation of the biliary anatomy, significantly enhancing intraoperative visualization. As a result, the surgical procedure was performed safely, effectively reducing the risk of intraoperative complications. Subsequent histopathological and immunohistochemical examinations of the excised gallbladder mass revealed positive staining for smooth muscle actin, conclusively diagnosing a primary gallbladder leiomyosarcoma, a notably rare malignancy in canine patients. Postoperative monitoring consisted of regular clinical evaluations and periodic abdominal imaging studies. The patient has remained clinically stable without any signs of tumor recurrence or metastasis over a follow-up period of 18 months. This case underscores the effectiveness and potential benefits of incorporating near-infrared fluorescence cholangiography with ICG in the surgical management of uncommon gallbladder malignancies in canine patients, facilitating improved surgical outcomes and long-term patient prognosis.

KEYWORDS: Canine, Gallbladder, Indocyanine green, Leiomyosarcoma, Near-infrared fluorescence

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LAPAROSCOPIC HILAR REGION LIVER LOBECTOMY USING AN ULTRASONIC ASPIRATOR IN A DOG: A CASE REPORT

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ABSTRACT

A 9-year-old Schnauzer weighing 10.2 kg was presented with elevated liver enzyme levels. Blood tests revealed no other abnormalities, and ultrasonography identified a tumor in the left lateral lobe. A subsequent CT scan showed no evidence of metastasis, leading us to decide on surgical resection. Although the tumor was located in the left lateral lobe, liver masses near the hilus often present a challenge, as complete resection is difficult to achieve using a surgical stapler alone. Direct isolation and ligation of the blood vessels would allow resection of the liver parenchyma at the hilus level. However, in laparoscopic surgery, controlling bleeding during this procedure is challenging, making it difficult to perform routinely. Therefore, we used an ultrasonic aspirator to resect the liver parenchyma near the hilus while keeping as much distance from the tumor as possible. Additionally, the blood vessels and hepatic ducts were individually ligated and excised. The laparoscopic liver resection was successfully performed without any intraoperative complications. The patient's blood parameters showed minimal changes and remained within the normal range, and the patient resumed normal activity on the day of surgery. Histopathological examination confirmed the tumor as an adenoma, and complete resection was achieved. Laparoscopic liver resection using an ultrasonic aspirator has proven to be a safer and more feasible procedure for liver tumors located near the hilus or for cases where the use of a stapler is challenging in veterinary medicine.

KEYWORDS: Laparoscopic liver lobectomy; Hilar region liver lobectomy; Ultrasonic aspirator.

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OR-15

Laparoscopic Cellophane Banding of Intrahepatic Portosystmic Shunt in a Cat

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ABSTRACT

A 2-year-old Munchkin cat presented with symptoms of drooling. Abdominal ultrasonography revealed a small liver and hyperammonemia, raising suspicion of a portosystemic shunt (PSS). Computed tomography (CT) identified an intrahepatic PSS in the right hepatic lobe. Since the shunting vessel was partially exposed on the visceral peritoneal surface of liver, laparoscopic surgery was performed. The exposed portion of the vessel was partially separated, minimally constricted with a cellophane band, and secured with a hemoclip. A liver biopsy was also performed. The total surgery time was 68 minutes, and the patient recovered quickly from anesthesia. Postoperatively, the cat was hospitalized for four days, and anesthesia recovery was uneventful. Follow-up evaluations were conducted at 1, 2, 6, and 10 weeks postoperatively. A CT scan at 10 weeks confirmed that the original intrahepatic PSS vessel was no longer detectable in blood flow, indicating complete closure. However, the liver remained in a state of portal hypoplasia, and multiple acquired extrahepatic shunts were identified. Liver biopsy revealed vascular anomalies, including portal arteriole hyperplasia and portal venule hypoplasia. Continuous internal management is planned for the patient.

KEYWORDS: IHPSS; cat; laparoscopy, cellophane banding, multiple APSS, hepatic vascular anomaly

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COMPARATIVE ANALYSIS OF 3D LAPAROSCOPY WITH ARTICULATING INSTRUMENTS VS. DA VINCI ROBOTIC SYSTEM FOR INTRACORPOREAL SUTURING IN A SIMULATED LAPAROSCOPIC BOX TRAINER

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ABSTRACT

This study represents the first comparative evaluation of 3D laparoscopy with articulating instruments versus the da Vinci robotic system for intracorporeal suturing in veterinary surgery. As minimally invasive surgery (MIS) becomes increasingly relevant in veterinary practice, accessibility to advanced technology remains a challenge due to financial constraints. This study aimed to determine whether 3D laparoscopy, combined with Artisential articulating instruments, could provide a cost-effective alternative to robotic surgery while maintaining high suturing precision and efficiency. A single-blinded, randomized crossover trial was conducted using a laparoscopic box trainer with synthetic tissue models simulating intestinal anastomosis. A single experienced laparoscopic surgeon (novice in robotics) performed standardized suturing tasks on both platforms. Performance was assessed through objective and subjective metrics, including suturing time per stitch, needle placement accuracy, suture spacing uniformity, tissue penetration depth, instrument collisions, knot security (tensile strength), and motion efficiency (path length, tremor, and wrist articulation). Additionally, subjective evaluations using OSATS and GRS, as well as learning curve analysis, were conducted. The results demonstrated that while the da Vinci robotic system provided superior precision, reduced errors, and better ergonomic control, the 3D laparoscopic system enabled faster suturing due to shorter setup time and direct manual handling. Knot security showed no significant difference between the two systems, suggesting that both can achieve effective suture integrity. However, the cost analysis revealed a significant advantage for the laparoscopic system, highlighting its potential applicability in veterinary settings where financial limitations often restrict access to robotic platforms. These findings suggest that 3D laparoscopy with articulating instruments can serve as a viable alternative to robotic surgery for experienced laparoscopic surgeons, offering a more affordable yet effective approach to advancing MIS techniques in veterinary medicine. Further studies involving multiple operators and clinical applications are warranted to validate its broader implementation.

KEYWORDS: 3D laparoscopy; artisential; robotic surgery; intracorporeal suturing

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PMMA FIXATION USING 3D PRINTED PATIENT SPECIFIC DRILL GUIDES IN CANINE ATLANTOAXIAL INSTABILITY(AAI) SURGERY

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ABSTRACT

Atlantoaxial instability (AAI) is a condition characterized by structural abnormalities of the atlantoaxial joint, leading to cervical spinal cord compression. This case report describes the successful management of congenital AAI in a 7-year-old male Poodle using 3D-printed patient-specific drill guides and polymethyl methacrylate (PMMA) fixation. The dog presented with forelimb rigidity, recumbency, and severe neck pain, with neurological examination revealing upper motor neuron signs and proprioceptive deficits. Diagnostic imaging confirmed malalignment of the C1-C2 vertebrae and hypoplasia of the dens. 3D-printed patient specific drill guide was designed to ensure precise trajectory of drilling, reducing the risk of complications such as cortical breaches or hemorrhage. Surgical stabilization involved a ventral cervical approach utilizing custom drill guides for precise screw placement, transarticular pinning, and PMMA application to enhance construct rigidity. The integration of 3D technology allowed for meticulous preoperative planning and enhanced intraoperative accuracy, minimizing the risk of iatrogenic complications. Postoperative radiographs confirmed appropriate implant alignment, and the patient exhibited significant neurological improvement. This report highlights the efficacy of advanced imaging and 3D printing technologies in enhancing surgical precision and outcomes in the management of AAI in small-breed dogs. The potential benefits and limitations of these innovative techniques are discussed, emphasizing their role in complex orthopedic surgeries.

KEYWORDS: Atlantoaxial instability; 3D printing; PMMA fixation; Patient-specific drill guides; dog

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APPLICATION OF COMPUTER-ASSITED SPINAL NAVIGATION FOR THORACIC VERTEBRAL MALFORMATION IN A 7-MONTH-OLD FRENCH BULLDOG

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ABSTRACT

A 7-month-old, intact female French Bulldog was referred to the Neurology Center of Kasetsart University Veterinary Teaching Hospital for paraparesis of the pelvic limbs. Radiographic imaging revealed thoracic hemivertebrae at the T4–T6 level with severe kyphosis. Surgical stabilization was considered necessary to prevent further deterioration. However, due to the complex and abnormal anatomy of the thoracic spine, the surgical approach posed significant challenges, particularly in accurately placing pedicle screws to stabilize the vertebral column without damaging adjacent critical structures.In human medicine, the insertion of pedicle screws in cases of scoliosis and kyphosis is difficult and requires high precision. To overcome these challenges, computer-assisted navigation systems have been utilized in various spinal surgeries to enhance the accuracy of screw placement. In this case, frameless stereotactic navigation (KICK®) was employed to guide preoperative planning and intraoperative screw insertion. Real-time navigation ensured the accurate placement of screws into the pedicles of T2, T3, T7, and T9, and a titanium rod was used for stabilization. Postoperative CT scans confirmed correct screw placement, with no damage to the surrounding critical structures. The Cobb angle of the thoracic spine increased slightly from 55 to 65 degrees, indicating some curvature improvement. This report highlights the effectiveness of computer-assisted navigation in enhancing surgical precision and minimizing risks in complex veterinary spinal surgeries. The learning curve for surgeons using neuronavigation technology is discussed as a critical factor for optimizing outcomes.

KEYWORDS: spinal navigation, thoracic hemivertebrae, veterinary surgery, pedicle screw, stereotactic navigation

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MECHANICAL TESTING OF THREE-DIMENSIONAL PRINTED CANINE RADIUS MODELS FORMED USING DIFFERENT MATERIALS

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ABSTRACT

The use of cadaveric bones in small animal orthopedic research is associated with several challenges, including ethical concerns, individual variability, and high breeding costs. These limitations emphasize the need for alternative methods. Advances in three-dimensional (3D) printing technology provide a promising solution by enabling the creation of accurate bone models for preoperative planning and surgical education. This study aimed to compare the mechanical properties of 3D-printed canine radius models made from different materials and orientations to evaluate their potential as replacements for cadaveric bones. We hypothesized that the type of material and printing orientation would significantly influence the mechanical properties of the model. The left radius of a skeletally mature beagle was scanned using computed tomography (CT) to create a 3D model, which was subsequently printed using acrylonitrile butadiene styrene (ABS), polylactic acid (PLA), and polycarbonate (PC) materials in both horizontal and perpendicular orientations relative to the long axis of the radius. Ten models per material and orientation (total=60) were tested for cranial bending and axial loading using a material-testing machine. Load-displacement curves were recorded, and the maximum, yield, and ultimate loads were statistically analyzed. The horizontal models demonstrated significantly higher maximum and ultimate loads compared to perpendicular models, particularly for PC. The PLA models demonstrated less variation in strength between the orientations, indicating less anisotropy. Axial stiffness was higher in the horizontal direction for ABS and PC, but in the perpendicular direction for PLA. The 3D-printed bone models exhibited consistent mechanical properties, addressing the variability inherent to cadaveric bones, thus offering an ethical alternative for research and training. Among the materials tested, PC printed in the horizontal direction performed the best under loading, whereas PLA exhibited minimal anisotropy. However, the mechanical properties of 3D-printed models remain inferior to those of real bones, limiting their application in high-load scenarios.

KEYWORDS: three-dimensional printing; radius; material testing machine

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SHORT-TERM OUTCOME AND COMPLICATION OF CORA-BASED LEVELING OSTEOTOMY FOR CRANIAL CRUCIATE LIGAMENT RUPTURE IN 13 SMALL BREED DOGS

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ABSTRACT

Background: Center of rotation of angulation (CORA)-based leveling osteotomy (CBLO) is a recent addition to surgical procedures for treatment of the cranial cruciate ligament rupture (CCLR) in canine stifle joint. However limited date is available regarding the clinical outcome and complications following CBLO with cranial cruciate rupture in small and toy breed dogs.

Objective: To report clinical experiences with the CBLO procedure in small breed dogs with CCLR using titan 2.0/2.4 mm locking plates and evaluating short-term outcome and complications.

Methods: Medical records of small breed dogs (<10kg) which underwent CBLO using titan 2.0/2.4 mm locking plates were reviewed retrospectively. Lameness evaluation was assessed subjectively preoperatively and ten to fourteen weeks postoperatively. The preoperative and postoperative tibial plateau angle (TPA) measurements were determined from the radiographic images.

Results: Thirteen small breed dogs (n=13 stifles) were included in this study. Lameness score by clinical assessment reduced from a median value of 3/4 preoperatively to 0/4 at ten to fourteen weeks postoperatively. Mean (± SD) preoperative TPA was 28.4 ± 3.1°, postoperative TPA was 8.7 ± 3.5°. Two complications occurred in 3 out of 13 stifles: two were intra-operative (fibula fracture) and one was medial patella luxation postoperatively.

Conclusion: CBLO with titan 2.0/2.4 mm locking plates may be a great choice for the stabilization of CCLR in toy breed dogs.

KEYWORDS: CBLO; toy breed dogs; cranial cruciate rupture

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UNILATERAL GENU RECURVATUM AND TARSAL JOINT DYSPLASIA IN A JUVENILE CAT: A CASE REPORT

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ABSTRACT

A 2-month-old intact female Devon Rex cross cat was presented to animal hospital for evaluation and treatment of unilateral hindlimb lameness. Orthopedic examination revealed laxity of the left hip joint, genu recurvatum at the stifle joint, and tarsal varus deformity. Radiography and computed tomography (CT) confirmed unilateral hip dysplasia, genu recurvatum, and luxation of both the calcaneoquartal and talocalcaneocentral joints. A single-session surgical intervention was performed, which included femoral segmental ostectomy, partial tarsal arthrodesis, and temporary arthrodesis of the stifle and tarsal joints. Two weeks postoperatively, the temporary arthrodesis and the screw used for partial tarsal arthrodesis were removed. Radiographic assessment at one month postoperatively demonstrated acceptable bone union at the femoral ostectomy site, and removed the plate and screws. The plate used for partial tarsal arthrodesis failed four months postoperatively and was subsequently removed. Although treatment for hip dysplasia was declined by the owner, the cat exhibited improved gait, with lameness graded as mild (grade 1) at one month postoperatively. Good range of motion was observed 3 months postoperatively. This improvement was maintained for at least 29 months. This case demonstrates that surgical correction of genu recurvatum and tarsal joint luxation can result in a successful long-term outcome in a juvenile feline. Surgical intervention can be considered for managing such deformities in young cats.

KEYWORDS: Congenital disease; Genu recurvatum; Tarsal joint luxation

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PATELLAR GROOVE REPLACEMENT WITH TIBIAL PLATEAU LEVELING OSTEOTOMY FOR TREATMENT OF DISTAL FEMORAL VARUS ASSOCIATED WITH GRADE IV MEDIAL PATELLAR LUXATION AND CRANIAL CRUCIATE LIGAMENT RUPTURE IN A DOG: A CASE REPORT

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ABSTRACT

Medial patellar luxation (MPL) is often associated with distal femoral varus and cranial cruciate ligament rupture (CCLR). Inadequate correction of excessive femoral varus has been suggested as a contributing factor to the recurrence of MPL in large breed dogs. Furthermore, MPL increases stress on the cranial cruciate ligament predisposing to degenerate and rupture over time. This case report describes a surgical technique to stabilize the patellar, realign the quadriceps mechanism, and adjust the TPA by using patellar groove replacement (PGR) in combination with tibial plateau leveling osteotomy (TPLO). A 3-year-old, 24 kg neutered female, mixed breed dog was referred to due to non-weight bearing lameness of left hindlimb more than a month. A physical examination revealed tibial compression test was positive with crepitation and grade IV medial patella luxated on the left stifle. On radiographic imaging, increased intra-articular soft tissue opacity, cranial displaced of the tibial plateau relative to the femur, and osteophyte formation at the base of the patellar and lateral femoral condyle was seen. The tibial plateau angle was 30°. The anatomic lateral distal femoral angle (aLDFA) was measured at 115° which indicated a distal femoral varus. A lateral stifle arthrotomy found rupture of lateral patellofemoral ligament, and severe erosive lesion at both femoral condyle and distal trochlear ridge. Patellar grove replacement was performed following a tibial plateau leveling osteotomy. Femoral varus was compensated by rotating the prosthesis in the frontal plane. Post-operative examination, the dog showed good weight bearing, the patellar was in normal position, and tibial compression test was negative. Patellar groove replacement is an effective surgical procedure for distal femoral varus associated with MPL, and it facilitates the simultaneous treatment of cranial cruciate ligament rupture using TPLO.

KEYWORDS: Patella groove replacement; Tibial plateau leveling osteotomy; Distal femoral varus; Medial patella luxation; Cranial cruciate ligament rupture

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