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A Novel Approach For Urethral Catheterization In Dromedary Camels: A Preclinical Study (published in: BMC Veterinary Research, 2025, 21, 291)

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Abstract

Background Urethral obstruction due to urolithiasis is an uncommon problem reported in dromedary camels. Urethral catheterization is recommended as an emergency preliminary alternative to palliative urethrostomy to preserve valuable animals for breeding purposes. This procedure is not possible in camels due to the narrow diameter of the tortuous urethra, presence of sigmoid flexure and urethral recess and unavailability of specific full-length catheter.

Objective To assess the normograde catheterization of the camel urethra through cystotomy incision by using 6-Fr, 70 cm, PVC straight-tip ureteric catheter with a central opening.

Methods Fifteen fresh penile specimens were utilized to obtain detailed surgical anatomy of the male urethra and to evaluate the normograde passage of a 6-Fr, 70 cm, PVC straight-tip ureteric catheter with a central opening, followed by X-ray imaging and casting of the urethra. The feasibility of the catheterization process was assessed. The urethral cast was employed to imprint the internal diameter of the urethra and identify potential sites for calculi lodgment. Samples from potential areas were examined to reveal any histopathological relevance.

Results The normograde passage of the rigid ureteral catheter was feasible and encompassed the entire urethra, as confirmed by X-ray imaging. The urethral cast revealed a remarkably narrow diameter (2 mm) of the penile urethra. The preputial portion of the urethra emerges as a potential site for calculi lodgment, attributed to its small diameter and the thin layer of urethralis and bulbospongiosus muscle responsible for urine expulsion.

Conclusion The normograde catheterization of the camel urethra with rigid ureteral catheter is feasible and may be a valuable preliminary intervention for calculi removal before surgical urethrotomy or urethrostomy.

Keywords Camel, Catheterization, Diagnostic imaging, Radiography, Urolithiasis

Computed Tomography and Gross Anatomical Studies on the Temporomandibular and Supraorbital Regions of One-Humped Camel (*Camelus dromedarius*) (published in: Slovenian Veterinary Research, 2025)

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Abstract

The objective of this study was to investigate the detailed surgical anatomy of the temporomandibular and supraorbital regions in camels using anatomical dissection and computed tomography (CT)

scanning. The study aimed to provide precise anatomical descriptions and assess the feasibility of surgical interventions within the orbital cavity via the orbital fossa. Twelve camel skulls and three fresh cadaveric heads of adult camels were procured from the faculty's morgue and a local abattoir, respectively. Descriptive anatomy of the skull and surgical anatomy of the temporo-orbital region were meticulously examined. Additionally, computed tomography of the heads was conducted to augment the dataset. Results were systematically documented to evaluate the applicability, feasibility, and safety of the orbital fossa approach to the orbital cavity. The temporal fossa of the camel was found to be significantly expansive, extending rostrally to a sizable orbital fossa. The external lining of the orbital fossa comprised skin and a subjacent thick fascia. Notably, no essential muscles or vital structures were identified. The posterior orbital cavity housed a substantial periorbital fat mass, and upon its removal, clear and safe visual access to the ocular structures was achieved, facilitating ease of approach. The orbital fossa approach was determined to be feasible and safe, enabling the performance of various surgical procedures, including enucleation, exenteration, periorbital tumor removal, prosthetic implantation, and other interventions. This approach promises enhanced cosmetic outcomes in the execution of such procedures.

New Description of Telocyte Sheaths in the Bovine Uterine Tube: An Immunohistochemical and Scanning Microscopic Study (published in: Cells Tissues Organs , 2016)

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Abstract

Telocytes are a special type of interstitial cells characterized by distinctive cellular extensions with alternating thin segments (podomers) and dilations (podoms). Telocytes establish contact with various cells and structures, but their role in the regulation of the function of many cell types is still obscure. The aim of the current study was to investigate the morphology, histochemistry, and immunohistochemistry of telocytes, and their distribution, organization, and morphometric measurements in different layers of the adult bovine uterine tube. Telocytes showed positive immunostaining for CD117, S-100 protein, vimentin, desmin, α -smooth muscle actin, tubulin, laminin, estrogen receptor- α , and progesterone receptor. They were organized in different types of sheaths: subepithelial, inner/outer perimuscular, and intra-muscular sheaths. Telocytes were scattered in the lamina propria, in the muscular layer, and the serosa. According to their size, they were grouped into different types of telocytes: small, large, and giant telocytes. Small telocytes were the most common type and located in all layers; large telocytes were observed in the epithelium, lamina propria, and inner/outer perimuscular and intramuscular sheaths, and giant telocytes were found in the external layer of the outer perimuscular sheath. Telocytes were connected by thin and thick telopodes (fenestrated membranes). Fenestrated membranes enabled connections between telocytes along the entire muscular wall of the uterine tube. Telocytes established an extensive biological network of different types of cells and structures, including epithelial, muscular, and mast cells, blood vessels, glomus, and nerve fibers. We hypothesize that telocytes help to organize the functional coordination between different types of cells in the uterine tube.

Origin of Rodlet Cells and Mapping Their Distribution in Ruby-Red-Fin Shark (Rainbow Shark) *Epalzeorhynchus frenatus* (Teleostei: Cyprinidae): Light, Immunohistochemistry and Ultrastructure Study

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Abstract

The present study describes for the first time histology, histochemistry, and ultrastructure of all rodlet stages. By ultrastructure, we identified rodlet progenitors in the stroma of the olfactory organ in Red-Fin shark. Rodlet progenitors were mesenchymal-like cells synthesis the primitive rodlet granules. Rodlet progenitors differentiated to vesicular rodlet cells, which was rich in vesicles and vacuoles, and accumulate intracellular fibrillar-like components. Granular rodlet cells were observed in the basal epithelia, contained premature rodlet granules and began to organize the fibrillar components of the rodlet capsule. Transitional rodlet cells continued to deposit the fibrils of the capsule and synthesis of rodlet granules. Mature rodlet cells were polarized bear-shape and had typical rodlet granules. Histochemistry showed rodlet cells had a wide range of staining affinities including carbohydrate, lipid, and protein staining. All stages of rodlet cells revealed the presence of PAS-positive granules in the cytoplasm of rodlet cells where, While the ruptured ones stained strongly with alcian blue, sliver stain and Sudan black B. Rodlet granule was positive for bromophenol blue Rodlet cells were positively immunostained against Matrix Metalloproteinase-9 (MPP-9) in all stages indicate invasion properties of rodlet cells in tissue. Conclusion rodlet cells originated from the stroma of the olfactory organ.

Branching Pattern and Distribution of the Renal Arteries in Donkeys (*Equus asinus*) (Published in: Egypt. J. Vet. Sci., 2025, pp. 1-10)

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Abstract

The kidney is an essential organ in the mammalian body and has become a prominent focus of medical research. A thorough understanding of the branching patterns and courses of arterial vessels within the kidney is crucial, particularly when performing surgical procedures such as nephrectomy, renal transplantation, and renal biopsy. This study was conducted on the kidneys of ten apparent healthy adult donkeys 4-5 years age, and 170-200 Kg. body weight. They were ethically anesthetized, euthanized, and embalmed. The extra-renal branching pattern was documented through gross examination. Following this, the kidneys of five donkeys were resected along with their intact renal arteries and subjected to radiographic analysis to illustrate both the excretory renal system and the distribution pattern and course of the arterial vessels within the kidneys. In most cases examined, the right and left renal arteries were represented by a single, robust stem originating from the lateral aspects of the abdominal aorta, just caudal to the origin of the cranial mesenteric artery. Each renal artery is

subsequently divided into cranial, caudal, and hilar primary branches, subdivided into dorsal and ventral secondary branches. Notably, in one exceptional case, the left three primary divisions arose independently from the abdominal aorta. The interlobar arteries and their subdivisions from the secondary branches demonstrated nearly typical distribution, like that found in most other animals. This study underscores the significance of understanding the branching patterns and distribution of the renal artery in donkeys, highlighting key anatomical features that are crucial for veterinary studies and practices.

Computed Tomographic and Radiographic Studies of the Hyoid Skeleton in Dromedary Camels

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Abstract

The primary objective of this study is to investigate the anatomical structure of the hyoid apparatus in dromedary camels using computed tomography (CT) and X-ray imaging techniques to provide a detailed understanding of its morphology and functional relationships. CT scans were performed on twelve camel cadavers' heads to visualize and assess the hyoid apparatus. X-ray scans performed on twenty-five healthy live camels. The images were analyzed to determine bone composition, articulation points, and any anatomical variations compared to other large mammals. Both CT and X-ray imaging revealed the distinct components of the camel's hyoid apparatus, including the basihyoid, stylohyoid, thyrohyoid, ceratohyoid, and epihyoid bones. Notably, the absence of a lingual process in the basihyoid bone was confirmed. CT images provided superior resolution of articulation points, while X-rays offered adequate overviews of bone structure. No pathological alterations were noted in the scanned specimens. CT scanning offers enhanced visualization of the camel's hyoid apparatus compared to X-rays, allowing for more precise anatomical assessments. This imaging technique can facilitate clinical and surgical applications involving the head and neck of camels, supporting improved diagnosis and treatment planning.

Unique Lateral Nasal Diverticulum in Dromedaries: Anatomical Structure and Possible Functions

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Abstract

The lateral nasal diverticulum is a unique anatomical structure characteristic of dromedaries. However, little known about the anatomy and histology of this diverticulum. The aim of this study was to investigate the macroscopic and microscopic structure of the lateral nasal diverticulum in camels, and to elucidate its possible functions. A total of ten camel heads were used for this study. Grossly, it comprised of intranasal and intramuscular parts, both of which are located mostly within the nasal vestibule. It started at the nasal opening, at the junction of vestibular skin and the mucus membrane of the nasal cavity proper. It ended as blind sac near the infraorbital foramen. Histologically, it was lined by stratified columnar epithelium with goblet cells. The mucosa presented a number of crypts and clefts. The submucosal glands were well developed and mostly of serous type. The lateral nasal diverticulum aid in narial closure, humidification of nasal mucosa, and detection of olfactory cues as a possible function in dromedaries.

Ultrastructure and histochemistry of the subepithelial glands of the nasal septal island in dromedaries with special reference to the possible functions

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Abstract

The nasal septal island (NSI) is a sensory patch of neuroepithelium located within the soft tissue of the nasal septum in dromedaries. The island has unique anatomical features, including the specialized subepithelial glands. The aim of the present study was to describe the microscopic features and ultrastructure of these subepithelial glands and to speculate the possible functions. A total of 10 camel heads were used for the study. Unlike the serous and mucous airway glands, the NSI glands' ultrastructural features were typical for cells of the (**A**mine **P**recursor **U**ptake and **D**ecarboxylation, **APUD**) system. These features were included, membrane bound secretory vesicles of varying electron density, smooth endoplasmic reticulum in the form of vesicles; electron dense mitochondria, abundant rough endoplasmic reticulum and free ribosomes. Alcian-PAS identifiable mucus granules were not observed, except for few clusters of cells, located at the luminal surface. The probable functions were discussed on basis of cellular morphology and context. In a conclusion, the NSI subepithelial glands in dromedaries had unique anatomical structures, and as many other APUD cells, they had the machinery required for synthesis of a variable number of biologically active peptides, amines and chemical mediators.

Gross Anatomy and Morphometrics of the Upper Digestive Tract of Adult Spur-winged Geese (*Plectropterus gambensis*).

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Abstract

The present study described detailed anatomy and morphometrics of upper digestive tract (UDT) of the adult Spur-winged geese (SWG), a wildfowl of Sudano-sahelian wetlands of northern Nigeria. A standard evisceration technique was employed on five SWG comprising of 3 males and 2 females. Each segment of the UDT was examined for gross morphology, topographical relations, and dimensional values. The upper and lower beaks were shovel-shaped, having horny plate at their rostral edge, and comb-like sharp horny lamellae at their lateral margin. The tongue was rectangular shaped, flanked by packed rows of spiny papillae and caudolateral by five giant conical papillae. The fusiform shaped proventriculus lies in the upper left quadrant of the body cavity. The gizzard was dark red oval shaped, presented white central tendinous aponeurosis flanked by cranial and caudal diverticula. The metrical dimensions of the UDT were slightly higher in the males than the females SWG. We concluded that SWG are well endowed with pecking, grazing and filter-feeding apparatus.

Key words: Spur-winged Geese, Upper Digestive Tract, Anatomy, Morphometrics

Light Microscopic Studies of the Respiratory Apparatus and Associated Glands of Adult Spur-winged Geese (*Plectropterus gambensis*).

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Abstract

The present study elucidated the histoarchitecture of the respiratory apparatus of five Spur-winged geese (SWG), a wildfowl of Sudano-Sahelian wetlands of northern Nigeria. Tissue samples collected from different segment of the respiratory apparatus were processed by routine paraffin technique of light microscopy. The narrow rostral vestibular region of the nasal cavity was lined by normal and modified vestibular epithelium, whereas the broad caudal region was lined by respiratory and olfactory epithelium. The laryngeal mound was lined by stratified squamous non-keratinized epithelium rostrally, and pseudostratified columnar ciliated epithelium caudally with polymorphic mucous glands in the subepithelial region. The trachea mucosa was lined by pseudostratified ciliated columnar epithelium with goblet cells, and large number of mucosal glands of simple alveolar mucous type. The primary bronchi were lined by a low columnar pseudostratified ciliated epithelium with few goblet cells and mucous-secreting glands. The cartilages of the bronchi were typically hyaline. The lung parenchyma presented an interconnecting network of primary, secondary, and tertiary bronchi, pulmonary blood vessels, numerous air capillaries, lymphoid tissue and pulmonary alveolar macrophages.

Key words: Spur-winged Geese, Respiratory Apparatus, Histology

Histological and histochemical structure of the pituitary gland in Mullet Fish (*Mugil cephalus*)

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Abstract

This study aimed to elucidate the histological and histochemical structure of the pituitary gland of Mullet fish (*Mugil cephalus*). The pituitary gland of *Mugil cephalus*, as in all teleost species, composed of a defined adeno-hypophyseal part interrupted by strands of neurohypophyseal arborization. The neurohypophysis consisted of nerve fibers, pituicytes were dispersed within thin connective tissue rich in blood capillaries. Three regions were observed in the adenohypophysis, rostral pars distalis, proximal pars distalis and pars intermedia. By certain histochemical stains, seven cell types were detected in the pituitary gland of *Mugil cephalus*, lactotrophs and adrenocorticotrophs in rostral pars distalis, somatotrophs, gonadotrophs and thyrotrophs in proximal pars distalis, melanotrophs and somatolactin cells in pars intermedia.

Key words: Histological, Histochemical, Pituitary gland, *Mugil cephalus*

