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Transcription of Equine Endoscopy: The Respiratory Tract, 1990

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BEGIN TRANSCRIPTION

[Transcriber's note: Making out adduction vs abduction was difficult, and it is possible that some of these should be reversed.]

Narrator: A normal larynx. The horse swallows. The endoscope is passed into the proximal trachea, a small amount of [intelligible] is seen, and the endoscope is then withdrawn. The first image is of the guttural pouch openings and the dorsal pharyngeal recess. Follicular pharyngitis or lymphoid hyperplasia. A normal epiglottis, it is important to be able to see the dorsal blood vessels and the scalloped edge of the epiglottis. The scoped is advanced in able to see the soft palate in normal position underneath the epiglottis. The tip of the scope is directed dorsally to see the corniculate processes of arytenoids in a resting position. The scope is advanced closer to the vocal folds and lateral ventricles of the larynx.

Narrator: The opening of the rima glottidis. Pharyngeal structures are pointed out in a freeze frame: the corniculate process of the arytenoid; the vocal folds; the lateral saccular or lateral laryngeal ventricle of the larynx; the rima glottis or opening in the larynx which leads into the trachea.

Narrator: The adductory slap reflex. This is a test of the adductory function of the arytenoid: someone slaps the lateral forex region of the horse three times hard, and the contralateral arytenoid should adduct or move in. The right arytenoid, in this horse, is functioning normally; the left is not.

Narrator: Endoscopy of a normal horse galloping on the treadmill. Note the crisp movement of both arytenoids and that the corniculate processes of the arytenoids are abducted during the majority of the exercise period, allowing the rima glottis to be wide open. This allows as much as possible to move through the larynx during the galloping phase of this exercise workout. The tip of the scope does move in and out and rotates somewhat during the examination. This creates movement of the image and, at times, the image is

askew. It can be difficult to keep the endoscope positioned perfectly while the horse is galloping on the treadmill.

Narrator: Laryngeal hemiplegia. This is the complete paralysis of the muscles controlling the horse's left corniculate process. Horsemen call horses with this condition “roarers”. The vocal folds and saccule on the left side are more prominent than normal due to laxity or lack of control of these structures as well as of the corniculate process.

Narrator: The same horse, seven days after surgery to correct the laryngeal hemiplegia. This surgery is called laryngoplasty or tie back, tying the corniculate process into a more normal position. Then ventriculectomy was also performed.

Narrator: Asymmetrical movement of arytenoids. The left arytenoid in this horse does move as well as the right side. The adductory spot test is being performed in order to better evaluate laryngeal function.

Narrator: The larynx of the horse that is galloping on a treadmill. There was asymmetrical movement of the arytenoids at rest in this horse, and the condition becomes more dramatic as the horse gallops on the treadmill. At the beginning of this series, the ethmoid turbinate and nasal area can be seen, as the scope moves out of the nasopharynx and then back in. The left corniculate process of the arytenoid is not abducted as dramatically as the right side, again, indicating an asymmetrical movement of the arytenoid. This particular horse did have a history of exercise intolerance at the race track, particularly at the end of a work out. This is a difficult condition to assess as far as its severity and clinical significance.

Narrator: The endoscopic image of a larynx of a seven year old foal with hyperkalemia syndrome. Pharyngeal collapse during the endoscopic exam can be seen. Complete collapse of spasm of the larynx. The foal continued to try to breathe through the larynx, which you can see has virtually no rima glottidis visible, and thus the foal became and obviously [intelligible] during the examination. The arytenoid and vocal fold areas do appear somewhat edematous. Tracheostomy was performed on the foal subsequent to this examination.

Narrator: An examination of the same foal four days after a left sided arytenoidectomy. There has been no improvement in the degree of pharyngeal or laryngeal spasm or collapse. The foal is breathing through a tracheostomy tube during this examination. There is fluid moving in and out of the rima glottidis.

Narrator: An endoscopic image of the same foal seven days after arytenoidectomy. The edema at the surgery site has resolved. There is no pharyngeal or laryngeal spasm or collapse. This foal was also treated medically for the hyperkalemia syndrome. The foal subsequently breathed normally after the tracheostomy tube was removed.

Narrator: Arytenoid chondritis in a draft horse. This image was obtained with a fiber optiscope. The image quality is not as good as with a video endoscope. The arytenoids are

somewhat swollen. There is virtually no movement of the arytenoids and the vocal folds are completely opposed. The surgical correction for this problem is an arytenoidectomy.

Narrator: The larynx of a horse that had a left sided arytenoidectomy fifty days previously. There is a normal opening to the rima glottidis at this time.

Narrator: A horse with epiglottic entrapment. Epiglottic entrapment with a subepiglottic cyst, making the area underneath the aryepiglottic fold extremely large and prominent. The endoscope is advanced to allow visualization of the corniculate processes of the arytenoids. The palatopharyngeal arch on top of the arytenoids.

Narrator: The larynx of the same patient two days after surgery. Feed is adhered to the epiglottis and has collected around the arytenoids.

Narrator: The same patient eight days after cyst removal. There is a large mass which we felt was edematous aryepiglottic fold and or soft palate tissue; this tissue can displace underneath the soft palate. There is still a raw edge on the epiglottis. In an examination two months after the surgery, this animal apparead to have a normal larynx and epiglottis.

Narrator: A laryngeal mass which moves in and out of the rima glottidis can be seen. The normal laryngeal structures cannot be seen. This image was obtained using the fiber otoscope.

Narrator: Displacement of the soft palate with normal adduction of the corniculate processes. Notice that the epiglottis cannot be seen.

Narrator: A cleft soft palate in a one day old foal. There is a distinct v-shape to the soft palate defect. This foal had milk coming out of its nose since birth.

Narrator: A cleft palate in a four year old arabian mare. This animal had feed from the nose since birth. The owners did not pursue work up until the horse was four years of age. Looking into the oropharynx from the nasopharynx due to the cleft in the soft palate. The larynx itself appears normal.

Narrator: Edema and dorsal elevation of the soft palate, which is pushing up under the epiglottis. This horse had severe swelling of the caudal tongue due to squamous cell carcinoma; the tongue itself cannot be seen.

Narrator: A normal endoscopic view of the ethmoid turbinate.

Narrator: A large right-sided hematoma. The tip of the endoscope is advanced below the ethmoid hematoma to see a normal nasopharynx. The tip of the endoscope is pulled into the nasal passage again to see the large ethmoid hematoma. The structures have been labeled. The ethmoid hematoma pushing over from the right below the nasal septum and the normal left side ethmoid turbinate. The normal ethmoid turbinate. The endoscope is then pulled back to see a normal ventral meatus.

Narrator: A mass in the ventral meatus, which is obscuring part of the passageway in an older horse. This was considered likely to be a neoplasia. The ethmoid appears normal.

Narrator: Entering into the ventral meatus of a horse. A small mass can be seen on the left side of the picture in the ventral meatus as it joins the nasopharynx. The nasopharynx and larynx appear normal.

Narrator: A mass in the ventral meatus. The larynx itself appears normal.

Narrator: Mycotic plaques within the nasal cavity. This image was obtained with a fiber optiscope. This white fungal appearing lesions in the nasal passage were associated with serum or blood in the area.

Narrator: The dorsal pharyngeal recess; this is an embryonic remnant of Rathke's pouch and there is no opening in this area normally. The guttural pouch openings.

Narrator: The biopsy instrument is used to enter the guttural pouch. The medial cartilaginous flap of the nasopharyngeal opening of the guttural pouch is elevated in order to pass through the rostral auditory tube. The scope enters the guttural pouch to see the structures within the pouch.

Narrator: Several structures will be pointed out individually in a freeze frame: the guttural pouch; the lateral compartment; the larger medial compartment; the stylohyoid bone which divides the medial, on our left, from the lateral, on our right, portions of the guttural pouch; the nerves involved with [intelligible] coarse through the dorsal portion of the medial compartment.

Narrator: The placement of a catheter into the guttural pouch. This catheter can be left in place to allow daily flushing of the guttural pouch. A uterine pipette is used to allow placement of the catheter. The tip of the pipette is used to elevate the flap of the nasopharyngeal opening of the guttural pouch. Polyethylene tubing is used to advance through the pipette and left in place to allow subsequent flushing of the pouch. The catheter is advanced into the pouch via the pipette.

Narrator: The endoscope is advanced up the ventral meatus, seeing the catheter in the ventral meatus. The biopsy instrument is used to enter the pouch to see the catheter. The coil at the end of the catheter allows it to stay in place. The catheter coiled within the guttural pouch.

Narrator: Blood is coming from the guttural pouch opening. This could be associated with a mycotic lesion or trauma to structures in the guttural pouch such as the stylohyoid bone. Blood in the ventral portion of the guttural pouch. The reason for hemorrhage in this particular animal was not visible endoscopically. The horse had a fractured stylohyoid bone.

Narrator: A defect in the dorsal pharyngeal recess. The endoscope was passed through this defect into the guttural pouch. There was extreme distortion in the guttural pouch as well

as mycotic lesion within the pouch. The mycotic lesion is a white fungal appearing plaque. A mass on the stylohyoid bone within the guttural pouch. This was associated with an inner ear infection in this particular patient.

Narrator: An elevation of the floor of the guttural pouch due to a retropharyngeal mass which is protruding up from below the guttural pouch.

Narrator: A melanoma within the guttural pouch of a gray horse in the lateral compartment, associated with the external carotid artery. Small melanomas, again in the lateral compartment associated with a vessel.

Narrator: Severe compression of the nasopharynx due to trauma of the throatlatch region of this horse, and resulted retropharyngeal swelling. Compared to previous images, there is only a small lumen to the nasopharynx–this is due to external pressure on the nasopharynx

Narrator: The same patient, five days after the trauma. There is more of an opening in the nasopharynx than seen previously. A tracheostomy tube was placed in the trachea to allow the animal to breathe for the past five days. The tracheostomy tube is being removed.

Narrator: A normal trachea with virtually no exudate. A tracheal wash will be performed utilizing sterile polyethylene tubing which is passed through the biopsy channel of the endoscope. The sterile tubing is not advanced past the tip of the endoscope until the tip is well within the trachea. A sterile isotonic fluid is injected and the sample is aspirated via the same polyethylene tubing.

Narrator: Increased tracheal exudate. As the scope travels down the trachea, more and more exudate can be seen. A tracheal wash is performed on this patient. This is the tracheal pool, where the horizontal and vertical trachea meet, and the most ideal location to get a sample. Exudate can adhere to the end of the polyethylene tubing, making it difficult to suction. Air can be blown from a syringe through the tubing to dislodge the exudate.

Narrator: A large tracheal mass in an older horse. This image was obtained with a fiber optiscope. A biopsy is performed on the tracheal mass, using forceps which were passed percutaneously through a small incision made between the tracheal rings. We are guiding our biopsy via endoscopy.

Narrator: The endotracheal tube within the trachea of a patient under anesthesia.

Narrator: The first and second divisions of the bronchi. The mucosa in this particular patient is slightly hyperemic. This image was obtained via a 310 centimeter long fiber optiscope.

Narrator: The normal urethra of a castrated male. The urethra has been distended with air in order to allow visualization of the mucosa. The red plaques are blood and cavernous tissue revealed by distention of the penile urethra with air. The bulbourethral gland ducts, which can be seen dorsal and slightly to the left on the screen. These ducts are

not as prominent in the castrated male as in the intact male. The colliculus seminalis: this structure, again, is not as prominent in the castrated male as in the intact male.

Narrator: The urethral opening. The endoscope is passed through the urethral opening and into the urinary bladder. The tip of the endoscope is passed into the bladder. Normal equine urine is seen in the ventral aspect of the bladder. The tip of the endoscope has been retracted out of the bladder into the urethra. The endoscope is advanced back into the urinary bladder. The ureters can be seen in the upper left and right lateral portions of the screen. The picture is blurred due to urine coming down from the ureter over the tip of the endoscope. The whitish or cloudy appearance of the urine is normal. This is due to the presence of calcium carbonate crystals.

Narrator: the ureters in the dorsal portion of the bladder just inside the urethral opening; these are slit-like structures, and when visualized over time the endoscopist can see urine coming from the ureters and flowing down the wall of the bladder.

Narrator: A slit-like defect in the urethra of a stallion. This animal was presented for evaluation of hemospermia.

Narrator: The ducts to the bulbourethral glands and the colliculus seminalis. There is also a hyperemic area in the urethra associated with or near the ducts to the bulbourethral glands to the right of the screen.

Narrator: The endoscopic examination of a stallion with hemospermia begins at the distal urethra. The urethra appears normal except for the slit-like defect and the hyperemic area near the bulbourethral gland ducts. The dark red plaques in the more distal urethra are normal cavernous tissue. The endoscope is advanced up the urethra while dilating it with air.

Narrator: The red patchy areas seen are normal; this is blood and cavernous tissue due to distention of the penile urethra with air. The slit-like lesion. The hyperemic area is on the right side of the screen. The colliculus seminalis. A small amount of normal urine in the bladder. The endoscope is being pulled back into the urethra. The tip of the endoscope is advanced into the bladder and the ureteral openings can be seen. Urine is passed from the horse's left and right ureter into the bladder. This urine appears normal.

Narrator: An examination of a stallion 53 days after a pelvic urethrotomy which was performed as part of the treatment for hemospermia. The surgery site is healed, but an outpouching in the urethra remains.

Narrator: The endoscope is advanced up the urethra. It appears normal. Red plaques can be seen in the penile urethra due to the distention of the urethra with air. There is some collapse of the urethra around the endoscope due to spasm of the urethra. Further distention of the urethra with air allows visualization of the mucosa and passage of the endoscope. A healed urethrotomy. There is an outpouching of the urethral mucosa at this point. The tip of the endoscope is advanced up the urethra. The bulbourethral gland ducts with the colliculus seminalis in the background. This is the area previous

hyperemia. The colliculus and urethral sphincter. The ejaculatory duct opening in the colliculus seminalis. The tip of the endoscope is advanced into the urinary bladder and normal equine urine can be seen in the ventral portion of the urinary bladder. The ureter openings. Urine is passed from the horse's right ureter into the bladder. Urine from the left ureter. The endoscope is being pulled back out of the urinary bladder and into the urethra. The colliculus seminalis as the scope is being slowly removed from the urethra. The bulbourethral gland ducts. External pressure is being put on the urethra at the previous surgery site. The movement in the urethra confirms this as the surgery site.

Narrator: Severely hemorrhagic bladder mucosa associated with a cystitis can be seen with a fiber optiscope. Small petechial hemorrhages near the apex of the urinary bladder associated with cystitis.

Narrator: Fluorescein dye stained urine is seen coming from the ureteral opening. The urine appears orange green because of the dye.

Narrator: Cysts within the uterus of a mare. These cysts were seen via ultrasonography. These images were obtained through a fiber optiscope and are not as of good quality as those obtained via the video endoscope.

Narrator: Fetal membranes within the uterus of a mare at attempts at abortion of this fetus using the biopsy instrument to rupture the fetal membranes.

Narrator: The first portion of the digestive tract of the horse which can be examined endoscopically is the nasopharynx. The first image is of a normal nasopharynx.

Narrator: A cleft palate in a one day old foal. This foal had reflux of milk from the nose when it attempted to nurse.

Narrator: A four year old horse which matured normally despite having a cleft soft palate. This animal had a history of feed from the nose since birth. Saliva is seen within the oropharynx via the nasopharynx.

Narrator: Dorsal displacement of the soft palate can be seen in this horse. This condition can result in difficulties with swallowing. The horse may aspirate feed and be unable to swallow normally due to problems with nervous control of the soft palate.

Narrator: A normal esophagus. The endoscope is passed into the esophagus just to the left of the larynx. The mucosa in this esophagus is pale and has striations. In order to allow adequate visualization the esophagus is dilated with air.

Narrator: The esophagus of a horse with choke. Saliva and feed is obscuring the view to some extent. The choke is in the mid-cervical region. Aspirating the fluid from the esophagus via the endoscope may improve visualization.

Narrator: The esophagus of the same patient with a choke having been relieved. A hyperemic area of the previous horse with choke. The esophagus more distal to this area appears

normal. This hyperemic area can again be seen as the scope is withdrawn. There is no severe ulceration or damage to the esophagus in this patient.

Narrator: The lumen of a full stomach. There is feed material within the stomach; this feed obscures complete visualization of the stomach. Even when feed is withheld from the horse or full, residual feed materials may remain in the ventral stomach and obscure visualization of the glandular region. The margo plicatus, the junction between the non-glandular stomach and glandular stomach. The non-glandular stomach is white and dorsal and the glandular stomach is pink and ventral. Feed is within the glandular stomach of this patient.

Narrator: A large milk curd can be seen in the stomach of this foal. There is feed material and Pepto Bismol, which have been given therapeutically to this patient, adhered to the milk curd. A normal margo plicatus; the glandular stomach; the non-glandular stomach; a milk curd, a large rounded structure that then narrows down toward the pyloric area. A small defect can be seen just above the milk curd in the non-glandular stomach.

Narrator: The bile duct opening within the duodenum. The tip of a 310 centimeter long fiber optiscope has been passed around the greater curvature of the stomach and into the proximal duodenum. Bile can be seen coming out of the duodenal diverticulum. Polyethylene tubing is being passed and actually cannulating the diverticulum in the horse. The duodenal diverticulum is the common opening of the bile duct and a duct for the pancreas in the horse. The duodenal mucosa is normal in appearance.

END TRANSCRIPTION