RHINOSTOMY AND TRACHEOSTOMY IN LLAMAS AND ALPACAS
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Key Points
- Tracheotomy usually represents an emergency procedure
- Tracheostomy / Rhinostomy may be a necessary procedure for provision of a long term upper airway
- Rhinostomy has been used to treat and manage crias with choanal atresia.

Since camelids are primarily nasal breathers, performance of an emergency tracheotomy may be indicated for camels with obstruction of the nasal, nasopharyngeal, or upper trachea. Clinical situations include snake envenomation, bilateral laryngeal paralysis, laryngeal swelling, traumatic head injury, drug hypersensitivity, and idiopathic airway obstruction associated with traumatic jugular catheterization. In these situations, a tracheotomy provides a functional, low resistance temporary airway. Tracheotomy performed soon after diagnosis provides relief from anxiety and minimizes risk of aspiration pneumonia in crias affected by choanal atresia.

The tracheotomy is usually performed just proximal to the junction of the proximal and middle third of the ventral cervical region. The area is clipped and subjected to routine surgical asepsis, however, in emergency situations these steps may need to be abbreviated or eliminated to save the patient. If time permits, local anesthesia is infused subcutaneously in a linear pattern on the ventral midline corresponding to the intended incision site. The paired sternohyoideus muscles are bluntly separated to expose the fascia over the trachea. Strict adherence to a midline approach will prevent inadvertent trauma to adjacent paired structures lateral to midline (external jugular veins, common carotid arteries, vagosympathetic trunks), and the esophagus on the left side. A horizontal incision is made between the tracheal rings of less than half (50%) of the tracheal circumference to open the trachea but preventing tracheal instability and trauma to the adjacent jugular veins (neonates). A curved tracheotomy tube is inserted to secure the airway. Tracheal diameter of neonates approximates 1 cm while adult camelids may be up to 3 cm in diameter. Non-cuffed endotracheal tubes less than the actual tracheal diameter are usually used to prevent mucosal trauma, and minimize the risk of complete tracheal occlusion in the event of the tube becoming plugged. The tube should be cleaned on a regular basis to assure patency.

Permanent tracheostomy is indicated to provide a long term or permanent airway. Indications include bilateral laryngeal paralysis, laryngeal cicatrix formation, proximal tracheal stricture, and perhaps choanal atresia. The technique is similar to that performed in horses and involves general anesthesia followed by resection of the ventral portion of 3-5 tracheal rings, incision, reflection, and suturing of the mucosal edge to the adjacent skin. Aftercare is significant. Complications, if they develop, usually occur much later and may include failure of primary healing, stenosis of the original stoma, distortion of the tracheal shape, and sudden death.

As part of long-completed research project, we have used a rhinostomy approach to correct choanal atresia in neonatal crias. The same approach is used in conjunction with a modified tracheotomy tube to provide long term access and an airway to these newborns. The appliance can be left in place permanently and requires regular maintenance or it can be removed and be expected to heal by second intention once the nasopharyngeal passages have achieved appropriate diameter and have epithelialized.

References