Upper airway obstruction is usually a progressive condition that affects calves more frequently than adults. On presentation, animals have a variable degree of inspiratory distress. This distress is quickly resolved by placing a temporary tracheostomy tube. The key points of this procedure are: 1) incision straight on midline (separate the paired sternohyoideus muscle) in the proximal third of the neck, 2) do not cut the annular ligament more than half its circumference, 3) insert the largest tube available and do not inflate the cuff.

When the inspiratory distress is resolved, diagnostic imaging is warranted (endoscopy, +/- radiography and/or tomodensitometry and/or ultrasound). On endoscopy, you need to be familiar with the normal anatomy of the bovine nasopharynx. It is different than the horse (ex: incomplete nasal septum, normal displacement of the soft palate, pigmentation of the mucosa (Jersey breed)). Most of the pathologies involve the arytenoids. They are usually secondary to oral necrobacillosis. This pathology, if untreated, evolves in chondritis and abscesses of the arytenoids. Medical therapy, including broad spectrum antibiotics and NSAID or corticosteroids, is always recommended prior to surgery. If medical therapy fails to resolve the obstruction, 3 surgical options are available:

1) Tracheolaryngostomy

This surgery consists of incising and removing the ventral part of the cricoid cartilage and the first 2 tracheal rings. Then, the tracheal mucosa is sutured to the skin with interrupted sutures. This surgery can be combined with an arytenoidectomy or with debridement of necrotic arytenoids. This technique is ideal when a tracheostomy tube cannot be maintained and for cattle destined to slaughter.

2) Arytenoidectomy

Removing an arytenoid in a ruminant species is less than ideal. The biggest concerned is repeat aspiration during the ruminating process. However, reports have shown that a good prognosis could be achieved when one arytenoid is removed. Two techniques, the subtotal (which leaves the cornulate process) and the partial arytenoidectomy (which removes the corniculate process) have been used with success. The ideal technique remains the subtotal (decreased risk of aspiration) but is not always feasible.

In cattle the short crycothyroid ligament makes it impossible to explore the larynx without splitting the thyroid cartilage on midline. The dissection of the body of the arytenoid is difficult and therefore, it could be difficult to save enough mucosa to close the arytenoidectomy site. When possible, the mucosa should be closed partially to decrease the risk of adhesions. The thyroid cartilage should be reconstructed. The crycothyroid ligament and the skin are left to heal by second intention. The healing of the surgery site could take anywhere from a few days to a month. During the healing period, the tracheostomy tube is kept in place.

3) Permanent tracheostomy

This surgery is generally less attractive for clients because of the permanent care of the surgery site and the cosmetic impact on the animal. However, this surgery could be successful for mid to long term prognosis. Tracheal collapse has been seen on a cow that had this surgery done 4 years ago.
It is challenging to perform this surgery when a tracheostomy tube is in place. The tube is generally where the permanent tracheostomy should be. It is not recommended to perform the surgery at the site of the tracheostomy tube. Dehiscence of the surgery site is almost guaranteed.

References