**Technique**

 Pre-Operative

This surgery has traditionally been done under a general anaesthetic and thus, horses should be fit general anesthesia candidates eg. Having no adverse cardiovascular complications, or severe respiratory issues, shock or hypovolemia.

This surgery has been shown to be useful in non-performance horses and also in some racehorses which have low grades of laryngeal disease.

In one research, using the unilateral laser-assisted ventriculocordectomy technique, the following anaesthetic protocol described below (including post-operative medication) was applied:

All horses were administered perioperative antibiotics (ampicillin trihydrate 15 mg/kg bwt i.v. t.i.d., gentamicin sulphate 6.6 mg/kg bwt i.v. s.i.d.) and an anti-inflammatory agent (flunixin meglumine 1.1 mg/kg bwt i.v. b.i.d.).

Horses were restrained in stocks and sedated by use of a continuous infusion of detomidine HCl. Topical mepivicaine was applied to the left vocal cord and ventricle by use of a catheter passed through the biopsy channel of the endoscope.

Intra-Operative

Most horses with this condition are within the grade 3 category (see figure 1.) where a Hobday is likely to be very effective.

Ventriculectomy (“Hobday”) and ventriculocordectomy removes a pocket of mucosal tissue, (both or one ventricles) and the vocal cords (left or both) of the larynx. Removal of the vocal cords (bilateral cordectomy) decreases airway obstruction when carried out alongside other procedures.

The ventricle and the vocal cord (located under the arytenoid cartilage) is removed to widen the airway that is performed alone or along with a prosthetic laryngoplasty (image 1 attached separately). It is done under anaesthesia through an incision under the jaw into the airway (known as a laryngotomy) or by using a laser passed through an endoscope (or “scope”) up the nostril. Laryngotomy incisions are often left open to heal on their own. Laser techniques can be performed with the horse awake and standing. No incision is necessary with the laser technique since the endoscope and laser are passed up the nose to the larynx. The standing laser technique is ideal for draft breeds that may have difficulty recovering from general anaesthesia.

| **Figure 1. Havemeyer Consensus grading system of laryngeal function performed in the standing unsedated horse**[**†**](http://www.ivis.org/proceedings/WEAS/2005/Ducharme1/chapter.asp?LA=1#anchor1) |
| --- |
| **Grade** | **Description** | **Sub-Grade Description** |
| **I** | All arytenoid cartilage movements are synchronous and symmetrical and full arytenoid cartilage abduction can be achieved and maintained. | - |
| **II** | Arytenoid cartilage movements are asynchronous, and/ or asymmetrical but full arytenoid cartilage abduction can be achieved and maintained. | 1. Transient asynchrony, flutter or delayed movement is seen.2. There is asymmetry of the rima glottidis much of the time due to reduced mobility of the affected arytenoid and vocal fold, but there are occasions, typically after swallowing or nasal occlusion, when full symmetrical abduction is achieved and maintained. |
| **III** | Arytenoid cartilage movements are asynchronous, and/ or asymmetrical but full arytenoid cartilage abduction cannot be achieved and maintained. | 1. There is asymmetry of the rima glottidis much of the time due to reduced mobility of the arytenoid and vocal fold, but there are occasions, typically after swallowing or nasal occlusion, when full symmetrical abduction is achieved but not maintained.2. Obvious arytenoid abductor deficit and arytenoid asymmetry. Full abduction is never achieved.3. Marked but not total arytenoid abductor deficit and asymmetry with little arytenoid movement. Full abduction is never achieved. |
| **IV** | Complete immobility of the arytenoid cartilage and vocal fold. | - |
| † Description generally refers to the left arytenoid cartilage in reference to the right. However, this grading system can apply to the right side (i.e., right grade III-1) |

Post-operative care

All horses were administered phenylbutazone (2.2 mg/kg bwt per os b.i.d.), sulphamethoxazole and trimethoprim (30 mg/kg bwt per os b.i.d.) and topical pharyngeal spray containing DMSO, dexamethasone, nitrofurazone and glycerine twice daily for 7 days following surgery. Horses were stall rested for 14 days. Upper airway endoscopy was performed on the horses at rest, 14 days after surgery, and revealed no abnormalities associated with LVC. The horses were turned onto pasture at that time. (This is in relation to the article on unilateral laser-assisted ventriculocordectomy technique).

General Post-Op management:

Post-operative management includes rest, anti-inflammatories, antibiotics, and feeding changes. Rest typically includes 2 weeks of stall rest, followed by 2 weeks of stall rest and hand walking, followed by 2-4 weeks of small paddock turnout or light exercise.

Skin sutures/staples may need to be removed if an incision was made. Stall rest and time to return to work will vary depending on the surgeon’s preference and the grade of laryngeal hemiplegia.

Horses that have laryngotomy incisions will require twice daily cleaning of the surgical site. Gradual return to normal exercise is allowed after 45-60 days. Feed changes include placing water, grain and hay on the ground and minimizing dust. This should be encouraged for the life of the horse to help decrease coughing and aspiration while eating.

**Prognosis**

The tie-back and Hobday surgeries are the best practical options currently available for the treatment of RLN, and are performed commonly, particularly in TB racehorses. Although there are recognised complications, the benefits generally outweigh the risks in horses that can otherwise not be effective athletes.

Prognosis post PLP (prosthetic laryngoplasty) surgery has reported ranges of success from 50-80% for racehorses and up to 94% in non-racehorses.