DIAGNOSIS OF RECURRENT LARYNGEAL NEUROPATHY (RLN)

- 1. Palpation
- Palpation of the larynx should seek evidence of atrophy of the intrinsic laryngeal musculature especially on the left side.
- The arytenoid depression test, whereby the right side of the larynx is forced to adduct by pressure on the right arytenoid muscular process, is more likely to provide a convincing increase in stridor at the conclusion of exercise than at rest.
- Palpation should also seek evidence of a cicatrix from previous ventral laryngofisure surgery. The area ventral to the left linguo-facial vein should be checked for a prosthetic laryngoplasty (‘tie-back’) scar.
- During palpation of the larynx note should be taken of the spacing between the cricoid and thyroid cartilages. Deformities of the thyroid laminae are frequently present as part of the fourth branchial arch defect syndrome, and particular attention should be paid in cases of apparent right-sided RLN.
- An assessment of the strength of the ‘slap’ response is more accurately judged by palpation than by High-speed treadmill endoscopy (HSTE) or Overground (OG) endoscopy. The test should not be applied during the inspiratory phase of respiration.

- 2. The ‘Grunt-to-the-stick’ test
- This test depends upon startling the horse by threatening it. Laryngeal fixation in an incompletely closed position, together with a rapid rise in pressure within the airway, produces a low-pitched grunt. This is a test of the competence of laryngeal adduction, but the results are inconsistent.

- 3. Resting endoscopy
- The asymmetry of the rima glottidis in cases of true left laryngeal hemiplegia is usually obvious. During equine laryngoscopy, the perspective distortion which arises from the eccentric position of the endoscope in the nasopharynx must be taken into account. Thus, when the endoscope is introduced through the right nostril, false negative diagnoses are possible, but from the left side the left arytenoid cartilage may give the false impression of inadequate abduction. Whenever doubt exists, the endoscopy should be performed through each nostril in turn.
- A grading system of laryngeal function with reproducible values is necessary if the subjectivity of endoscopy of the larynx is to be eliminated, particularly when left laryngeal dysfunction is incomplete.

- A suggested laryngeal function score (LFS) grading system is provided below:

Grade 1: All movements by the left and right arytenoid cartilages (both adductory and abductory) are synchronized and symmetrical.

Grade 2: All major movements of the arytenoid cartilages are symmetrical with a full range of adduction and abduction. Transient asynchrony, flutter, or delayed abduction, especially by the left arytenoid cartilage, may be seen.

Grade 3: The rima glottidis is asymmetric during quiet breathing, but the left arytenoid cartilage and vocal fold are capable of full abduction, typically in response to the nostril occlusion manoeuvre or after swallowing.

Grade 4: There is consistent asymmetry of the rima glottidis at rest: the left arytenoid cartilage is not capable of full abduction, but some residual movements are present.

Grade 5: True hemiplegia: active movement is absent on the left side with the arytenoid cartilage resting on or near the midline. In addition, the 'slap' test does not provoke any adductory response (Figure 5.8).

- This five-point scheme of LFS grading is that which is most commonly used in the United Kingdom, Ireland, and Australasia, but other systems with up to 7 grades are in use in the USA., e.g. the Havermeyer system.

Figure 5.8 Recurrent laryngeal neuropathy (Grade 5 out of 5 LFS) where there is obvious asymmetry of the rima glottidis and no active motility by the left arytenoid cartilage or vocal fold – true hemiplegia.

- 4. Dynamic endoscopy
- High-speed treadmill endoscopy (HSTE) or Overground (OG) endoscopy is necessary to provide a complete assessment of laryngeal function because of the inconsistencies of interpretation of endoscopy at rest – see above (Figure 5.9).

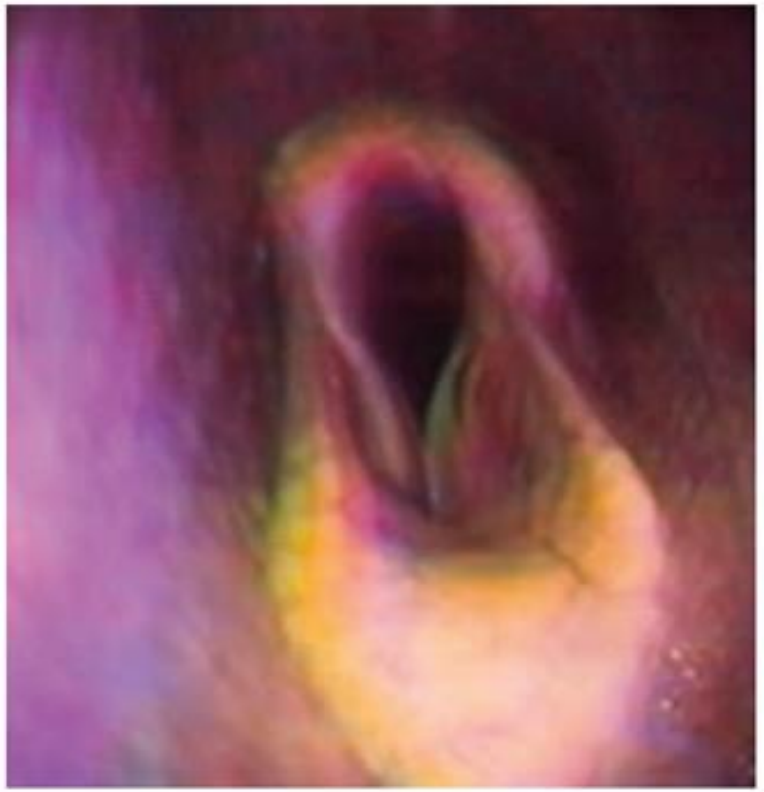

Figure 5.9 Dynamic collapse of both vocal cords and the left arytenoid cartilage in a horse which appeared to be normal at rest, confirmed by overground endoscopy during fast exercise.

- 5. Exercise test
- Endoscopy after exercise. Although it is standard procedure to include an examination as soon as possible after completion of the exercise test, this is probably the least informative time to perform endoscopy. No dynamic collapse is likely to be seen, and some of the subtler anomalies apparent during quiet breathing will have been abolished especially by the full sustained abduction of the arytenoid cartilages.