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DISEASES OF THE PHARYNX

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PARESIS, PARALYSIS, AND/OR ELONGATION OF THE SOFT PALATE

In 1957 clinical signs in several horses with noise originating from the upper respiratory tract were reported to be caused by paralysis of the recurrent laryngeal nerve and/or the pharyngeal branch of the vagus nerve supplying the soft palate, resulting in dyspnea, hypoxia, and reduced racing performance.^{1,2} No definitive studies have been conducted concerning the etiology and pathogenesis of paralysis of the palate, nor am I aware of any studies which confirm that the soft palate is paralyzed.

In some cases it appears that the soft palate is either too long for the pharynx, or it has undergone hyperplasia, resulting in its being displaced dorsally and diminishing the nasopharyngeal airway. A horse that is tense, excitable or showing signs of anxiety may tighten the muscles in the area of the throat and/or pull back the tongue. Both actions force the soft palate dorsally, resulting in airway obstruction. For this reason, many owners and trainers tie the tongue to the lower jaw during sporting events to prevent pulling the tongue back.

Insufficient evidence is available to prove or disprove the presence of a true elongated soft palate in the horse, the diagnosis being a clinical one. Endoscopy may suggest a palate that is too long or thickened, as the view of the glottis is obstructed until the endoscope depresses the elevated soft palate. Continued observation through the endoscope as it is slowly withdrawn may reveal the soft palate moving dorsad. Excessive dorsal movement is thought to be abnormal. Areas of acute hyperemia and/or submu-

cosal hemorrhage in the soft palate are seen on occasion.

The soft palate normally lies beneath the epiglottis. During swallowing it moves dorsally to close off the nasal passages as food is delivered to the esophagus. The epiglottis also moves dorsally to close the glottis. If the soft palate lies above the epiglottis, the flow of air is partially obstructed, and a noise is produced on both inspiration and expiration. Airway obstruction is more evident during expiration, and the noise is louder at this time. The noise is the result of a fluttering of the soft palate (as in horses recovering from a general anesthetic following removal of an endotracheal tube, when full function of the soft palate has not been regained).

The noise is frequently described as a rattling or gurgling sound, comparable to that made by a brachycephalic dog, and may be produced at rest or while at work. A horse with a history of racing normally, but which on occasion chokes up, staggers, becomes cyanotic and stops, strongly suggests a palate problem. If the horse swallows he may replace the soft palate beneath the epiglottis and continue to race normally. Definitive diagnosis requires endoscopic evidence of the soft palate being positioned over or covering the epiglottis. Paralysis of the soft palate has been reported in association with disease of the guttural pouch, particularly in diphtheria with involvement of the glossopharyngeal and/or vagus nerves.³

Treatment

Surgical removal of a section from the caudal free border of the soft palate is effective. The horse is prepared in the usual manner, placed in dorsal recumbency under gas anesthesia, and a laryngotomy is performed. Through a 4" ventral midline incision, with the head extended, the sternothyrohyoideus muscles are bluntly separated

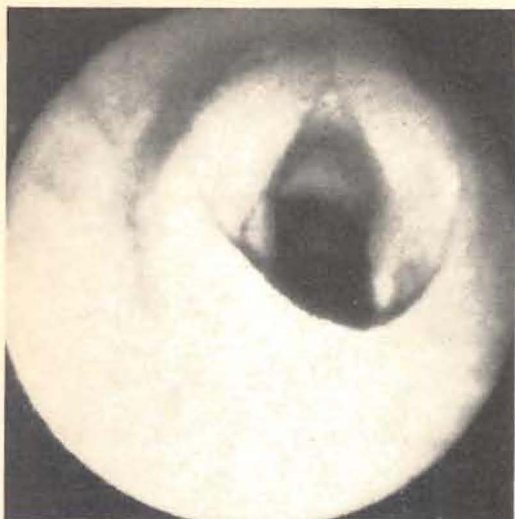
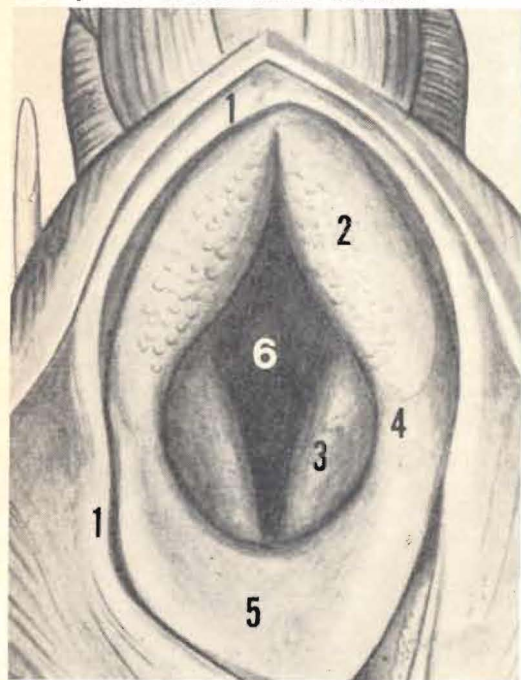


Fig 1. A large mucoid cyst lies beneath the epiglottis, the most common location for pharyngeal cysts.

to expose the cricothyroid membrane, incision of which opens the larynx. The body of the thyroid cartilage, lying immediately below the epiglottis, is severed with a cartilage knife, scissors, or bone cutter to further expose the larynx and pharynx. A self-retaining laryngeal retractor is inserted.

The horse is put into a plane of deep sur-

Fig 2. The laryngeal cavity and entrance. Points identified include: palatopharyngeal arch (1); corniculate cartilage (2); vocal cord (3); aryepiglottic fold (4); epiglottis (5); and rimaglottis (6). From Popesko: *Atlas of Topographical Anatomy of the Domestic Animals*. (Saunders).



gical anesthesia, and the endotracheal tube is pulled back into the oral cavity, at which time the soft palate (which was lying dorsal to the endotracheal tube) comes into view. Three Allis tissue forceps are placed equidistant on the free caudal border of the soft palate. Moderate traction is applied, and a section of the palate is removed with electrocautery, or scissors may be used since hemorrhage is minimal. The incision is started near the arytenoid cartilage on one side, at the caudal pillar of the soft palate, and is continued cranially to the center of the palate. A 2nd incision is started on the opposite side and continued forward to meet the first.

This procedure is followed to avoid trauma to the arytenoid cartilage, which may result in a granulomatous lesion. There is no firm guide to the size of the section to be removed. A rule of thumb is to not remove more than 1" of the tensed palate centrally, tapering the incision to the right and left caudal pillars. Blood is removed from the pharynx with sponges attached to sponge forceps. The endotracheal tube may be reinserted to deepen the plane of anesthesia if indicated. The body of the thyroid cartilage is not sutured; in hundreds of cases, no complications have arisen, whereas problems such as chondroma may result if foreign material enters the cartilage.

The laryngotomy incision may be completely closed by approximating the edges of the cricothyroid membrane, in which case sutures should not invade the laryngeal mucosa. The 2 muscles may be approximated with tack sutures (00 gut) and the skin closed. If this procedure is used a drain should be placed between the muscles and the cricothyroid membrane. It is removed when drainage is not evident (5 to 7 days).

The wound can be left open to heal by granulation; healing is satisfactory and uneventful, leaving little or no evidence of a scar, but will require about 2 weeks. Some surgeons prefer partial closure of the wound, leaving a small central area for drainage. The surgical field is not sterile once the larynx and pharynx have been invaded; therefore some degree of infection must be anticipated.

Postoperative Course

At the time of surgery the horse is given 2 g phenylbutazone, tetanus antitoxin, and

prophylactic penicillin-streptomycin which is continued for 5 days. Additional phenylbutazone may be administered as required. An emergency tracheotomy set should be available for immediate use, at least during the first 24 hours. A tracheotomy is not routinely performed. When the endotracheal tube is removed, the head should be kept low to drain blood from the airway.

Upon recovery from anesthesia the horse is returned to his stall, where he is cross-tied and not allowed water or feed for 12-24 hours. He must be observed at 2- to 3-hour intervals for 18-24 hours. Evidence of respiratory distress (obstruction) warrants an immediate tracheotomy. With incomplete closure of the surgical wound, thorough cleansing daily to maintain drainage and control infection will allow normal healing. Vaseline should be placed around the margins of the wound and under the jaw to the chin to prevent excoriation of the skin. A special halter without a throat strap should be used to prevent local irritation.

As some horses experience difficulty in swallowing the first 1 or 2 days, the water should not be higher than 3 feet from the ground, to prevent aspiration. Routine feed-

ing may be resumed the day following surgery. The horse should be kept out of work for at least 30 days, or longer if indicated. Endoscopy of the throat should be carried out during the first postsurgical week, repeated as indicated to evaluate the success of the surgery and the nature of the healing.

This operative procedure is not without danger; several horses have exhibited signs of difficult deglutition, with regurgitation of feed and water through the external nares, and/or aspiration pneumonia. If the signs do not regress within a few days, they will probably be permanent, and the horse may have to be destroyed for humane reasons, or it may die from a foreign-body pneumonia. Thus, the decision to operate should not be made lightly, but only if and when indicated.

The operation is not always successful, as the soft palate may continue to lie dorsal to the epiglottis. Additional resection may be considered, but the complications mentioned should be discussed with the owner so that he is fully aware of the problem. □

References

1. *J So Afr VMA* 28:291, 1957.
2. *J So Afr VMA* 28:63, 1957.
3. *Proc 11th Annual AAEP Mtg*: 111, 1965.

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