Long-Term Outcome of Horses Undergoing Permanent Tracheostomy: 42 Cases

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Permanent tracheostomy is a viable surgical procedure associated with a favorable long-term prognosis in horses with severe obstructive lesions of the upper airway. Most long-term complications are associated with exercise and are easily managed. The majority of owners are very satisfied with the long-term outcome. Authors' addresses: Texas Veterinary Medical Center, Texas A&M University, College of Veterinary Medicine, College Station, TX 77843-4475 (Eastman, Rakestraw, Taylor, and Wright); and Department of Large Animal Surgery and Medicine, College of Veterinary Medicine, Auburn University, AL 36849-5522 (Schumacher). © 2000 AAEP.

1. Introduction
Diseases resulting in severe obstruction of the upper airway, including advanced arytenoid chondritis, and pharyngeal/laryngeal or tracheal cicatrix, are indications for tracheostomy in the horse. Temporary tracheotomy provides short-term relief, but maintenance of a tracheal cannula may be too labor-intensive to be considered a viable long-term treatment. Permanent tracheostomy greatly decreases labor associated with maintenance of a temporary tracheotomy. Permanent tracheostomy was shown to have a low incidence of complications when performed in a group of non-diseased research horses. There is little information, however, describing long-term outcome, complications, and owner satisfaction in horses with disease treated by permanent tracheostomy.

2. Materials and Methods
Case records of all horses presented to the Texas A&M Veterinary Medical Center (TVMC) from June 1989 to May 1998 that were treated by permanent tracheostomy were reviewed. Information concerning the patient history, preoperative endoscopic diagnosis, clinical signs, surgical procedure, and the immediate postoperative course was obtained from the individual patient records. Owners were mailed a questionnaire regarding postoperative performance after discharge from the hospital, long-term outcome, and satisfaction with the procedure. The surgical procedure has been described previously.

3. Results
Forty-two horses presented to the TVMC during the study period for respiratory difficulty were treated by permanent tracheostomy. Thirty-one were mares, 8 were geldings, and 3 were stallions. The majority were Quarter Horses. The average age was 16.1 years (range, 3–27). Thirty-three horses were afflicted with arytenoid chondritis, 23 with pharyngeal/laryngeal cicatrix formation, and 9 with...
left-sided laryngeal hemiplegia. Twenty-one horses (50%) had multiple lesions. Eight horses had previous surgeries that failed to correct the problem (partial arytenoidectomy [4], laser excision of obstructing lesions [2], laryngoplasty [2]). Surgery was performed standing in 33 horses and under general anesthesia in 9 horses. Five tracheal rings were removed in 21 horses, 4 in 7 horses, and 2 horses had 3 or 6 rings removed. Surgical sites were cleaned twice daily for the duration of hospitalization, which averaged 7.5 days (range, 1–38 d). Pre-discharge postoperative complications included partial dehiscence of the trachea mucosa–skin suture line (7 horses, 5 of which required repair prior to discharge), excessive inflammation with swelling (6 horses), insufficient stoma size (3 horses, all of which required enlargement of the stoma by removal of a section of omohyoid muscle and re-apposition of the tracheal mucosa to the skin).

The tracheostomy was functional in surviving horses or was functional at the time of death in all 33 horses for which long-term follow-up was available (average time to follow-up 4.8 yr, range 2–10 yr). Aftercare required by the owner after discharge involved cleaning of the tracheostomy site. At the time of follow-up, six owners (18%) reported they cleaned the site daily, 11 owners (33%) cleaned the site 2 times per week, 7 owners (21%) cleaned one time per week, and 9 owners (27%) less than once a month. Twenty-nine owners (88%) reported that it took 2–3 mo for the tracheostomy to heal sufficiently to reduce the postoperative care to the current level, and 4 owners (12%) reported it took up to 4 mo. Complications identified after discharge by the owners included coughing at exercise (8 horses, 24%), stridor (5 horses, 15%), and exercise-induced dyspnea (3 horses, 9%). The majority of the horses (19 out of 33) were used for breeding (58%). Seven horses (21%) were used for pleasure riding, and 5 horses (15%) were used as Western performance horses. Two horses were pasture horses only. When asked to rate satisfaction with the long-term outcome, 85% (28/33) stated they were very satisfied with the outcome, 12% (4/33) were somewhat satisfied, and 3% (1/33) were unsatisfied. Ninety-one percent (30/33) indicated that they would have the permanent tracheostomy surgery performed on another horse under similar circumstances, but 9% (3/33) said they would not.

4. Discussion and Conclusion
Permanent tracheostomy should be reserved for horses that fail to respond to other less invasive procedures. The most common disease requiring permanent tracheostomy to be performed in our study group was arytenoid chondritis. Although partial arytenoidectomy has been advocated for horses affected with uncomplicated arytenoid chondritis, we previously found that horses with complicated arytenoid chondritis (multiple lesions) respond poorly to arytenoidectomy, and consequently we are more likely to recommend permanent tracheostomy for these horses. Pharyngeal/laryngeal cicatrization is also a relatively common problem we encounter, which responds only to permanent tracheostomy in advanced cases. Although it is generally assumed that the nasopharynx provides an important component of the pulmonary defense system, bypassing this area with the permanent tracheostomy did not appear to predispose these horses to respiratory tract infections. However, the coughing during exercise seen in some of the horses most likely was associated with irritation from dust particles. Our most significant complications were associated with stomas that were too small. We have revised our technique so that now we resect not only sections of the paired sternothyrohyoideus but also part of the omohyoides. Our results indicate that permanent tracheostomy is likely to produce good long-term results when less aggressive measures fail to correct an upper airway obstruction.

References