A 6-month-old Morgan colt was examined by the University of California, Davis, equine field service because of a retropharyngeal swelling of 3 days’ duration. According to the owners, the swelling had been increasing in size. The colt was housed in a pasture with 5 other weanlings. One of the weanlings in the same pasture had a respiratory tract disease associated with equine herpesvirus 4 infection, but the other weanlings appeared healthy.

On physical examination, the horse carried its head in an extended position and had a large swelling protruding ventrally and to the right of the retropharyngeal region. The mass was 10 cm in diameter and extended from the caudal angle of the right mandible to the mid-cervical region. On palpation, the mass was soft and moveable; palpation of the mass did not elicit any signs of pain. Results of thoracic and tracheal auscultation were normal; no wheezes, crackles, or abnormal bronchovesicular sounds were heard. Results of the remainder of the initial physical examination were unremarkable.

Radiography of the laryngeal and cranial cervical region revealed a large space-occupying mass in the soft tissue ventral to the second cervical vertebra. The mass was 10 cm in diameter and extended from the caudal angle of the right mandible to the mid-cervical region. On palpation, the mass was soft and moveable; palpation of the mass did not elicit any signs of pain. Results of thoracic and tracheal auscultation were normal; no wheezes, crackles, or abnormal bronchovesicular sounds were heard. Results of the remainder of the initial physical examination were unremarkable.

Hematologic abnormalities included mild neutropenia (1,818 neutrophils/µl) and lymphocytosis (7,471 lymphocytes/µl); fibrinogen concentration was normal (300 mg/dl). The lymphocytosis and neutropenia were attributed to possible equine herpesvirus 4 infection. The owner declined further diagnostic testing and was instructed to observe the colt daily for signs of respiratory distress and enlargement of the mass.

The colt was reexamined 2 weeks later and found to be in good health. Results of physical examination were normal, except for the cervical swelling. The mass had enlarged and was now 15 cm in diameter. The WBC count (7,300 cells/µl) and fibrinogen concentration (300 mg/dl) were normal, but the lymphocyte count was still high (4,307 lymphocytes/µl).

Ultrasonography of the mass revealed an anechoic fluid-filled structure with a well-defined hyperechoic capsule. The foal was sedated with xylazine hydrochloride (0.5 mg/kg of body weight [0.25 mg/lb], IV) and given flunixin meglumine (1 mg/kg [0.5 mg/lb], IV). Hair over the mass was shaved, and the skin was disinfected. A small area of skin on the ventrolateral aspect of the mass was infiltrated with 5 ml of 2% lidocaine hydrochloride, and an 18-gauge needle was used to obtain an aspirate. Aspiration yielded 20 ml of an amber viscous fluid; samples were submitted for cytologic evaluation and aerobic and anaerobic bacterial culture. The fluid was classified as an exudate (protein concentration, 5.4 g/dl) with low cellularity; cells consisted predominantly of lymphocytes and macrophages. Aerobic and anaerobic bacterial culture did not yield any growth. A 6-cm incision was made in the skin over the right side of the mass, and soft tissues were dissected to expose the cyst capsule. As much of the cyst contents as possible were aspirated, and a portion of the cyst capsule was submitted for histologic exami-
inination. Histologically, the specimen consisted of a vascularized connective tissue wall lined by pseudostrati-fied columnar to cuboidal epithelium. There were small numbers of lymphocytes and plasma cells surround-ing small mural blood vessels and underlying the epithelium. The cyst wall was sutured circumferenti-ally to the skin in a simple interrupted pattern, using 2-0 polydioxanone. To rule out the possibility of a fistu-

The horse was treated with trimethoprim-sulfa-
methoxazole (30 mg/kg [15 mg/lb], PO, q 12 h) for 7
days after surgery, and skin surrounding the wound was coated with bacitracin zinc-neomycin sulfate-polymyxin B sulfate ointment and petroleum jelly. The cyst cavity was flushed twice daily with 1% povidone-iodine solu-
tion for 3 days, until the cyst wall appeared to have healed to the skin. The cavity was then flushed with 100 ml of 2% povidone iodine solution twice daily for 5 days and with the same volume of 7% povidone iodine once daily for an additional 4 days. Sutures were removed after 14 days, at which time forceps were introduced into the cyst, and the cyst lining was removed. The mar-
supilation site was allowed to heal by second inten-
tion, and 20 days after surgery, the stoma had closed.

Thirty days after surgery, the horse was reexamined, because the swelling had recurred. Ultrasonography of the mass revealed a hyperechoic fluid-filled structure that was 4 cm in diameter. The foal was sedated with xylazine (0.5 mg/kg, IV), hair over the mass was shaved, and the skin was disinfected. Skin overlying the mass was infiltrated with 3 ml of 2% lidocaine hydrochloride, and an incision was made over the previous marsupial-

Reexamination 7 days later revealed that the foal had maintained a normal appetite, attitude, and activi-

ty level. The stoma was retracting, and there was no evidence of discharge. The foal was examined peri-
dually for the next 2 years. The stoma healed cos-
metically, and there were no further complications.

Branchial arch cysts result from malformation of the 5 branchial arches during embryogenesis. In human embryos, the 5 paired branchial arches are separated by 4 pairs of endodermal (inner) pouches and ectodermal (outer) clefts by the fourth week of gesta-
tion. The first pharyngeal pouch gives rise to the eustachian tube (guttural pouch), middle ear, and mast-
toid cells. The second pouch is greatly reduced by the for-

possible causes of cranial cervical swellings include hematomas, seromas, guttural pouch empy-

eas or tympanum, abscesses involving the cervical lymph nodes, salivary mucoceles, esophageal and tracheal duplication cysts, and neoplasms with liquefactive necrosis. Salivary mucoceles, similarly to branchial cysts, contain clear slightly viscous fluid but lack an epithelial lining. Cervical lymph node abscesses are usually associated with signs of pain and can be differenti-
ated from other causes of cervical swellings by means of radiography and endoscopy. Esophageal and tracheal duplication cysts are rare congenital mal-

Branchial cysts are uncommon embryonic anom-

Branchial arch cysts result from malformation of the 5 branchial arches during embryogenesis. In human embryos, the 5 paired branchial arches are separated by 4 pairs of endodermal (inner) pouches and ectodermal (outer) clefts by the fourth week of gesta-
tion. The first pharyngeal pouch gives rise to the eustachian tube (guttural pouch), middle ear, and mas-
toid cells. The second pouch is greatly reduced by the proliferation of the tongue and adjacent tissue; the dor-

sal portion persists as the fossa for the palatine tonsil.

Branchial cysts can be bilateral or unilateral and are likely derived from the first or second pharyngeal pouch. The horse described in the present report was 6 months old when clinical signs were first observed, and in people, clinical signs of branchial cysts are typically not recognized until adolescence or early adulthood. The late recog-
nition of branchial cysts may be a result of delayed secretion of fluid by the epithelial lining.
ity of vital structures such as the recurrent laryngeal nerve, vagosympathetic trunk, jugular vein, and carotid arteries. Percutaneous aspiration and drainage of branchial cysts is considered inappropriate, because the epithelium remains, allowing for continued fluid secretion and recurrence.

For the horse described in the present report, we elected to attempt to destroy the epithelial lining with iodine sclerotherapy so that the risks and costs of surgical excision could be avoided. Iodine sclerotherapy has been used previously to treat selected esophageal duplication cysts in horses and to treat renal cysts, cervical lymphoceles, and chyluria in humans. The successful outcome in this horse suggests that marsupialization and iodine sclerotherapy of branchial cysts may be a viable alternative to surgery in horses. However, it was still necessary in this horse to remove the entire cyst lining after completion of sclerotherapy. The only complication in this foal was development of an abscess that resulted from the initial failure to completely remove the epithelial lining of the cyst. We believe that complete removal of the cyst lining initially would have avoided formation of an abscess.

References


