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Anatomy and Physiology

The palate separates the respiratory and digestive passages of the head. The soft palate plays an important role in swallowing. The bony hard palate is rostral, and the membranous soft palate caudal. The soft palate ends with a concave border at the tip of the epiglottis. No uvula is present. A thin elliptical fold extends from its ventrolateral part laterally to form the ventral wall of the tonsillar sinus.

Stratified squamous epithelium covers the ventral surface of the soft palate and pseudostratified epithelium of the ciliated columnar type its dorsal surface. The soft palate contains several muscles, glands, an aponeurosis, arteries (minor palatine, ascending pharyngeal and major palatine arteries), veins (in the form of a plexus of veins), lymphatics (draining to the medial retropharyngeal lymph nodes), and nerves (branches of the major palatine, sphenopalatine, glossopharyngeal and vagus nerves).

Congenital Defects of the Soft Palate

Congenital soft palate defects may be inherited or result from an insult during fetal development (intrauterine trauma or stress), with brachycephalic breeds being at higher risk. They are usually associated with a midline cleft of the hard palate. Soft palate defects without hard palate defects may occur in the midline or are unilateral. The prognosis for congenital absence of the soft palate, as opposed to cleft soft palate, is poor because restoration of a pharyngeal sphincteric ring and normal swallowing function may not be achieved despite careful planning and meticulous surgical technique.

Clinical signs of patients with a soft palate defect may often be absent but can include difficulty nursing, nasal discharge, coughing, gagging, sneezing, nasal reflux, tonsillitis, rhinitis, aspiration pneumonia, poor weight gain and general unthriftiness.

Surgical correction can be performed as early as 3 to 4 months of age. Medially positioned flaps are utilized to repair midline soft palate defects in a two-layer closure to the level of the midpoint or caudal end of the tonsils. Removal of the ipsilateral tonsil will facilitate repair of unilateral soft palate defects. In animals with congenital absence of the soft palate, bilateral resection of the tonsils will allow dorsal and ventral pharyngeal flaps be made to create a partition between oropharynx and nasopharynx.

However, the operator should keep in mind that this newly created soft palate-like structure does not contain muscle tissue and may not function like a real soft palate.

Soft Palate Defects Acquired after Birth

They usually result from trauma (e.g., high-rise syndrome, electric cord and gunshot injury, dog bites, foreign body penetration, pressure wounds), neoplasms, and surgical and radiation therapy. In all cases, the cause of the defect must be removed prior to repair.

Traumatic cleft palate usually affects the hard palate, but the midline defect can sometimes also extend into the soft palate. This injury is typically associated with high-rise syndrome in cats and can easily and effectively be managed by approximating the displaced bony structures with digital pressure, followed by suturing of the torn palatal soft tissues in a simple interrupted or mattress pattern.

Electric cord injury usually affects the hard palate rather than the soft palate. It occurs most often in young animals, probably due to their innate behavioral curiosity. Initially, the patient is managed conservatively (lavage with dilute chlorhexidine or Ringer’s lactate and empirical antimicrobial therapy), and the injured tissues are left to necrose so that the maximum amount of tissue is retained. Once the necrotic tissue has determined itself, surgical intervention may be initiated to close a defect.

Palate injury from gunshot trauma may be treated in similar fashion as electric cord injury. It is often best to wait and treat the patient conservatively until necrotic tissues have sloughed. This approach allows determination of viable tissues available for definitive repair at a later time.

In cases of foreign body penetration, a history of running onto or chasing a stick is common, together with sudden onset of oral discomfort, reluctance to eat or drink and bleeding from the mouth. Injuries from dog bites and foreign body penetration are carefully explored and debrided prior to surgical repair.

Inflammation and Neoplasia

Eosinophilic disease has been reported to affect the mucosa at the junction of the hard and soft palates, the soft palate and lateral pharyngeal walls in some cats and dogs. In dogs, Cavalier King Charles spaniels appear to be predis-
posed to this condition. Clinical signs may be absent but can include difficulty swallowing, gagging and coughing. The treatment of choice is corticosteroid therapy upon histopathological confirmation of eosinophilic disease.

Neoplasia of the soft palate is uncommon but may include fibrosarcoma, malignant melanoma and other tumors. Tonsillar squamous cell carcinoma may also infiltrate soft palate tissues. A needle may be advanced through the soft palate in order to aspirate cells from nasopharyngeal masses. The soft palate may also be incised in its midline to gain access for biopsy of nasopharyngeal pathology.

**Soft Palate Elongation**

This condition is primarily seen in brachycephalic dogs such as English bulldogs, Boston terriers and pugs. Dogs with brachycephalic airway syndrome tend to breathe rather noisily when excited.

Mouth breathing, snoring and snorting become even more pronounced during hot weather and periods of exercise. The dogs frequently appear to gag as if they attempt to clear their airway and occasionally bring up foam and saliva while eating or drinking. Untreated elongated soft palate may result in swelling of pharyngeal tissues, thus exacerbating the clinical signs, and secondary upper airway diseases such as laryngeal collapse.

Treatment is surgical shortening of the soft palate to a more normal length (caudal end of the tonsils). This can be accomplished by using a cold scalpel blade or a laser (e.g., CO2 laser). Stay sutures are placed to gently pull the soft palate rostrally which facilitates partial resection. Postoperative swelling appears to be less severe after laser surgery, probably due to decreased tissue manipulation compared to cold blade techniques.

**Postoperative Management**

Postoperative pain and swelling are controlled with opioids and non-steroidal anti-inflammatory drugs. Antibiotic treatment is usually not required after palate surgeries in the otherwise healthy patient. Soft food is offered 8 to 24 hours after surgery and maintained for about two weeks.

Esophagostomy and gastrostomy tubes are rarely needed to bypass the oral cavity. Dilute chlorhexidine solution or gel is administered into the mouth for two weeks. A major complication after palate surgery is wound dehiscence, usually as a result of tension on suture lines or compromised vascularity of flaps.

**References**


