

MANAGING CLEFT PALATES

Joseph C. Glennon, VMD, Diplomate ACVS – Surgeon, Veterinary Specialty Referral Center
Adjunct Associate Professor of Surgery, Albany Medical College
Consultant, Rensselaer Polytechnic Institute Dept. Biomedical Engineering
Course Instructor, Kyon Veterinary Surgical Products



Figure 1: Large defect involving both the hard and soft palate exposing nasal and nasopharyngeal cavities.



Figure 2: Closure of the soft and hard palates. The bilateral releasing incisions in the hard palate are left to heal by second intention healing.



Figure 3: One week post-op. Incision is intact and the releasing sites are healing by second intention healing.



Figure 4: Two weeks post-op. The incision has healed and the releasing sites are epithelializing.



Figure 5: Six weeks post-op. The incision remains intact and the releasing incisions are completely healed.

Introduction

A cleft palate is a congenital defect characterized by an abnormal opening between the oral and nasal cavities involving the hard palate, soft palate, premaxilla, and/or lip. This condition is also referred to as a congenital oronasal fistula. Purebred dogs, especially brachycephalic breeds (broad heads), have a higher incidence. It has also been reported in Schnauzer, Labrador Retriever, Cocker Spaniel, Dachshund, and German Shepard breeds. Cats, especially the Siamese breed, can also have this condition. Genetics is considered the main cause of cleft palate. Nutritional, hormonal, and mechanical factors can enhance the formation of cleft palate in genetically predisposed fetuses. Intrauterine viruses and toxins that affect the mother during pregnancy may also increase the risk of cleft palates.

Cleft palates are classified as a primary cleft which involves the premaxilla and overly lip (primary palate); and a secondary cleft which involves the hard palate and/or soft palate (secondary palate). Clefts of the secondary palate are more common and often go unnoticed until clinical signs develop.

Clinical signs include poor growth, difficulty nursing, drainage of milk and food from the nares, coughing, sneezing, pneumonia (inhalation), and chronic rhinitis.

Patient Presentation

“Boo”, a 6-month-old female, 13.3 kg Labrador Retriever, presented to VSRC for a defect in her hard palate (Figure 1). As a puppy, she had difficulty nursing, developed a nasal discharge, and did not grow at the same rate as her littermates. Other than a smaller than normal stature, the remainder of her physical exam was normal. An oral exam under sedation revealed a large defect extending from the caudal margin of the premaxilla to the caudal end of the soft palate. The entire nasal cavity and nasopharynx communicated to the oral cavity and oropharynx. The widest point of the defect in the hard palate was 1.0 cm across. On each side of the defect, 1 cm of normal mucosa was present between the medial side of the dental arcade and the cleft. Food material was lodged into the nasal turbinates and nasal mucosa was hyperemic.

Surgery

Following pre-anesthetic blood evaluation, a guarded endotracheal tube to prevent kinking was placed via the oral cavity. Since there was sufficient room to work around the endotracheal tube, a pharyngostomy or tracheostomy was not necessary. The soft palate was closed first. Because the edges of the defect were easily apposed without creating tension at the suture line, releasing incision were not necessary. Full thickness debridement of the cleft margins was performed separating the oral mucosa, palatine muscle, and nasal mucosa. The soft palate was then closed in three separate layers (nasal mucosa, palatine muscle, and oral mucosa) using absorbable monofilament suture material. Starting caudally at the caudal margin of the tonsillar crypts and progressed cranially to the hard palate, a simple interrupted pattern was used in the nasopharyngeal mucosa, a continuous pattern was used in the palatine muscle, and a simple interrupted pattern was used in the oropharyngeal mucosa. Because of the width of the hard palate defect, simple

closure was not possible. A sliding bi-pedicle mucosal flap was utilized to provide sufficient mucosa to cover the defect. The oral mucosal and nasal mucosal along the defect were debrided to provide a fresh edge. Bilateral releasing incisions were made along the medial margins of the dental arcade (alveolar ridge). Care was taken to preserve the major palatine vessels, which supply the flap. The mucosa and underlying periosteum were elevated starting laterally at the releasing incision and working medially towards the margin of the defect. Each flap was “slid” towards midline. The mucosa was closed in two layers. The nasal mucosa was closed using a simple interrupted pattern (the knot positioned into the nasal cavity); and the oral mucosa-periosteum was closed with a simple interrupted pattern. While the releasing incisions help to minimize tension at the incision line, a resulting oromucosal defect was created bilaterally along the medial dental arcade (figure 2). The defect was left to heal by granulation and epithelialization (second intention healing).

Post-Operative Management

Antimicrobial and analgesic treatment is utilized for 10-14 days. Within 12-24 hours after surgery, the patient can be fed a soft consistency diet. Soft food should be continued for at least 6 weeks while both the primary repair and the releasing incisions heal and gain strength. Chewing on play toys, bones, and sticks should be prohibited. Follow-up evaluation should be performed every week for the first 2-3 weeks to assess healing of both surgical sites (figures 3 & 4).

Potential Complications

Dehiscence is the most common complication, usually occurring around 3-5 days after surgery. Most of the time, only a partial dehiscence will occur. However, it will require additional surgery to close the oronasal fistula. Repair should be delayed for 4-6 weeks while the tissue revascularizes and becomes healthier. Eliminating tension at the suture line is critical to minimize dehiscence. Other causes for dehiscence include tissue trauma, poor vascular supply, and abrasion from food and/or tongue movement. If the defect is closed when the patient is too young, continued growth may create tension at the repair resulting in dehiscence and various sized oronasal fistulas. Re-repair should be performed when the patient is around 8-10 months of age.

Prognosis

Overall, prognosis for successful resolution of the oronasal fistula is very good. Chronic rhinitis may continue if the defect has been present for a long time.

Summary

Several surgical techniques have been described for closure of the secondary palate defect. A bi-pedicle mucosal flap was chosen in this patient because it is reliable and relatively quick to perform, thereby minimizing morbidity and anesthesia time. The exposed palatine bone at the releasing incisions heals quickly by granulation, epithelialization and contraction, eliminating the need for a buccal mucosal flap. “Boo’s” cleft repair and bilateral releasing sites healed without any complications (figure 5).





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