Recent Updates on Brachycephalic Airway Syndrome

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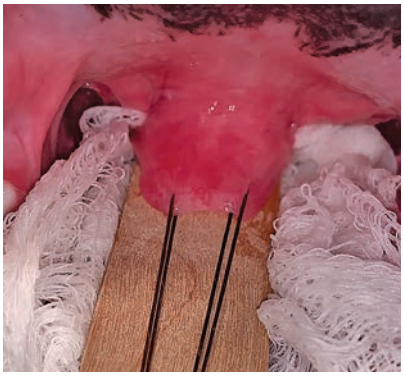

▲ **FIGURE 1** Preoperative elongated soft palate. Stay sutures are in place to pull the elongated soft palate rostrally. A laser is used to trim to the mid- to distal one-third of the palate.

▲ **FIGURE 2** Trimmed palate. Postoperative laser resection was done on the mid- to distal one-third of the elongated soft palate.

▲ **FIGURE 3** Everted saccules. Stage 1 laryngeal collapse (ie, everted laryngeal saccules) demonstrates there has been significant negative pressure in the oronasopharynx, causing the saccules to evert.

In the literature

Lindsay B, Cook D, Wetzel J-M, Siess S, Moses P. Brachycephalic airway syndrome: management of post-operative respiratory complications in 248 dogs. *Aust Vet J*. 2020;98(5):174-180.

FROM THE PAGE ...

Brachycephalic airway syndrome (BAS; ie, brachycephalic obstructive airway syndrome) is a combination of upper respiratory tract abnormalities that result in decreased air passage and typically consist of stenotic nares, elongated soft palate, everted laryngeal saccules, abnormal turbinates, and (eventually) laryngeal collapse and tonsillar protrusion from the crypt. Hypoplastic trachea is common in brachycephalic dogs and contributes to airway distress, but it is not a component of BAS. Decreased air flow as a result of these abnormalities can lead to increased upper airway resistance, hypoxia, and elevated proinflammatory cytokines.[1] Affected dogs have also been found to have decreased arterial oxygen saturation, increased carbon dioxide levels, and hypertension.[2] GI tract lesions (eg, gastritis) were also found in up to 98% of dogs.[3] Due to the severe physiologic consequences of BAS, surgery is recommended for ideal long-term health and exercise tolerance. Staphylectomy can be performed with sharp resection (potentially resulting in more hemorrhage and swelling), a carbon dioxide laser,[4] or a ligature vessel-sealing device.[5] The carbon dioxide laser technique resulted in a similar prognosis as sharp resection but was much faster and easier, with potentially less hemorrhage and edema. A bipolar sealing device can be safely used and resulted in no mortalities.[5]

This study retrospectively reviewed medical records of 248 dogs for data on incidence and management strategies of postoperative complications following surgical correction of ≥1 components of BAS. Dogs ranged in age from 31 days to 15.8 years; Cavalier King Charles spaniels were significantly older than the rest of the study population. Other breeds were primarily brachycephalic, with pugs, Cavalier King Charles spaniels, and British bulldogs predominating. Prior to anesthesia, thoracic radiography was performed in all dogs to assess for pneumonia. Surgeries performed included vertical wedge resection, staphylectomy with sharp resection, everted saccule resection, and tonsillectomy. In this population, 23.4% of patients developed complications, including varying levels of dyspnea (25.1%), aspiration pneumonia (4%), and respiratory or cardiac arrest (2.4%). Of the 10 dogs with aspiration pneumonia, 4 had clinical evidence preoperatively. Dogs that had significant complications were older than those that did not develop complications; this differs from a previous study[6] that found younger dogs developed more complications than older dogs. Overall complications (23.4%) were higher in this study than in previous studies, but overall mortality (2.4%) was similar.[7,8] Vomiting and regurgitation were associated with significantly higher risk for postoperative respiratory complications. Temporary tracheostomy placement was also more common in this study and was present in 8.9% of cases; however, 5 of these dogs were presented to the referral hospital with the tracheostomy in place.

Due to the severe physiologic consequences of BAS, surgery is recommended for ideal long-term health and exercise tolerance.

… TO YOUR PATIENTS

Key pearls to put into practice:

1. Surgical correction of BAS should be performed early for ideal long-term health and a better prognosis.
2. Preoperative radiography should be obtained to determine if pneumonia is present, and surgery should potentially be postponed until pneumonia has resolved.
3. Proactive postoperative supplementation with oxygen may prevent respiratory compromise and shorten time of recovery from anesthesia. Close monitoring with 24-hour care is imperative because complications are more likely to occur in the immediate postoperative period.
4. Further studies are indicated to determine whether prokinetics, antacids, or antiemetics may be beneficial in decreasing the risk for regurgitation/vomiting; this may result in a lower incidence of respiratory compromise.

References

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