

## Anesthesia and Analgesia for Brachycephalics

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Brachycephalic breeds have unique characteristics including stenotic nares, hypoplastic trachea, high vagal tone, everted laryngeal sacculles, elongated soft palates. This coupled with additional common co-morbidities increases their rate of anesthetic risks. Brachycephalic breeds include from both cat and dog species including Persian, Boston terrier, French bulldogs, pug, Himalayan, mastiff, Shih Tzu, Pekinese etc. The most outwardly visible indicator is a short, squished nose appearance along with the above-mentioned characteristics. Specifically, brachycephalic dog breeds, when compared to non-brachycephalic dog breeds have 1.6 greater incidence of intra-operative complications and 4.33 greater incidence of complications in the post-operative period.(1) Cardiovascular differences include increased vagal tone predisposing patients to sudden, drastic bradycardia often experienced during or immediately following intubation, some brachycephalic breeds have increased incidence of congenital cardiac conditions such as pulmonic and aortic stenosis. Furthermore, vascular access can be more challenging in brachycephalic dog breeds who have short, stubby legs. Brachycephalic breeds are also prone to yeast and bacterial skin conditions often affecting their excessive dermal folds. Complicating this, they are often prone to high body condition scores or obesity. Obesity increases the incidence of hypoventilation under sedation and anesthesia. It also makes drug dosing more challenging, and it is often recommended to calculate drug doses based on lean body weight. Additional respiratory challenges include risk for dyspnea from the brachycephalic obstructive airway syndrome (BOAS). Appropriate sedation coupled with adequate analgesia and pre-oxygenation for at minimum 3 minutes and up to the point of intubation during induction assists minimizing oxygen saturation.(2) Often overlooked, brachycephalic breeds are also at risk for increased incidence of regurgitation. Patients that experience regurgitation under sedation or anesthesia are at increased risk for esophagitis, esophageal strictures, and aspiration pneumonia. Pain and prolonged fasting times are associated with increased incidence of regurgitation. Reducing incidence of regurgitation includes administration of anti-nausea, anti-emetics, other gastrointestinal supportive medications, adequate analgesia, and appropriate fasting times. Brachycephalic breeds, both dogs and cats have prominent eyes making them at higher risk for corneal ulcers. Their excessive dermal folds on their faces may predispose them to additional eye conditions. During sedation and anesthetic procedures, apply copious amounts of eye lubrication at frequent intervals. Pay close attention to patient positioning to avoid ocular contact with surroundings. Furthermore, many brachycephalic breeds are prone to orthopedic conditions including osteoarthritis, hip dysplasia, elbow dysplasia and stifle conformational issues. The take aways from this presentation reinforce good peri-anesthetic practices-minimizing stress, provided appropriate analgesia, addressing brachycephalic specific considerations, and adequately recognizing the brachycephalic patient.

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