



# Recurrent pulmonary edema secondary to elongated soft palate in a cat

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## Abstract

A 9-month-old intact female Persian cat presented with recurrent pulmonary edema secondary to an elongated soft palate. Endoscopic evaluation of the pharynx and larynx showed that the elongated soft palate was overlying the epiglottis. Partial resection of the soft palate was performed and the cat showed no further respiratory signs. This report is the first description of elongated soft palate causing airway obstruction in a brachycephalic cat.

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A 9-month-old intact female Persian cat weighing 2.2 kg was presented to a cat clinic in Rio de Janeiro for evaluation of respiratory distress. Clinical examination findings included stertorous breathing, increased upper respiratory noise, inspiratory stridor, inappropriate respiratory effort, open-mouth breathing and tachypnea (88 beats per min). Thoracic radiographs revealed a peripherally distributed alveolar pattern and normal cardiac silhouette. The cat responded well to oxygen therapy, cage rest and intravenous furosemide (4.0 mg/kg, Lasix; Aventis). Hematology and serum biochemistry evaluations were within normal limits. Survey skull radiographs were performed without any evidence of nasal or palatal deformity. A complete echocardiographic examination proved unremarkable. The cat was discharged with a diagnosis of non-specific upper respiratory noise.

Six months later, the cat presented with the same clinical signs. Thoracic radiography findings suggested pulmonary edema. The patient responded promptly to furosemide injections. When respiratory function was much improved, the cat was anesthetized and endoscopic examination of the pharynx and larynx revealed the presence of an elongated soft palate overlying the epiglottis. Partial soft palate resection was performed (Figure 1). Respiratory function was much improved upon recovery from anesthesia. The patient was asymptomatic 7 years postoperatively.

Pulmonary edema is classified as cardiogenic or non-cardiogenic. Non-cardiogenic pulmonary edema results from an increase in vascular endothelial permeability and may be a result of partial airway obstruction.<sup>1,2</sup> Elongated soft palate, a congenital abnormality, can cause airway obstruction and severe respiratory distress.<sup>3–5</sup> The cat in the present report developed severe respiratory distress and recurrent pulmonary edema secondary to elongated soft palate.

Brachycephalic airway obstruction syndrome is a common syndrome in dogs and includes stenotic nares, elongated soft palate, redundant pharyngeal folds, laryngeal sacculae eversion and tracheal hypoplasia.<sup>3,4</sup> To the our knowledge, a similar syndrome has not been described in cats. Reported causes of upper airway obstruction in cats include laryngeal mass, laryngeal paralysis, trauma, soft palate dysgenesis,

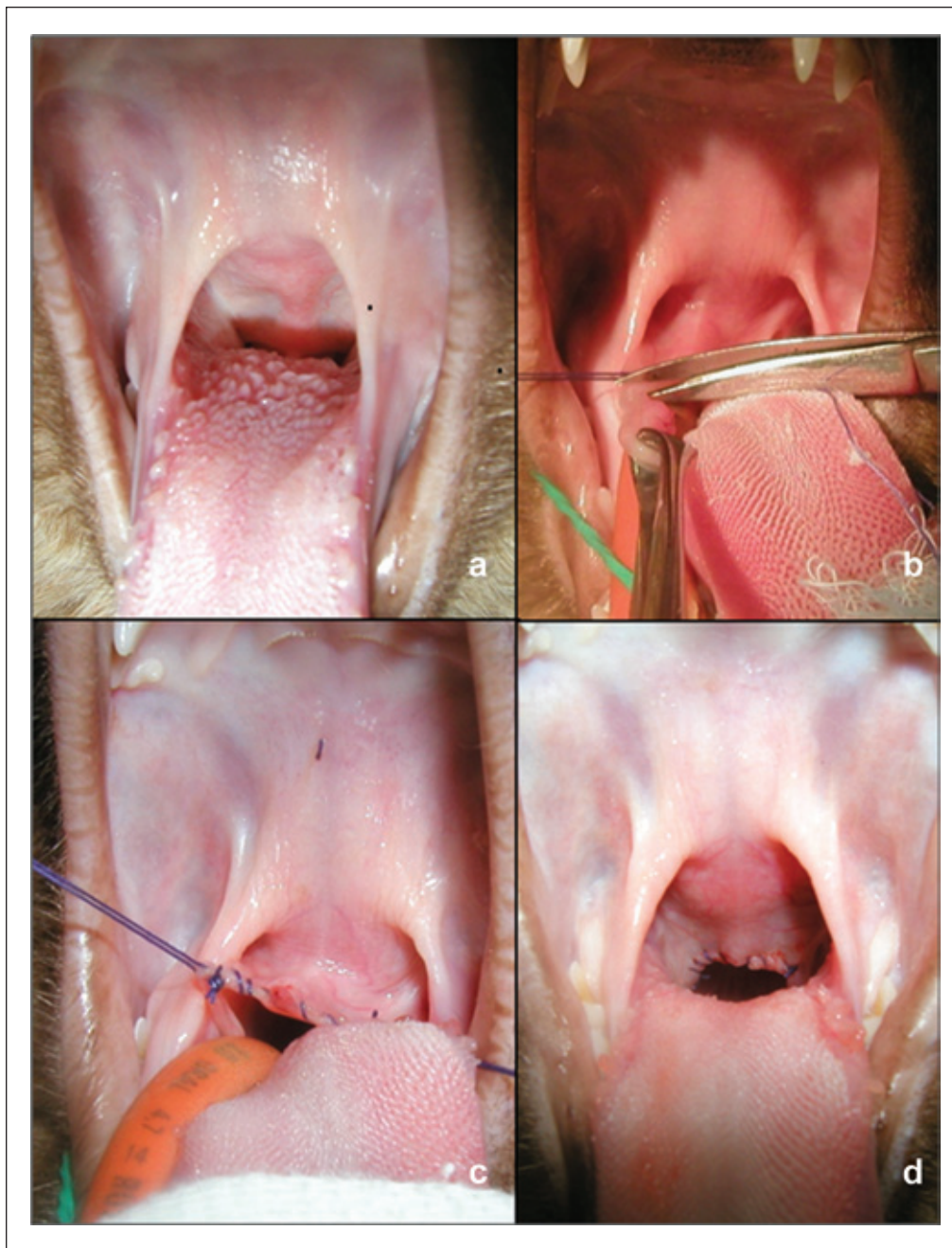
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**Figure 1** Soft palate resection in a Persian cat with elongated soft palate: (A) elongated soft palate overlaid the epiglottis; (B) resection done with scissors; (C) simple continuous suture pattern with 4-0 polyglactone at the border of the palate, apposing the oropharyngeal and nasopharyngeal mucosa; (D) soft palate resected

nasopharyngeal stenosis and upper airway swelling.<sup>6-10</sup> The present cat was of brachycephalic head conformation and there were no concurrent abnormalities other than elongated soft palate.

Partial resection is performed to remove a diseased or redundant portion of the soft palate.<sup>3-5</sup> Common complications seen after surgery include excessive respiratory noise, dehiscence, regurgitation/vomiting, aspiration

pneumonia, severe dyspnea and perioperative death.<sup>4,11</sup> Postoperative surgical complications were absent in the cat described herein.

Brachycephalic airway obstruction syndrome may also occur in brachycephalic cats. This is the first reported case of elongated soft palate in a cat that, to the authors' knowledge, resulted in upper airway obstruction and secondary pulmonary edema.

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**Conflict of interest** The authors do not have any potential conflicts of interest to declare.

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