

Investigation of laryngeal function and effect of surgery on laryngeal collapse in dogs with brachycephalic syndrome.

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Laryngeal collapse is commonly associated with brachycephalic syndrome (BS) and is suspected to be secondary to chronic upper airway obstruction. Although laryngeal collapse is suspected to be a consequence of the lack of rigidity of laryngeal cartilages (chondromalacia), the impact of possible laryngeal dysfunction (laryngeal paresis) has not yet been evaluated. Corrective surgical treatments mainly aim to improve airflow through the rima glottidis. However, the impact of laryngeal collapse on postoperative prognosis is still controversial.

The objectives of the present study were to investigate laryngeal function in anaesthetized dogs with BS using pharmacological stimulation doxapram hydrochloride (Dxp) during laryngoscopy and to investigate whether surgery can worsen laryngeal collapse.

Twenty-six dogs presented with BS were included. At diagnosis, respiratory clinical signs were assessed as well as the degree of laryngeal collapse before and after Dxp injection (1.1mg/kg intravenously). One month after corrective surgery of the BS, respiratory clinical signs, and the degree of laryngeal collapse were re-evaluated. Respiratory clinical signs were scored (0 to 4) based on the frequency of snoring, inspiratory effort, exercise intolerance and syncope. Degree of laryngeal collapse (from 0 to 3) was assessed according to the classification described by Leonard (1960).

Wilcoxon signed rank test with continuity correction, and Fisher's exact test were used for statistical analysis.

Pugs were significantly more frequently presented with grade 2 or 3 laryngeal collapse ( $p < 0.001$ ) compared to French bulldogs. While the larynx initially appeared parietic in all dogs, significant abduction of laryngeal cartilages could be observed in all dogs after Dxp injection. Moreover, there was a significant difference of the mean degree of laryngeal collapse before (1,64 [0-3]) and after (1,07 [0-3]) Dxp injection ( $p < 0.001$ ) confirmed this observation.

While a significant clinical improvement was observed after surgery in the vast majority of dogs (mean respiratory clinical score (3,15 [1-4] before and 1,5 [0-4] after surgery), there was no significant difference of the mean degree of laryngeal collapse before (1,4 [0-3]) compared with after surgery (1,5 [0-3]). Laryngeal collapse improved, remained stable and worsened in 20% (n=4), 60% (n=12) and 20% (n=4) of dogs respectively after surgery.

As a conclusion, 1) laryngeal collapse in brachycephalic dogs is not associated with absence of laryngeal abduction and 2) preoperative degree of laryngeal collapse should not be used as a criterion to discourage surgery for BS, because of the overall clinical improvement, even if laryngeal collapse may worsen in few dogs after surgery.