

BRACHYCEPHALIC AIRWAY SYNDROME: EFFECTS OF PARTIAL TURBINECTOMY ON INTRANASAL AIRWAY RESISTANCE

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INTRODUCTION: Importance of brachycephalic airway syndrome (BAS) has increased with the gain in popularity of short nosed dogs. Recent studies suggest intranasal stenosis by nasal conchae be a key factor in this syndrom¹⁾. Based on this assumption endoscopic resection of obstructive conchal material using a diode-laser fibre was developed (Laser-Assisted TurbinEctomie = LATE)²⁾. The influence partial turbinectomy has on intranasal airway resistance has not been investigated to date.

PURPOSE: In order to evaluate surgical success objectively, intranasal airway resistance excluding influence of nostrils and soft palate was measured before and after *LATE-surgery* had effected an open meatus nasi ventralis. In addition, long-term-effect on airway resistance was investigated.

METHODS: *Impulse-oscillometry* was performed on 25 dogs (10 pugs, 15 French bulldogs) that showed severe symptoms of BAS. Nasal airway resistance of each nasal cavity was measured in anesthetized and spontaneously breathing patients both pre-operatively and one week post-LATE-surgery. For ten of the patients, *impulse-oscillometry* was also performed three to six month after surgery. By inserting plastic tubes into the nostrils, influence of these structures on airway resistance could be eliminated. The influence of the soft palate on airway resistance was eliminated by retraction of this structure using a hook-shaped instrument or measuring after staphylectomy. The upper airways of all patients were subsequently investigated by endoscopy and computed tomography.

RESULTS: A mean percentage decrease in resistance could be shown in all examined dogs (25) of 69 %. In the patients mean intranasal airway resistance was $1,35 \pm 0,54$ kPa/(L/s) preoperative and $0,54 \pm 0,25$ kPa/(L/s) postoperative. A mean percentage decrease in resistance of 54 % in pugs and 62 % in French bulldogs could be observed. Pre- and postoperative intranasal airway resistance in pugs was significantly greater than in French bulldogs ($p < 0,1$ und $p < 0,01$). Patients for which impulse-oscillometry was performed three to six weeks postoperative, showed a mean percentage decrease in resistance of 60 %. From preoperative to three to six month postoperative there was a mean percentage decrease in resistance of 55 %.

CONCLUSION: Partial turbinectomy (LATE) results in a significant decrease of intranasal airway resistance in dogs with BAS. Differences between breeds are probably due to differences in body size or/and length of nose. A lower resistance could be observed in dogs with a greater body weight (French bulldogs) than in smaller dogs (pugs). This is consistent with our clinical observations in which French bulldogs evidence fewer symptoms than pugs. LATE-surgery reducing intranasal airway resistance shows an immediate short term and good, stable, long-term effects. The results of this study indicate LATE being an effective and reliable therapy for intranasal airway obstruction by nasal conchae.

¹⁾ Oechtering, G.U., Hueber, J.P. and Noeller, C.; Laser Assisted TurbinEctomy (LATE) – a novel approach to brachycephalic airway syndrome. 2006. 16th Annual Scientific Meeting European College of Veterinary Surgeons, Dublin/Ireland.

²⁾ Oechtering, T.H., Oechtering, G.U. and Noeller, C. Strukturelle Besonderheiten der Nase brachycephaler Hunderassen in der Computertomographie. *Tieraerztliche Praxis* 35 (K) (2007): 177-187