TRACHEAL DIAMETER IN PUPPIES

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**Introduction:** Tracheal hypoplasia is often associated with brachycephalic syndrome and occurs most commonly in bulldogs and Bullmastiffs, but other non-brachycephalic breeds can be affected. Tracheal diameter is assessed by tracheal diameter on thoracic inlet distance ratio (TD/TI). Even if young dogs have been reported to have a smaller ratio, same values are routinely used for both young and adult dogs. The goals of this study were (1) to determine if there is a significant difference of the TD/TI between non-brachycephalic breeds, brachycephalic non-bulldogs breeds and bulldogs depending on age; (2) to investigate if there is a positive correlation between TD/TI ratio and age and (3) to assess if there is an age limit to perform thoracic radiographs to diagnose tracheal hypoplasia in dogs.

**Materials and methods:** Seventy-seven puppies were prospectively recruited and classified in 3 categories (non-brachycephalic breeds (NBB), non-bulldog brachycephalic breeds (NBBB), bulldogs (B)). Thoracic radiographs in right lateral recumbency were obtained at 1, 2, 3, 6, 9, 12 months (M) and, for NBBB, also at 15M. Three measurements of TD/TI were performed on each radiograph by one reader. Statistical analysis tests (mixed linear regression and Pearson’s product-moment correlation test) were performed (*P* < 0,05).

**Results:** Only26 dogs completed the study with the majority of dogs being lost to follow up after 2 months of age.A significant difference of TD/TI was observed between the 3 breed categories for all age categories (for example: TD/TI means: NBB at 1M: 0.17 ±0.023 and NBB at 12M: 0.19 ±0.029; NBBB at 1M: 0.135 ±0.024 and NBBB at 15M: 0.18 ±0.016; B at 1M: 0.125 ±0.022 and B at 12 M: 0.165 ±0.018). In all dogs, a significant difference of TD/TI was obtained between all age categories except between 1M and 3M, 2M and 6M, and between 9M, 12M and 15M. No significant difference of TD/TI was obtained between French Bulldogs and English Bulldogs (TD/TI means: French Bulldogs = 0.144 ± ????; English Bulldogs = 0.140 ± ????). A positive correlation was observed between TD/TI values and ages (r=?).

**Discussion:** As previously described, TD/TI was significantly different between NBB, NBBB and B, with the largest ratio being observed in NBB and the smallest ratio in B. However TD/TI were slightly different from previous reported values. TD/TI significantly changed with age up to 9M. Therefore, 9M of age seems to be the lower age limit to evaluate the definitive tracheal diameter in dogs. However, a positive correlation between TD/TI values and ages indicated that a dog with small trachea at 4 weeks is proned to have a small trachea during growth and at the adult age.