SUPPLEMENTAL DIGITAL CONTENT 1

Ratio between endotracheal tube cuff outer diameter and tracheal internal diameter

We measured the tracheal diameter of the seven pigs undergoing oropharyngeal challenge with *Pseudomonas aeruginosa*. Briefly, as reported in figure 1 below, during an expiratory pause we obtained fluoroscopic images of the trachea, through a C-arm fluoroscopy system (Siremobil Compact, Siemens AG, Erlangen. Germany). A ruler with radio-opaque markers was applied in close proximity of the pig's neck to correct for magnification of the fluoroscopic images. The tracheal internal diameter was measured using ImageJ (NIH, Bethesda, MD)

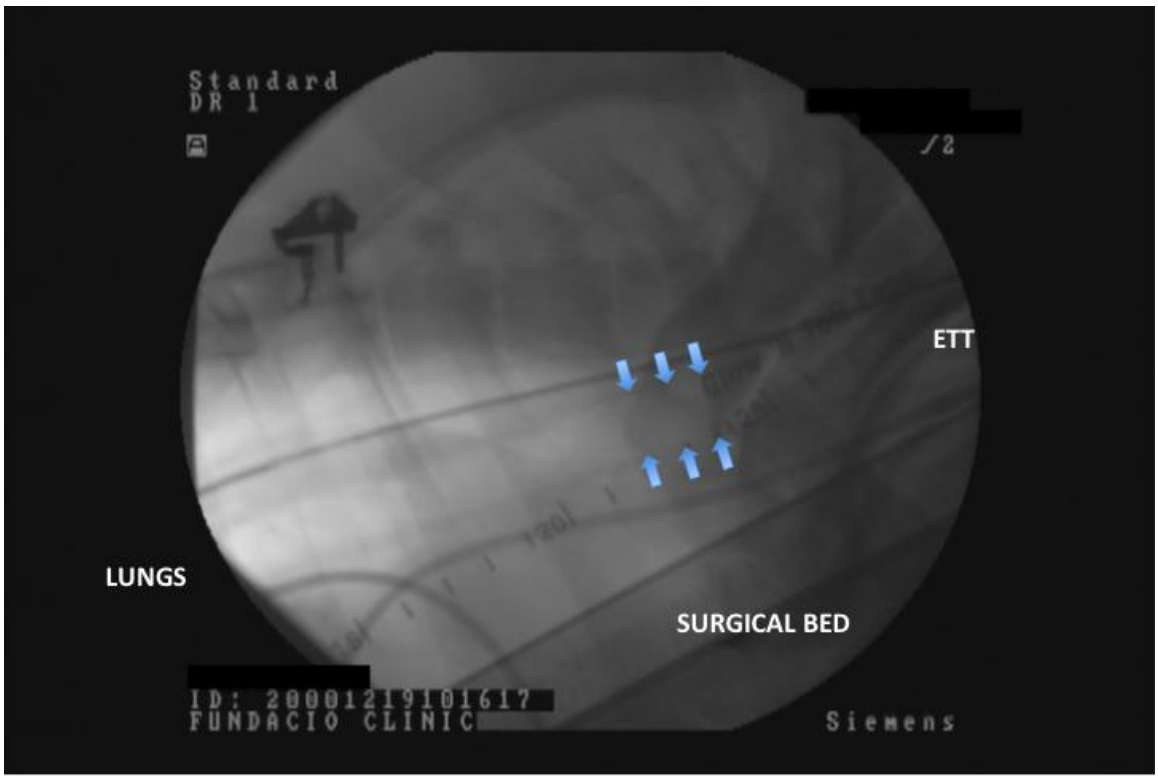

Fig 1. Fluoroscopic image of pig's trachea (pig weight 32 Kg). Pigs is prone and placed in anti-Trendelenburg. The arrows depict the upper and lower tracheal margins.

Based on these computations, we found a mean tracheal internal diameter of 15.3 ± 0.6 mm. Therefore, given that the 7.5 I.D. Hi-Lo endotracheal tube comprises a cuff with a mean outer diameter of 30.4 mm[1], in our studies the mean ratio between cuff outer diameter and tracheal internal diameter was 1.9 ± 0.8.

Reference List

1. Li Bassi G, Ranzani OT, Marti JD, Giunta V, Luque N, Isetta V, Ferrer M, Farre R, Pimentel GL, Torres A: An *in vitro* study to assess determinant features associated with fluid sealing in the design of endotracheal tube cuffs and exerted tracheal pressures. Crit Care Med 2013; 41:518-26