

# Translaryngeal Tracheostomy Needle Introducer (TTNI): a simple device to improve safety and reduce complications during Translaryngeal Tracheostomy (Fantoni's method). A trial on human cadavers.

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

**Introduction:** Percutaneous dilatational Tracheostomy techniques are, at the moment, the standard of care in order to guarantee mechanical ventilation in patients who are in need of prolonged periods of respiratory assistance. The Translaryngeal Tracheostomy (TLT), Fantoni's method is our first choice for the intrinsic safety of the technique, mainly in patients with high bleeding risk. One of the crucial steps of all the percutaneous tracheostomies is the needle insertion in the trachea. For simplifying and increasing the safety of this procedure, we developed a new device, based on Translaryngeal Tracheostomy Fantoni's Method, the Translaryngeal Tracheostomy Needle Introducer (TTNI). The device is composed by one rigid tracheoscope (endotracheal tube, kit Fantoni's method), one plastic support for the arm of TNI, one arm (made in plexiglass), one Introducer for needle 18G (made in plastic and plexiglass), one needle 18G for angiography (7cm long). (Figure 1.)

**Methods:** We performed 58 attempts of needle insertion on 13 different bodies (CAVIAR Lab, Trois Riviere, Canada). We randomized 5 operators (2 trained and expert, 3 not trained in tracheostomy) and the sequence of the techniques (needle insertion with standard method vs TNI use). We recorded the number of attempts to optimize needle insertion, the needed time in seconds, the final position of the needle, and all the events and the possible complications related to needle insertion.

**Results:** all the statistics show a significant differences in favor of using TNI vs the standard method. The rate of complications about standard method goes accordingly with the literature data. The rate of complications observed on cadavers with TNI use is 0.

**Conclusion:** TNI is a device for simplifying needle insertion and reduce complications (needle insertion related) during TLT. TNI is a safe device for operators with very different skill levels.

