



Optimal insertion length of endotracheal tube in neonates

Carlo Bellini¹ · Paolo Massirio¹

Received: 4 March 2022 / Revised: 4 March 2022 / Accepted: 1 April 2022 / Published online: 12 April 2022
© The Author(s), under exclusive licence to Springer-Verlag GmbH Germany, part of Springer Nature 2022

To the Editor: We read the interesting paper by Priyadarshi et al. [1]; there are a few points from the article we would like to discuss. The authors affirmed that none of the currently recommended methods (weight-based, gestation-based, and naso-tragal length) accurately predicts optimal endotracheal tube (ETT) length in neonates and that there is an urgent need for newer bedside modalities for estimating ETT position in neonates (correct tip position not below the lower border of T2). We have faced the problem of intubation of the newborn, and in particular of the newborn weighing less than 1000 g, the most difficult population to treat, in a very challenging context represented by neonatal transport, during which radiographic control is often not possible, therefore with a high risk of ETT malpositioning. Based on our two previously studies [2, 3], we proposed a weight-based equation (the “Genoa formula,” i.e., ETT depth (cm) = $2 \times \text{weight (kg)} + 5.5 \text{ cm}$), really useful in predicting optimal insertion depths for nasal intubation in ELBW neonates. We compared our results with those obtained using NICU Tools and Tochen suggested formula(s). We agree with the authors that the methods currently available are inaccurate to varying degrees. Our second study proved this claim [3]. The Genoa formula proposed by us has instead proved to be very accurate in obtaining the correct positioning of the ETT tip at the level of the mid-trachea, the T1-T2 passage. Our formula has been proposed for naso-tracheal intubation, while Priyadarshi article [1] focused on

oro-tracheal intubation. We believe that with a correction factor of one centimeter, our Genoa formula can also be used for the oral route. It is our practice to intubate through the nose, let us say it is a school choice; we think it can be easy to verify the Genoa formula even in the case of oro-tracheal intubation.

Declarations

Conflict of interest The authors declare no competing of interests.

References

1. Priyadarshi M, Thukral A, Sankar MJ et al (2021) ‘Lip-to-Tip’ study: comparison of three methods to determine optimal insertion length of endotracheal tube in neonates. *Eur J Pediatr* 180:1459–1466. <https://doi.org/10.1007/s00431-020-03919-7>
2. Bellini C, Turolla G, De Angelis LC, Calevo MG, Ramenghi LA (2019) Development of a novel reference nomogram for endotracheal intubation in neonatal emergency transport setting. *Acta Paediatr* 108(1):83–87. <https://doi.org/10.1111/apa.14488>
3. Bellini C, Massirio C, Polleri G et al (2021) New formula for nasal endotracheal intubation in extremely low-birth weight infants in the emergency transport setting: the “Genoa formula.” *Air Med J* 40(2):115–118. <https://doi.org/10.1016/j.amj.2020.11.013>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

✉ Carlo Bellini
carlobellini@gaslini.org

¹ Department Mother & Child, Neonatal Emergency Transport Service, Neonatal Intensive Care Unit, IRCCS Gaslini, Largo G. Gaslini, Genoa 516147, Italy