Estimating Naris-to-Vocal-Cord Distance for Fiberoptic Intubation

When fiberoptic nasal intubation is performed, the endotracheal tube is first lubricated and inserted through the naris; then, ideally, it is advanced until it is positioned just above the vocal cords. The scope is then passed through the tube, and the glottis is visualized and entered. Knowing the distance from the naris to the cords would facilitate expedient and optimal placement of the endotracheal tube. Researchers in Korea measured the naris-to-vocal cord distance (NVD) and evaluated the correlation between NVD and three other patient attributes: height, naris-to-mandibular-angle distance (NMD), and naris-to-ear (tragus) distance (NED) in 45 women and 50 men undergoing general anesthesia. After anesthetic induction, the researchers measured each patient’s NED, NMD, and height. A fiberoptic scope was then passed through the naris and placed between the vocal cords, marked, and removed for measurement of NVD.

The mean NVD was 18.3±0.8 cm in men and 16.3±0.7 cm in women. There was no correlation between NVD and NMD, modest correlation between NVD and NED (r=0.636), and stronger correlation between NVD and height (r=0.755). The authors suggest formulae for the linear best fit that could be used to estimate NVD from either height or NED.

Comment: The nasal route is often preferred for emergency fiberoptic intubation because it avoids both the tongue and the teeth, and knowing the naris-to-vocal cords distance can help to position the tube for the best view with the scope. The average NVDs in this study were approximately 18 cm for men and 16 cm for women, but the average heights were only 5 feet 6 inches and 5 feet 2 inches, respectively. According to the formula, a 6-foot-tall man would have an NVD of 19 cm. Forget about the formulae. As a rough guide for both fiberoptic and blind nasotracheal intubation, allow for about 16 cm to the cords in a 5-foot-tall person and 19 cm in a 6-footer. Vocal-cord-to-lip distances are approximately 3 cm less.

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