Cricothyroid Membrane Identification by Palpation Is Difficult in Females

Identification is most difficult in obese female patients.

Researchers determined the accuracy of identification of the cricothyroid membrane by palpation in females. Each of 24 physicians (17 anesthesiologists and 7 OB/GYN residents) identified the membrane and marked its location and midline in 56 female patients (15 with body-mass index >30 kg/m²) who were in the supine position with their heads in both neutral and extended positions. The actual location was then confirmed by ultrasound. The physician's estimated location was considered correct if it was between the membrane's upper and lower limits and within 5 mm of its midline.

Physicians correctly identified the location in 0 of 15 obese patients and 10 of 41 nonobese patients in the neutral head position and in 1 obese and 12 nonobese patients in the extended head position. Estimates of the location were as much as 3 cm too high, 4 cm too low, and 1.6 cm off from midline. Physicians considered identification to be more difficult in obese than in nonobese patients (scores of 5.3 vs. 3.3 on a 10-point visual analogue scale).

Comment: Identification of the cricothyroid membrane is difficult in females, whose laryngeal prominence is less obvious than men's, and is even more difficult in obese patients. The results are not surprising, particularly because the physicians received no additional training in locating the membrane before the study. Although ultrasonography could help to identify the membrane more accurately, prior practice with ultrasonographic landmark identification would be necessary, and time constraints often would prohibit its use. Physicians expected to perform emergency cricothyroidotomy should be trained in the technique and in landmark identification. Use of a vertical midline incision helps correct for imprecise localization of the membrane.

— Cheryl Lynn Horton, MD, and Ron M. Walls, MD, FRCPC, FAAEM

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