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CORRESPONDENCE

Does a learning curve exist in endorectal two-dimensional ultrasound accuracy?

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Dear Sir,

We read with interest the paper in *Techniques in Coloproctology* by Morris et al. [1] where a two-dimensional (2D) probe was used in rectal cancer staging. We feel it important to mention the value of three-dimensional (3D) endosonography, which we now use routinely in our department.

Display of volume data in three perpendicular planes facilitates the interpretation of ultrasound images and enhances the diagnostic information provided by the data.

The comparative accuracy for both techniques is similar according to the literature. Tumor invasion prediction has been shown to be 84 and 88 % for 2D and 3D endosonography, respectively. In the determination of lymph node involvement, 3D and 2D endoscopic ultrasound (EUS) provide accuracy rates of 79 and 74 %, respectively [2].

However, 3D has obvious advantages. With the use of 2D EUS, no direct information is available about the longitudinal extent of the tumor and its spatial relationships. Consequently, a series of transverse images must be integrated by the observer to produce a mental impression of the real anatomy. This means repeated movements of the scan plane over the region of interest, which can be time-consuming, embarrassing, and painful for the patient. With 3D EUS, data from a series of closely spaced 2D images are combined to create a 3D volume displayed as a cube. The cube does not remain fixed; it can be freely rotated, rendered, tilted, and sliced to allow the operator to infinitely vary the different section parameters and visualize the lesions at different angles in order to get the most information out of the data.

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The multiview function also allows up to six different and specialized views at once with real-time reconstruction. This allows the physician to evaluate arbitrary planes not available with 2D ultrasound, to improve assessment of complex anatomic situations by 3D display, to measure organ dimensions and volumes, and to standardize the ultrasound examination procedures [3].

3D scanning may also allow visualization of obstructing tumors by using reconstructed planes in front of the transducer, possibly improving therapy planning in advanced rectal cancer by selecting patients who require neo-adjuvant therapy.

Finally, 3D imaging makes EUS less operator dependent as data can easily be stored on a hard disk allowing a real-time reexamination at a later date without loss of information, such as in discussion of images at cancer multidisciplinary team meetings.

3D ultrasound facilitates the interpretation of the scan images and improves the diagnostic confidence in approximately 60 % of the examinations [4].

Conflict of interest None.

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