

Endorectal Ultrasonography. A Contribution in Rectal Tumors

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Our unit has performed endorectal ultrasound (EUS) with a 360° transducer since 2003, and its indications in rectal tumors have been decreasing over time. The advances and benefits of magnetic resonance imaging (MRI) evolved faster than those of ultrasound. Although the improvement in the ultrasound equipment is evident (in the frequency, subtraction of images and 3D reconstruction), for rectal tumors it has not yet achieved an image that allows clearly observing "the holy plane of rectal surgery" as does MRI and does not offer the possibility of multi-compartment vision. Although to evaluate the size of the tumor (T) and its relationship with the rectal wall, the sensitivity and specificity are over 85%, they decrease for the lymph node (N) involvement assessment.

The great disparity in the results obtained in multicenter studies on the sensitivity and specificity of EUS, sometimes reproduce the experience of specialists in diagnostic imaging and not specialists in colorectal surgery. This data is relevant if the "operator-dependent" nature of these practices is taken into account when planning a surgical approach. For these reasons, it is important to avoid polarizing the use of diagnostic methods but to complement them, to optimize the indication of treatment, given the wide spectrum of therapeutic alternatives that have emerged in recent decades for neoplastic rectal pathology.

EUS is accurate for local staging and has demonstrated a favorable rate of detection of early lesions compared to other modalities. The results depend on the experience of the operator and the volume of cases studied at the diagnostic center, leading to real-world results that may not coincide with those reported in the literature. For this reason, the selection of the staging modality should be individualized according to the clinical context and the use of EUS should be complemented with other modalities, such as computed tomography for the evaluation of systemic disease and MRI for local evaluation. However, recent advances in MRI technology make it the first choice.

Frequently requests are received for evaluation of the tumor response to neoadjuvant therapy, to define whether or not it was complete, and in most cases vision is very difficult. It is observed in a rectal "reconstruction" that the layers have continuity again.

Arias's group evaluated the usefulness of three-dimensional ultrasound (3D EUS) as a predictor of clinical and pathological response in patients who underwent neoadjuvant treatment. They proposed an ultrasound classification according to the reduction of the tumor mass divided into 5 Grades as follows:

- Grade 1: complete ultrasound response, total reduction of the tumor mass. Normal anatomy.
- Grade 2: almost complete ultrasound response, reduction in tumor mass > 80%.
- Grade 3: moderate ultrasound response, reduction of tumor mass between 50 and 80%.
- Grade 4: mild ultrasound response, reduction in tumor mass between 20 and 50%.
- Grade 5: no ultrasound response, reduction <20%.

However, in the literature we found that even in the combination of mucosal integrity, both EUS and MRI have a poor correlation with postoperative pathological findings (sensitivity of 25% and specificity of 93.9%). Therefore, a "watch and wait" strategy based only on these methods does not seem to be appropriate yet.

In our daily practice, the staging of tumors of the middle and lower rectum and those close to the anal canal continues to be common, seeking to establish the existence of the sphincter complex invasion. When the tumors are located very close to the dentate line, the EUS has a very good definition to determine if there is invasion of the anal sphincter.

Regadas et al., highlight the value of measuring with 3D EUS the distance between the lower edge of the tumor and the proximal end of the internal anal sphincter, given its implication in surgical therapy. With this methodology, it would be possible to identify in the post-neoadjuvant evaluation a margin ≥ 2 cm that would allow planning non-amputative surgeries, such as those with partial resection of the sphincter.

Another frequent situation is the diagnosis of the malignant polyp, either to look for "if there is something left" of a excised lesion whose histopathology confirmed malignancy, or prior to the resection of a villous lesion to establish the absence of invasion. Although the first situation is very complex to analyze given the difficulty of identifying residual lesion on the scar tissue, the second case is the most benefited by the best rates of positive and negative predictive values of EUS when submucosal and

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muscular neoplastic invasion is assessed. In particular, when considering the over-staging of adenomas as T1 lesions that MRI has shown.

In summary, although 360° EUS has not evolved at the rate of MRI, it is still extremely useful for T staging,

sphincter evaluation, tumor size and definition of distance from the anal verge. It is one more tool in the algorithms for the management of rectal cancer, either for its initial evaluation, prior to treatment, or even for its follow-up.

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