



## **Endoscopic Intramuscular Dissection for Rectal Laterally Spreading Tumor Suspected For Submucosal Invasion**

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**Abstract**

*Therapeutic endoscopic techniques for rectal superficial and invasive cancer are improved in the last two decades<sup>1</sup>. A proper resection technique should be selected in consideration of submucosal invasion risk based on the size, morphology, superficial and vascular pattern of the lesion<sup>2,3</sup>. Endoscopic submucosal dissection (ESD) is recommended for colorectal lesions suspected for superficial submucosal invasion ( $\leq$  Sm1), primarily for those with demarcated and depressed areas, irregular superficial patterns, bulky components, or a size larger than 20 mm<sup>4</sup>.*

*In the rectum, expanded indications for endoscopic treatment have been discussed, in particular endoscopic intramuscular dissection (EID) or endoscopic full-thickness resection (EFTR) should be considered in case of deeply submucosal invasion (T1b), considering similar complete resection (R0) rates and better outcomes than transanal mesorectal excision (TME) [5,6]. Here we report the video case of a patient who has undergone EID for a large rectal laterally spreading tumour (LST) suspected to extend close to the inner muscular layer.*

**Introduction**

Therapeutic endoscopic techniques for rectal superficial invasive cancer (T1a/T1b) are considerably improved in the last years. Nowadays thanks to a better lesion characterization based on white light imaging (WLI), chromoendoscopy (ex. Narrow Band Imaging by Olympus®, Flexile Imaging Color Enhancement by Fujinon® or I-SCAN by Pentax®), digital magnification and new endoscopic devices release (ex. injection solutions, hybrid dissection knives, endoscopic suture techniques and systems), it is possible to achieve a curative resection of rectal invasive cancers avoiding transabdominal surgery namely Rectal Anterior Resection (RAR) +Total Mesorectal Excision (TME) 5,7. Over the past decade, thanks to the evolution of endoscopic techniques, endoscopic submucosal dissection (ESD) has become the first-line therapy for lesions with superficial submucosal invasion ( $\leq$  Sm1) to obtain en-bloc resection. In the rectum, compared to surgery, endoscopic resection is associated with significantly lower rates of complications and a much quicker recovery, achieving similar R0 rates 4,7. Moreover, in case of suspicion of deep sub-mucosal invasion (T1b) either in case of fibrotic or recurrent lesions, endoscopic inter-muscular dissection (EID) could be considered. Nowadays, the therapeutic process for lesions with deep submucosal invasion (T1b)

represents a border area where endoscopic resection is less invasive than surgery, but it could be linked to a higher risk of noncurative resection (ex. presence of lymph nodal invasion, N+), whereas surgery (RAR+TME) for sure reduces the risk of disease persistence or recurrence, but could represent an over-treatment associated with severe adverse events and finally showing no difference in overall survival. [10]

EID is an "extended" ESD technique and is a dissection in between the inner (circular) and outer (longitudinal) part of the muscularis propria. First, it is necessary to make a mucosal incision to enter in the submucosal layer after submucosal lifting, followed by, submucosal dissection, as in the ESD technique to reach the area where muscle retracting (MR) sign is observed. MR sign has been associated with a high risk of incomplete endoscopic removal via ESD<sup>9</sup>. At this point, an incision through the internal circular muscle layer is performed to open the intermuscular space and start intermuscular dissection. After creating an adequate plane in muscle propria, dissection is accomplished up to no more MR sign or deeper tumor infiltration is observed. EID is an advanced dissection technique that could be useful to treat lesions with severe fibrosis or suspected deeper invasion in the submucosal layer. Performing intermuscular dissection could be valuable to avoid superficial vascular arborization and reduce bleeding risk, plus, EID permits to preserve external longitudinal muscle layer without compromising a further surgical intervention.

In literature<sup>5</sup>, this technique is reported only in case reports and small series; Recently, Leon et al. published a prospective cohort experiences of 67 patients treated with EID for rectal LST, reporting technical success and curative resection achieved in 96% and 45% of patients whereas adverse events (AEs) occurred in 12% and all were classified as mild to moderate (ex. perianal pain, inflammatory response, delayed bleeding)<sup>7</sup>.

Intramuscular space expansion and selective superficial myotomy should be also considered in gastrointestinal stromal tumors (GISTs) resection and in particular could be useful to achieve transition zone (TZ) exposition and resection in gastric submucosal tunneling endoscopic resection (STER)<sup>8</sup>.

In other recent methanalysis of Spadaccini et al, non curative resection based on the histological report, are anyway associated a lower risk of disease recurrence<sup>6</sup>

## Case Report

Here we report the case of a 77-year-old ASA 2 woman, who underwent to colonoscopy for sideropenic anemia and positive FIT. Examination showed a rectal granular nodular-mixed laterally spreading tumor (GM-LST) with a dominant nodule of 5 cm and a pseudodepressed central area [figure 1,2]. The lesion was

extended on the two third of rectal circumference involving the second and the third Huston fold and was judged suspected for invasive carcinoma. The histological examination reported low and high-grade dysplasia. At total body computed tomography (CT) no metastatic lesion was detected. Pelvic magnetic resonance (MRI) was consistent with T2N0, showing the extension of the lesion nearby the muscularis propria, without a clear distinction plane. In addition, a rectal endoscopic ultrasound (EUS) was requested, confirming the MRI findings. Given the well-known risk of EUS and MRI overstating, as reported by recently released ESGE guidelines [4] and after a gastrointestinal multidisciplinary team (MDT) discussion, the patient was proposed for endoscopic submucosal dissection<sup>4</sup>. For the procedure, we used a standard diagnostic Pentax gastroscope mounted with a conic distal end cap (ST Hoods, Fujifilm®). First, a mucosal incision was made approximately 5mm around either the proximal and distal side of the rectal lesion, followed by submucosal dissection using DualKnife J 1.5mm (Olympus®). During the dissection, a deeper submucosal invasion was suspected beneath the dominant sessile nodule, where the submucosal space was progressively disappearing for muscular retraction and also for fibrotic reaction [Figure 3]. In this area we moved to the inner circular muscular layer dissection, even using the same small tip knife. The dissection was completed using the Hook Knife J (Olympus) for the lateral part, resulting in complete resection of the lesion, 10x6 cm in size [Figure 4]. The resection phase took 90 min. Hemostasis was achieved with monopolar forceps (Coagrasper - Olympus®). The base was sutured using through-the-scope clips and a hemostatic matrix (Purastat®, 3ml) was apposed to prevent delayed bleeding. Precautionary, the patient was hospitalized for three days and then discharged after uneventful observation. Histological examination of the lesion reported well-differentiated adenocarcinoma (G1) focus over a high-grade dysplasia tubulovillous adenoma, no tumoral budding or vascular invasion, absence of tumor on the resection plane and sub-mucosal invasion limited to 500 µm. Histopathology also showed the circular muscular layer on the resection plane of the lesion [Figure 5]. MDT indication was endoscopic follow-up after 6 months.

## Discussion

In this case report, we outlined the EID as a promising endoscopic resection technique in suspicion of deep submucosal invasion or in case of severe submucosal fibrosis. Although differentiation between T1a/T1b and T2 cancers is still challenging and questions on long-term oncologic outcomes need more studies, EID should be considered, in selected cases, as an alternative to transabdominal surgery.

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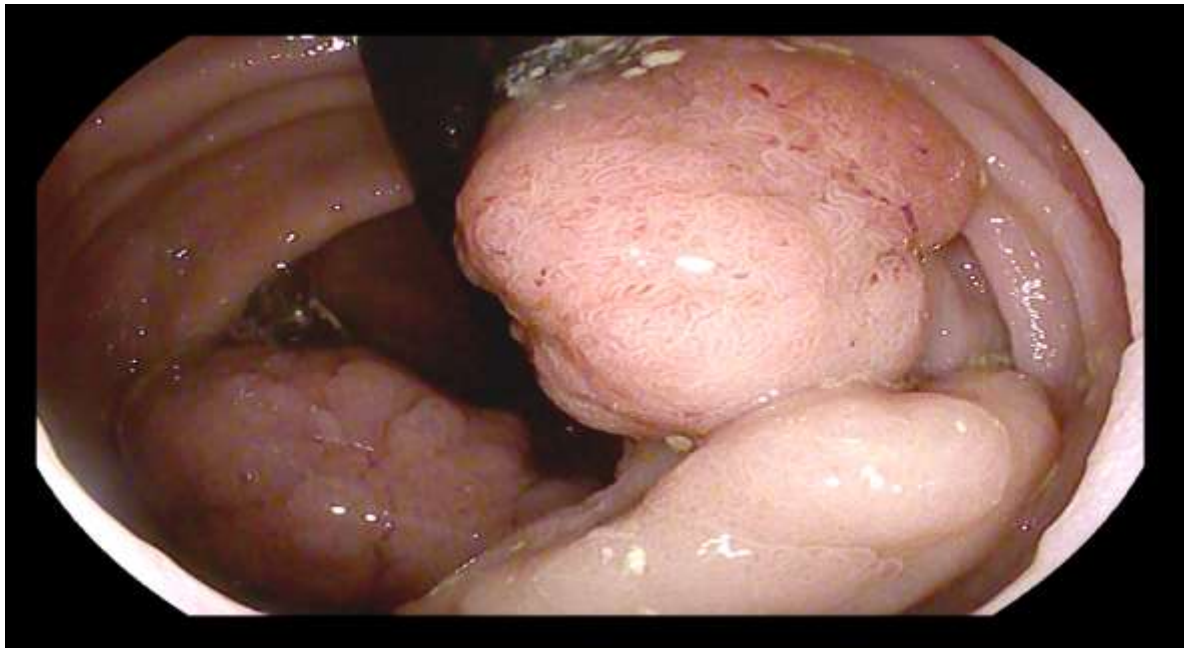


Figure 1



Figure 2



Figure 3

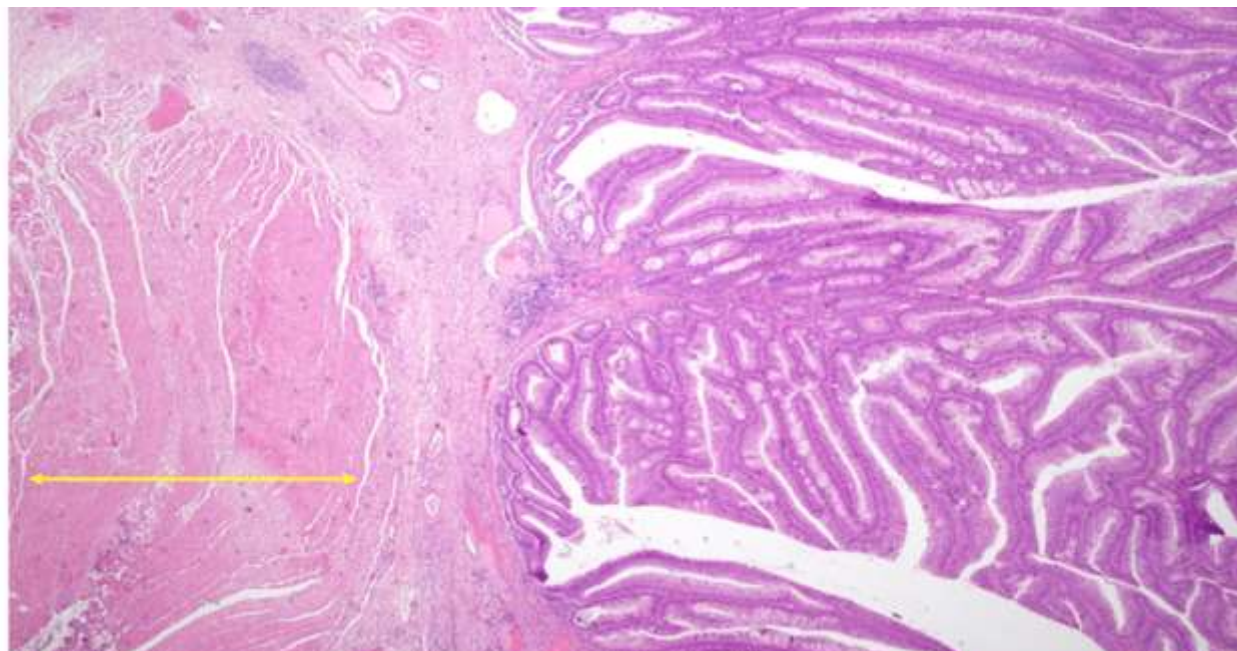


Figure 4

### Conflicts of Interest

The authors have no potential conflicts of interest

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### Author Contributions Conceptualization

Writing–review & editing: all authors

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