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Trans-anal full-thickness endoscopic resection of a rectal neuroendocrine neoplasia performed with TEO® (Karl-Storz microsurgery device) and laparoscopic ICG-guided lymphatic sampling – video vignette

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Dear Sir,

Rectal neuroendocrine neoplasms (NEN) are increasingly diagnosed worldwide. Compared to colonic NEN's, they are commonly smaller, less aggressive, with a low to intermediate grade of differentiation. A 5-year survival rate as high as 88% has been reported [1,2].

The risk of malignancy is closely related to tumour size, depth of invasion and lymph node involvement [1-3]. The incidence of lymph node metastasis increases with tumour (1-10mm 5.4%, 10-20mm 30%, >21mm 70%). The risk of lymph node metastasis increases with tumour depth (12% if submucosa is involved and 56% when the muscularis propria is involved) [3-5].

Our video shows the surgical treatment of a 9 mm rectal NEN treated by a combined access in a patient who previously had had a single hepatic lesion resected. On histology this was a well-differentiated neuroendocrine metastasis.

The Ga⁶⁸ PET-TC undertaken showed the primary lesion in the rectum (less than 1cm in size) and a single pelvic enhancement, reported as a possible lymph node. A colonoscopy confirmed the presence of a well-defined non-umbilicated 9mm rectal lesion, 10 cm from the anal verge.

A minimally invasive approach was undertaken using Indocyanine Green (ICG) fluorescence-enhanced angiography.

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The surgical procedure lasted 55 minutes, with insignificant blood loss. Patient was discharged on 3rd post-operative day. Surveillance programme using Ga68 PET-CT was planned three months after surgical treatment.

Histology of the rectal lesion showed a low-grade 9 mm NEN (pT1aNxG1R0, Ki67<1%), while the ICG fluorescent sampling in the sigmoid mesentery did not demonstrate lymphatic metastasis.

Almost half of NEN's located in the rectum are small, indolent and frequently asymptomatic. Diagnosis is often made on endoscopic evaluation performed for unrelated reasons [1-3].

In our case, the patient was diagnosed stage IV by the American Joint Committee on Cancer classification but molecular analysis of the hepatic metastasis showed an extremely low mitotic count and a limited proliferation rate (< 2 mitoses/10 hpf and a Ki67 index < 3%).

Endoscopic resection is indicated for rectal NENs measuring less than 10 mm in diameter without muscular invasion and peripheral lymph node metastasis. More extensive tumours should undergo complete surgical resection of the organ and lymphadenectomy [1,2,6]. As a consequence of the low mitotic count in the excised liver lesion and the discrete nature of the rectal lesion we decided to perform a minimally invasive procedure as a first approach.

Since early 2015, we have routinely performed ICG-fluorescence imaging to help guiding the appropriate level of bowel transection in colorectal surgery. More recently, we started using this technique for lymphatic evaluation in the same context. ICG fluorescence-guided sentinel lymph node (SLN) biopsy has shown initial excellent results in terms of SLN detection rates [7-10], while it seems to lack sensitivity in particular when applied to evaluate lymphatic spread in gastrointestinal cancers [11-13]. This poor sensitivity may be related to the so-called skip metastasis event, which is defined as a non-continuous nodal metastatic diffusion toward the lymphatic drainage. This seems to be prevalent in gastrointestinal cancers [4,14,15], as high as 6.5-10.5% [4]. There may also be differences in metastatic lymphatic diffusion of colorectal carcinomas and NEM tumours [4].

In the case described here there was no lymphatic invasion detected. However, we have planned a close follow-up to detect recurrence in a timely fashion. [1-4].

In conclusion, ICG fluorescence could be a useful tool to assess the lymphatic extent of disease in NENs of the rectum, but these are early results limited by both the initial experience and underestimated event of skip metastases. Further larger studies are required to evaluate the sensitivity of this method.

Supporting information supplied: video

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