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Endoscopic full-thickness resection (EFTR) after neoadjuvant chemotherapy: is it feasible? A case report

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ABSTRACT

Endoscopic full-thickness resection (EFTR) is a new technique for the resection of colonic lesions with limitations for other techniques such as endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD) due to fibrosis, the location of the lesion or invasion depth. In addition, techniques such as ESD require a long learning curve and unfortunately they are not fully implemented in Western countries. EFTR has numerous indications, which are expanding daily. The Full-Thickness Resection Device® (FTRD) is a promising tool, although it has many limitations and is associated with some risks. One of the main limitations of this resection device is the size of the lesion and it is not recommended for the resection of lesions > 30 mm. Furthermore, tumor size is directly related to the *"en bloc"* resection rate.

On the one hand, this case report suggests that neoadjuvant chemotherapy can modify the lesion size and larger lesions become candidates for EFTR in a second attempt. On the other hand, the concomitant use of systemic anticancer therapy could be a contraindication for the use of FTRD® as it may be associated with late

perforations. It is necessary to establish the time between the use of chemotherapy and the use of FTRD® in order to avoid complications. These considerations must be analyzed in future prospective studies.

Key words: Endoscopic full-thickness resection (EFTR). Full-thickness resection device (FTRD). Over-the-scope clip (OTSC). Colonic neoplasms. Delayed perforation. Adjuvant chemotherapy.

INTRODUCTION

Endoscopic full-thickness resection (EFTR) is a new resection technique for colorectal lesions based on a full-thickness resection device (FTRD®; Ovesco Endoscopy, Tübingen, Germany). This technique allows the resection of all layers of the colon. It is especially useful for lesions for which other techniques, such as endoscopic mucosal resection (EMR) or endoscopic submucosal dissection (ESD) are not possible, due to fibrosis (non-lifting adenoma), a difficult anatomic location (appendiceal orifice, diverticulum, folds) and deep submucosal invasion (T1 SM2-3). This technique may also be used for the resection of small sub-epithelial tumors such as neuroendocrine tumors (1,2). The major limitation of the system is lesion size and it is not recommended for the resection of lesions > 30 mm (3).

We present a case which was successfully treated with this procedure after a failed first attempt of resection by FTRD® due to the large size of the lesion. There was decrease in size secondary to lung chemotherapy treatment.

CASE REPORT

A 64-year-old female was referred to our Endoscopy Unit for a colonoscopy due to a hypermetabolic nodule with signs of malignancy that was identified on a PET-CT study as a solitary pulmonary nodule. An ileocolonoscopy was performed and several adenomatous polyps were resected with a diathermy loop. A 25 mm 0-IIa + IIc Paris lesion was found in the descending colon, with signs suggestive of submucosal invasion (NICE 3, Kudo's V pitt pattern) (Fig. 1). The lesion was biopsied and tattooed and the patient was referred for surgery. Histological assessment identified a well

differentiated adenocarcinoma.

Some days later, after complementary studies, the patient was diagnosed with stage IIIA lung adenocarcinoma. Thus, she had two synchronous tumors, a lung adenocarcinoma and a descending colon adenocarcinoma. She also had a history of ductal breast carcinoma stage IA (cT1NOMO) that was surgically treated four years previously and was currently under hormone therapy treatment. The case was presented at a multidisciplinary tumor session and the decision was taken to resect the colonic adenocarcinoma by EFTR due to high comorbidities and to continue with hormonal therapy for breast cancer. A second colonoscopy was performed for an EFTR and the procedure was unsuccessful as it was not possible to include the full lesion inside the cap. The procedure was interrupted in order to avoid an incomplete resection and potential iatrogenic complications.

The patient started a lung chemotherapy regimen with cisplatin and vinorelbine and was re-evaluated four months later via PET-CT. This radiological assessment showed a partial response of the lung tumor and the disappearance of hypermetabolic foci in the descending colon. Thus, a second EFTR attempt was decided upon. A new colonoscopy was performed and the tumor size had decreased from 25 to 15 mm and this time, the entire lesion was included into the FTRD® and it was successfully resected (Fig. 1). There were no complications and the patient restarted an oral diet 24 hours later and was discharged. Analysis of the histological specimen showed tumor invasion of the muscular layer (T2) and a R0 resection with tumor free margins (Fig. 2).

Nine days later, the patient was admitted to the Emergency Department due to delayed colonic perforation. A successful left colonic segmentectomy and discharge colostomy was performed. Histological assessment showed a 0.4 mm perforation near the FTRD®. Analysis of the histologic specimen confirmed the previous R0 resection with no neoplasic nodes.

DISCUSSION

EMR and ESD are well-established and effective techniques for the endoscopic resection of mucosal neoplasms along the entire gastrointestinal tract. However, these techniques are limited to superficial lesions. ESD is still the first option for lesions

limited to the mucosa and superficial submucosa of < 1,000 μm (T1sm1). It is a curative technique but is not yet fully implemented in Western countries. It is time consuming and requires a long learning curve.

EFTR may offer a simpler and less time-consuming procedure for the treatment of difficult adenomas or superficial colorectal neoplasic lesions, in cases where standard endoscopic resection is unfeasible. Compared with EMR or ESD, the diagnostic yield of EFTR may be higher as the pathologist receives a full-thickness *(en bloc)* resection specimen. Different retrospective series have shown good rates of en bloc resection with a low complication rate, most of which are mild (4-6). Although a recent multicenter prospective study by Schmidt et al. (7) showed an increased rate of complications (9.9%) compared with retrospective studies, they are still manageable, depending on different indications of resection.

FTRD® also has some limitations. It is difficult to pass through sharp colonic flexures to reach lesions located in the right colon and visibility is reduced due to the fact that the device is placed at the front of the endoscope. Furthermore, the cap diameter is 23 mm long and it does not allow the resection of lesions larger than 30 mm and, in some cases, larger than 20 mm depending on lesion-related fibrosis. In a recent prospective study, Schmidt et al. (7) suggested that R0 resection depended on lesion size (58.1% for > 20 mm *vs* 81.2% for ≤ 20 mm). Thus, resection success decreased significantly for lesions > 20 mm. The reduction of lesion size with EMR prior to same-session EFTR has been suggested for larger lesions (5).

On the one hand, this case suggests that concomitant chemotherapy for another tumor type could modify colonic tumor size, which could be re-evaluated some months later after an unsuccessful attempt. On the other hand, further investigations should be performed to determine if recent or concomitant chemotherapy could be associated with a delayed perforation. Furthermore, the optimal period to perform EFTR without an associated increased risk of complications should be established. In addition, we cannot assume long term cure, even though the tumor has been completely resected. Other types of concomitant treatments should be evaluated to evaluate the association with delayed perforations.

In conclusion, FTRD® offers a non-surgical option for the resection of non-lifting lesions, including neoplasic lesions and patients with significant co-morbidities. It is necessary to perform prospective studies to investigate whether concomitant chemotherapy is a contraindication for EFTR and to establish the optimal time from its use to resection in order to avoid complications. Furthermore, other risk factors associated with delayed perforations should be determined.

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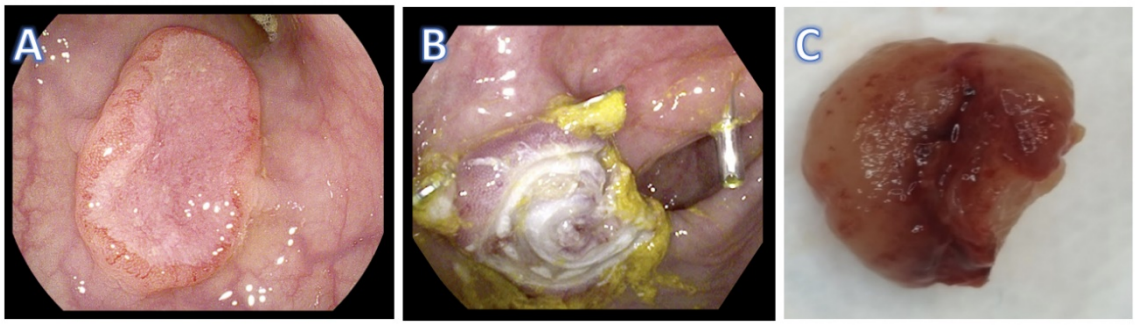

Fig. 1. A. First colonoscopy with a Paris 0-IIa + IIc lesion located in the descending colon. B. Lesion fully resected by Full-Thickness Resection Device. C. Histological piece after endoscopic full-thickness resection.

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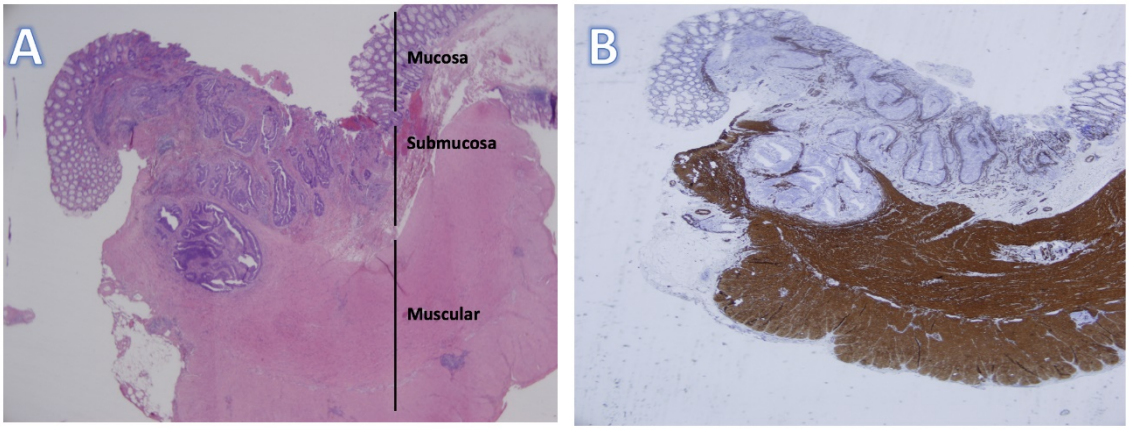

Fig. 2. Histological specimen with muscle layer tumor invasion. A. Hematoxylin eosin 100x. B. Immunohistochemistry, smooth muscle Dako stain 100x.