 Thieme

Outpatient ESD for challenging colorectal lesions: Is it feasible and safe for western countries?

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ABSTRACT

Background and study aims The need for hospital beds during the COVID-19 pandemic almost overwhelmed the health care systems all over the world. Therefore, elective non-life-saving procedures were postponed. We decided to perform all colorectal endoscopic mucosal dissections (ESDs) for challenging lesions as outpatient procedures, organizing an ad hoc path to management of any delayed post-procedural complications. The aim of the present study was to retrospectively evaluate the feasibility and safety of outpatient ESD for colorectal tumors.

Patients and methods From March 2020 to May 2020, outpatient colorectal ESDs were performed for 15 challenging lesions. We retrospectively investigated feasibility and safety of the procedures, rates of en bloc resection, and complications rates.

Results The mean age of the patients was 66.5 years and 40 % of the them were on antiplatelet/anticoagulation therapy. Median size of removed lesions was 45 mm (range 32–77) and 38 mm (range 24 to 55) Five patients (33 %) had rectal tumors extending to the dentate line and four (26.6 %) were recurrences on a scar of previous endoscopic or surgical local resections. All complications, such as bleeding or visible microperforation, were managed endoscopically and no delayed perforations occurred. One patient had fever (37.5 °C), while three patients complained of anal pain after ESD for a rectal tumor that extended to the dentate line (RTDL); all patients were managed conservatively.

Conclusion Outpatient colorectal ESD is feasible and safe for challenging lesions. It reduces costs of hospitalization but direct access to the endoscopy service to manage potential post-ESD complications should always be guaranteed.

Introduction

Colorectal endoscopic submucosal dissection (ESD) is a challenging procedure, potentially associated with intraprocedure or post-procedural complications such as bleeding, perforation or coagulation syndrome (CS). It is usually recommended during hospitalization [1–3], especially for patients with risk factors or those who require anticoagulation therapy [4]. The COVID-19 pandemic stressed health care systems all over the world with an inflow of COVID-19 patients and all elective non-life-saving procedures had to be postponed [5–6]. The same happened in our endoscopy unit, and only urgent and oncolo-

gic procedures were allowed, because beds for COVID-19-positive patients who required hospital treatment were urgently needed and almost all departments were transformed into COVID-19 units. However, many patients were on the waiting list for ESD. As we were unaware when we would be able to resume regular patient admissions to the wards, we decided to perform all colorectal ESDs for superficial neoplastic lesions suspected or at high risk for cancer evolution as outpatient procedures, including those technically demanding, larger than 5 cm, and usually requiring hospitalization. Upper gastrointestinal ESD, usually performed under general anesthesia and endotracheal intubation, was excluded from outpatient management.

To handle possible adverse events (Aes), an ad hoc path was created to manage any delayed post-procedural complications and avoid access to the emergency department and higher infection risks with SARS-CoV-2. Data on all colorectal ESDs performed as outpatient procedures from March 7, 2020 until May 20, 2020 were collected and analyzed. The feasibility and safety of ESD as an outpatient procedure and potential risk factors related to outcomes were evaluated.

Methods and procedures

This was a retrospective analysis of a prospective medical database of consecutive colorectal ESD outpatient procedures performed for challenging lesions (>40 mm in diameter, sessile and lateral spreading tumors, and presence of submucosal fibrosis) [7]. Indications for ESD were large, non-pedunculated, colorectal lesions classified according to the Paris classification [8]. Contraindications for the procedure included advanced or ulcerated lesions, platelet count <50,000, and inadequate bowel preparation. Demographic and clinical data including patient age, sex, pathological diagnosis, lesion size, location, procedure outcomes, and AEs were collected for all patients (▶Table 1). All data were collected in an Excel database. All patients followed the preoperative protocol for COVID-19 in our endoscopy unit according to European Society of Gastrointestinal Endoscopy guideline [9]. Risk stratification of patients for possible COVID-19 infection was performed 1 day prior to gastrointestinal endoscopy by phone and then again on the day of endoscopy by questioning for symptoms and contacts. Moreover, temperature measurement and immune rapid tests for virus infection were available for each patient as triage tests before entering the endoscopy room.

Primary study outcomes were incidence of delayed major complications (e.g. bleeding, perforation) and secondary outcomes were the evaluation of procedure time, intraprocedural complications, and mucosal defect closure rates. All procedures were performed by three experts (LP, FB, SP). All patients were informed about the endoscopic technique and possible complications and signed an informed consent. Procedures were performed under conscious sedation with intravenous midazolam and pethidine or fentanyl. Carbon dioxide insufflation was used. All lesions were resected using a standard technique [10]. A distal attachment under the exfoliated mucosa ensured a good counter traction to the submucosal layer and visualization of the operative field to facilitate evaluation of

the submucosal (SM) layer. For all procedures, gastroscopes with a water-jet system (2.8-mm working channel diameter, Olympus, Tokyo, Japan) or operative gastroscopes (3.7-mm working channel diameter, Olympus, Tokyo, Japan) with Dual-knife (1.5 mm, KD-650Q; Olympus, Tokyo, Japan) were used. The electrosurgical units were VIO 300 D (ERBE Elektromedizin GmbH, Tubingen, Germany), with Endocut I and Swift Coagulation 3/40 or Dry Cut and Swift Coagulation 3/30 as parameters of eletrocautery settings.

All patients had to stay close to the hospital for 48 hours after the procedure to ensure faster management of any delayed complications. They were managed according to an "ad hoc path," which provided the possibility of calling an emergency number, which was answered by endoscopist on call. If necessary, direct access to the endoscopy unit was guaranteed and colonoscopy was performed in the Emergency Room.

Results

During the COVID-19 pandemic, 15 endoscopic colorectal ESDs were performed as outpatient procedures. The mean age of the patients was 66.5 years and 40 % of them were on antiplatelet/anticoagulation therapy managed according to guidelines. Comorbidities are shown in ▶Table 1. The median size of the removed lesions was was 45 mm (range 32–77) mm and 38 mm (range 24–55) Five (33 %) of these were rectal tumors extending to the dentate line (RTDL) and four (26.6 %) were recurrences on a scar from previous endoscopic or surgical local resection (▶Table 2). All lesions (100 %) were removed en-bloc (▶Fig. 1 and ▶Fig. 2) Bleeding was endoscopically controlled with a closed tip Dual knife and monopolar forceps (Coagrasper). In three cases (two cancers and one adenoma), prevention of delayed bleeding was managed by clipping visible vessels on the ulcer site. Immediate and visible microperforation, defined as focal injury of muscularis propria (MP) [11], was seen in three patients (20 %) and was managed with clipping (▶Fig. 3). Monitoring of vital signs and clinical symptoms was done for 3 hours after each procedure. All patients were discharged in good clinical condition. Delayed bleeding occurred in one patient who did not need hospitalization; another patient had fever (37.5 °C) while three patients complained of

▶Table 1 Patient characteristics.

Mean age	66.5 y
Sex	11 M/4 F
Anticoagulants	1
Antiplatelet drugs	5
Hypertension	9
Diabetes	1
Respiratory disease	3
RCU	1
Previous Treatment – endoscopic/surgical	3/1

▶ **Table 2** Technical features of challenging colorectal ESD.

Morphology	Size (mm)	Site	Type of sm injection	Fibrosis (score)[1]	Intraprocedural bleeding/management	Intraprocedural perforation/management	Procedure Time (min)	Histology
LST-GM	45*40	RT	glycerol + IC + adrenaline	F1	Dual Knife + Coagrasper	no	180	T LGD adenoma
LST-GM	40*35	RT	glycerol + IC + adrenaline + orise gel	F1	Dual Knife + coagrasper + clipping	no	65	T HGD adenoma
0-IIa + Is s	75*55	RTDL	glycerol + IC + adrenaline + orise Gel	F2	Dual Knife + Coagrasper + clipping	no	152	Adenocarcinoma in situ (Tis)
Scar lesion	35*30	RT	glycerol + IC	F3	Hybrid Knife + Coagrasper	no	75	TV LGD adenoma
LST GM	95*85	RT	glycerol + IC	F2	Dual Knife + Coagrasper	yes – clipping	275	Adenocarcinoma T1
NG-LST	30*18	SF	orise gel + glycerol + IC	F3	Dual Knife + Coagrasper	yes – clipping	185	Adenocarcinoma T1
Is + IIa	80*75	SC	glycerol + IC	F1	Dual Knife + Coagrasper + clipping	no	180	Adenocarcinoma T1
LST-GM	85*55	RT	glycerol + IC	F1	Dual Knife + Coagrasper	no	170	Adenocarcinoma T1
NG-LST	45*38	RTDL	voluven + IC + lidocain	F1	Dual Knife + Coagrasper	no	70	Adenocarcinoma T1
Is + IIa	65*55	RS junction	voluven + IC	F1	Dual Knife + Coagrasper	no	120	T LGD adenoma
GM-LST	90*85	RTDL	glycerol + IC	F1	Dual Knife + Coagrasper	no	170	TV LGD adenoma
Is + IIa	25*15	RTDL	glycerol + IC	F2	Dual Knife + Coagrasper	no	134	ASIN
Scar lesion	40*38	RT	glycerol + IC + adrenaline	F3	Dual Knife + Coagrasper	yes – clipping	250	TV HGD adenoma
Scar lesion	20*15	RTDL	glycerol + IC + xylocaina	F3	Dual Knife + Coagrasper	no	210	T LGD adenoma
Scar lesion	25*13	RTDL	glycerol + IC	F3	Dual Knife + Coagrasper	no	138	T HGD adenoma

Morphology: According Paris classification [8]

ESD, endoscopic submucosal dissection; RTDL, rectal tumor extending to the dentate line; SF, splenic flexure; SC, sigmoid-colon; RS, rectosigmoid; sm, submucosal injection; IC, Indigo Carmine; T, tubular histology; TV, tubular-villous; LGD, low-grade dysplasia; HGD, high-grade dysplasia; ASIN, anal squamous intraepithelial neoplasia.

[1] *Fukunaga S, Nagami Y, Shiba M* et al. Impact of preoperative biopsy sampling on severe submucosal fibrosis on endoscopic submucosal dissection for colorectal laterally spreading tumors: a propensity score analysis. Gastrointest Endosc 2019; 89: 470-478 doi:10.1016/j.gie.2018.08.051

anal pain after ESD for RTDL; all patients were managed conservatively.

Discussion

The SARS-CoV-2 pandemic has stricken national health systems all around the globe, requiring a reorganization of endoscopy units. In the pre-COVID-19 period, all technically challenging ESDs were routinely performed in the hospital. To ensure endoscopic resection of colorectal superficial neoplastic lesions and to reduce the waiting lists as much as possible, 15 colorectal ESDs were performed on outpatients, because most of the hospitalization wards from March 7, 2020 until the end of June were entirely occupied by COVID-19 patients. Considering that the risk of bleeding associated with colorectal ESD ranges from 0% to 11.9% [12, 13], which is higher in Western than in Asian
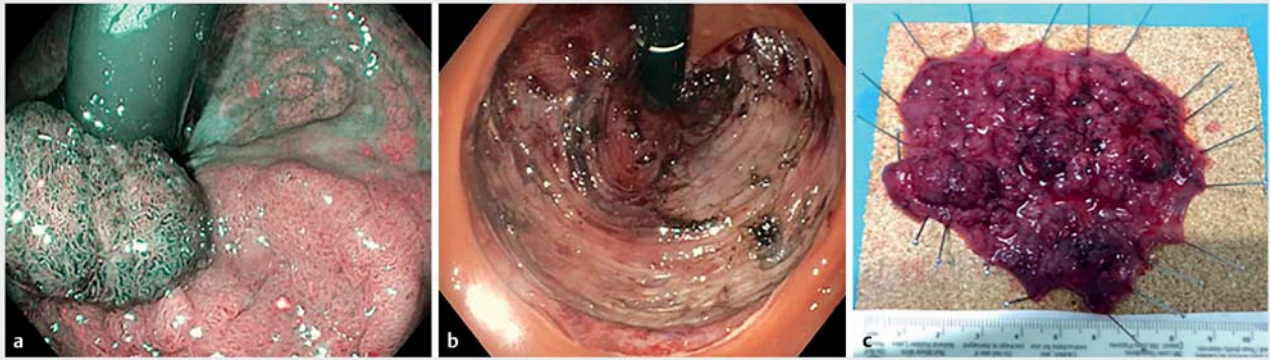
▶ **Fig. 1** **a** and **b** Rectal tumor (GM-LST) extending to the dentate line (RTDL) before and after ESD. **c** Specimen assessment for histologic evaluation.
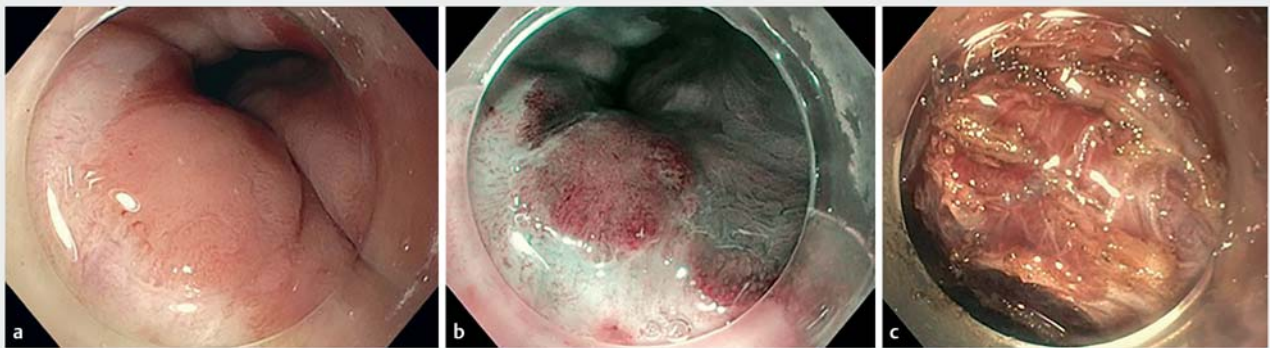
▶ **Fig. 2** Scar lesion extending to the dentate line (RTDL) in ulcerative colitis visualized with **a** white and **b** narrow banding imaging (NBI). **c** Submucosal dissection with evidence of severe fibrosis (F3).
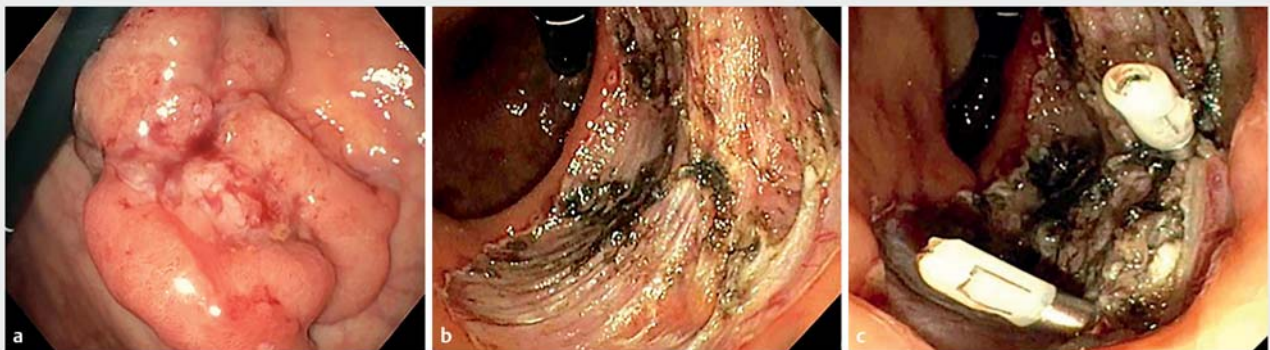
▶ **Fig. 3** **a** Retroflex vision for diagnostic evaluation of **b** rectal tumor resected with ESD. **c** Suturing with endoclips for intraprocedural micro-perforation.

countries [14], our experience with colorectal ESD has been encouraging. Analyzing our data case-by-case, intraprocedural complications such as bleeding seemed to be unrelated to the size, site, and submucosal injection type, but the only impact was on the duration of the procedure. Moreover, tumor size, high grade of submucosal fibrosis, and colonic location are known risk factors for perforation [11, 15]. In our experience,

the majority of ESDs showed these characteristics, but no delayed perforations occurred even if routine suturing and closure of mucosal defects were not performed, and long-lasting submucosal injection agents such as hyaluronic acid were not used. Restrictions linked to the COVID-19 pandemic forced us to perform difficult and challenging procedures on an outpatient service. However, the limited number of cases prevents us

from drawing definitive conclusions or recommendations, but encourages us to argue that outpatient colorectal ESD is feasible and safe. Although in our series no correlation between post-procedural complications and anticoagulant use was demonstrated, certainly concomitant medications, age or any co-morbidities of the patients must be taken into consideration before planning outpatient colorectal ESD, mainly to ensure direct access to the endoscopy service to quickly manage any potential post-ESD complications. Finally, endoscopist experience is essential for two reasons: the success of the procedure and the management of complications. In fact, an expert endoscopist (>80 colorectal procedures performed with en bloc rate >90%) can guarantee proper technical ESD execution, which enables not only the success of the procedure itself but also optimal management of all possible intra-procedural complications without sequelae that would require patient hospitalization.

Conclusion

Performing outpatient ESD in complicated cases may reduce the general costs of hospitalization, but the data from this study need to be confirmed in a larger prospective study.

Competing interests

The authors declare that they have no conflict of interest.

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