CASE REPORT

Bowel perforation after endoscopic submucosal dissection due to colon cancer and successful endoscopic treatment using an Ovesco clip

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SUMMARY

An 83-year-old woman under intravenous anaesthesia underwent endoscopic submucosal dissection due to early well-differentiated colon cancer with no deep invasion (pT1). Wide perforation in the deep site of excision of the descending colon was identified and an Ovesco clip placed to close the defect. The patient was discharged from the hospital on day 4 after the procedure, with no abdominal pain and no peritoneal signs of inflammation. Follow-up CT and colonoscopy were performed after 6 months, and no recurrence was observed.

BACKGROUND

Colon perforation after endoscopic submucosal dissection (ESD) is quite common and is a frequently encountered complication (0–20.4%).¹ Previously, surgery was the main treatment for colonic perforations.^{2–3} Nowadays, endoscopic closure with conventional clips is successful for perforation observed during colonoscopy.⁴ Nevertheless, closure of large mucosal defects is technically difficult.⁵ The over-the-scope-clip (OTSC, Ovesco Endoscopy AG, Tübingen, Germany) is an alternative choice for colonic perforation closure.^{6–9} We submit this report on Ovesco clip placement after ESD of a giant sessile polyp and large bowel perforation, which was performed in Vilnius University Hospital ‘Santariskiu Klinikos’, in Lithuania.

CASE PRESENTATION

An 83-year-old woman (body mass index 23.59 kg/m²) with no clinical symptoms underwent a faecal occult blood test. After a positive test result, the patient was directed to colonoscopy procedure. During the colonoscopy, the approximately 2.5 cm sessile-type polyp of sigmoid colon with suspicion

of malignisation was identified. Biopsy specimens obtained from the tumour were diagnosed as adenocarcinoma G1.

INVESTIGATIONS

Further, abdominopelvic CT (with CT colonography) was performed for evaluation of disease outspread. A broad base (approximately 25 mm), protuberant (approximately 18 mm), rugged tumour in the mesentery bowel side, approximately 44 cm from the anal verge, was observed (figure 1). The mucosal layer intensively accumulated contrast weight and the submucosal layer was visible as a low density with a smooth outer contour. Transmural infiltration and infiltration into the mesentery were not observed. No increased lymph nodes and no distant metastases were found.

Subsequently, multidisciplinary team consensus was made. Owing to the patient’s age, comorbidities, and tumour type and size, ESD was suggested.

TREATMENT

The procedure was performed under intravenous anaesthesia. First, under insufflation of air, inspection of all large bowel and terminal ileum was made. The 2.5 cm broad-based tumour was identified about 40 cm from the anal verge in the descending colon. Second, a 12 mL solution of voluven (6% hydroxyethyl starch 130/0.4 in 0.9% sodium chloride), epinephrine and methylene blue was injected into the submucosal layer around the tumour. Unfortunately, lifting of the tumour was not adequate (possibly due to its malignisation). From a visual point, the tumour was removed radically using the ESD technique, maintaining a minimum 2 mm margin. A 5 mm perforation in the deep site of excision of the descending colon was

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Figure 1 Abdominopelvic CT with CT colonography of sessile tumour.

Figure 2 Ovesco clip placed over the defect in the deep site of excision.

identified endoscopically. The Ovesco clip was placed and defect successfully closed (figure 2).

OUTCOME AND FOLLOW-UP

There were no complications after the procedure. Intravenous antibiotics, 1.2 g amoxiclav and 0.5 g metronidazole, were provided three times per day for 3 days. No abdominal pain and no peritoneal signs of inflammation were observed. Inflammatory laboratory tests were normal on the first and third day after the endoscopy. A liquid diet was started on the second day after ESD, followed by a normal low-residue diet, started on the third day. The patient was discharged from the hospital on day 4 after the ESD and Ovesco clip placement.

Histologically, the tumour was identified as adenocarcinoma pT1 G1 in a tubulovillous adenoma. Invasion of the adenocarcinoma of the submucosal layer was observed (level 4 according to Haggitt's classification and Sm3 according Kikuchi's classification). The adenocarcinoma was radically removed (resection margins without tumour invasion with a minimal distance of 2 mm were identified).

Figure 3 Follow-up colonoscopy after 24 months with no recurrence.

Follow-up CT and colonoscopy were performed after 6, 12 and 24 months, and no recurrence was found (figure 3).

DISCUSSION

The OTSC system has a wide spectrum of uses: it has the ability to close gastrointestinal defects such as perforations, leaks, fistulas or non-variceal gastrointestinal bleeding.^{7 10 11} Colonic perforations and bleeding are the most frequent complications after colorectal ESD.¹ It is essential to recognise the perforation after ESD procedures, because 'delayed' perforations have more severe clinical outcomes, in comparison with the perforations observed during the endoscopy. Recognition of the perforation reduces a higher rate of peritonitis, as well as lowering a longer and more severe clinical recovery.⁹ We presented the successful treatment of colon perforation using an Ovesco clip. It is advisable for an OTSC system to be available in all cases of ESD treatment, as there are some reports on the use of this clipping system for closure of colorectal perforations after ESD. Additionally, the European Society of Gastrointestinal Endoscopy position statement recommends the use of the OTSC system for large perforations.¹² Nishiyama *et al* reported two sigmoid colon cases with 100% success rate using an OTSC system for colonic perforations after ESD. Unfortunately, the scope of this study was too narrow to evaluate the effectiveness of OTSC treatment after colorectal ESD perforation.⁸ Fujihara *et al* also reported on the absence of complications related to prophylactic closure of nine colon perforations using an OTSC. The indications to use the OTSC system were: (1) a large mucosal defect (tumour size >30 mm); (2) flexure of the colon; (3) excessive coagulation in the muscularis propria and (4) an inability to close the defect, but not transmural perforations, with conventional clips. Prophylactic closure reduces the peritoneal inflammatory reaction and abdominal symptoms that may occur without it.⁵ Also, OTSCs have some drawbacks such as postprocedural pain, mucosal laceration, perforation and lumen stenosis.^{8 13 14} These complications did not occur in our case, and the treatment was successful.

In conclusion, since colonic perforation is not a rare complication and can occur after performing ESD, endoscopists should be aware of such a risk and its management.

Learning points

- ▶ Endoscopic submucosal dissection (ESD) is an effective method for en bloc resection of large adenomas and early cancers of the colon.
- ▶ Perforation is not a rare complication after ESD and is encountered in up to 20.4% of cases.
- ▶ The over-the-scope-clip (OTSC) system must be available every time an ESD is performed.
- ▶ Ovesco clip placement is a feasible minimally invasive treatment approach even for large colonic perforations.

Contributors MK performed the literature review and wrote the paper. JS performed the procedure. RV kept the patient under observation. SM revised the paper critically for important intellectual content and performed final approval of the version to be submitted.

Competing interests None declared.

Patient consent Obtained.

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