Are endoscopic mucosal resection and endoscopic submucosal dissection risky for patients with cirrhosis?

Endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD) have become a standard treatment in selected cases of early gastric cancer [1,2]. The risk of complications may increase in patients with cirrhosis, due both to severe clotting impairment and to decreased platelet counts [3]. We present our experience in three patients with cirrhosis.

A 68-year-old woman with cryptogenic cirrhosis and esophageal varices, who had normal laboratory parameters and platelet count, was diagnosed with a high-grade gastric adenoma. ESD was decided on. Lesion margins were marked. A solution of mixed saline, adrenaline, and indigo-carmine was used for submucosal injection. Circumferential incision and submucosal dissection were carried out using a HookKnife and an ITknife2 (Olympus, Tokyo, Japan). A Coagrasper (Olympus) was used for preventive hemostasis. The lesion was removed en bloc in 61 minutes (**Figs. 1, 2**). Pathological examination revealed a high-grade gastric adenoma. A prophylactic antibiotic was administered. Endoscopy at 6-month follow-up showed no recurrence.

A 69-year-old man was diagnosed with decompensated cryptogenic cirrhosis (esophageal varices and ascites). Serum bilirubin and albumin levels were 1.9 mg/dL and 2.2 g/dL respectively. Platelet count was 59×10^3/µL and INR was 1.42. Endoscopic evaluation showed a sessile polyp (width 10 mm) in the gastric body. The polyp was elevated by administering a mixture of saline and adrenaline, and was then removed en bloc using a polypectomy snare. Pathological examination revealed a grade 1 neuroendocrine tumor. Prophylactic antibiotic therapy was administered.

A 55-year-old woman was diagnosed as having hepatitis C virus-related cirrhosis. Blood chemistry was normal except for the platelet count (91×10^3/µL). Five sessile polyps (the largest 15 mm, the others 6–8 mm) were seen in the gastric body during endoscopy. The largest polyp was elevated as described above and removed en bloc using a polypectomy snare. EMR with a ligation device was planned for the remaining polyps. The lesions were elevated, band ligation was applied, and EMR was performed below the band with a polypectomy snare (**Figs. 3, 4**). Pathological examination revealed grade 1 neuroendocrine tumor for all lesions. A prophylactic antibiotic was administered.

Patients with cirrhosis are at increased risk of developing gastric lesions [4]. Surgical treatment in these patients is associated with high mortality [5]. The risk of bleeding during ESD in patients with cirrhosis is reported to be 4%–33%. INR below 1.5 and a platelet count above 50×10^3/µL are likely to be safe thresholds for endoscopic resection [3,6–8]. There is a risk of sepsis in cirrhotic patients due to impairment of defensive mechanisms [9]. Prophylactic antibiotics can reduce the risk of bacteremia and sepsis.

Fig. 1 **a** Endoscopic appearance (i-scan) of gastric lesion. **b** Marking the lesion with the HookKnife. **c** Submucosal injection.

Fig. 2 **a** View of submucosal tissue through endoscope hood. **b** Mucosal defect after endoscopic submucosal dissection. **c** Resected specimen.

Fig. 3 **a** Endoscopic appearance of gastric lesion. **b, c** Application of endoscopic band ligation to lesions.

Fig. 4 **a** View after endoscopic resection with snare. **b** Mucosal defects after endoscopic mucosal resection. **c** Resected specimens

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