Introduction
Endoscopic treatment of colonic tumors has been advanced recently. We applied endoscopic submucosal dissection (ESD) and endoscopic unroofing (EU) to a patient with multiple colonic lipomas.

Case
A 62 year old woman was referred to our department for her colonic submucosal tumors found during screening colonoscopy. She had no particular past or familial medical history. Colonoscopy showed two submucosal tumors with 5 and 2.5cm in diameter in the ascending colon and transverse colon, respectively. Both surfaces of the tumors were smooth and yellowish, and their cushion signs were positive (Fig. 1). Based on these findings, multiple colonic lipomas in the ascending colon and transverse colon were diagnosed. Colonic lipomas, larger than 3.0cm, are resected by ESD in our institution because of possible intestinal invagination. Those cause bleeding, melena, or abdominal pain are also treated. Therefore, ESD was intended for the ascending colon. Although the tumor in the transverse colon was 2.5cm, EU, having a smaller risk of bleeding and perforation in comparison with ESD, was considered due to the patient’s desire. Firstly, we started EU at the transverse colon. By using an electric snare, we resected about 5mm of mucosal and submucosal tissue on the top of the tumor (Figs. 2, 3). Then, yellowish tissue assumed to be lipoma appeared and protruded from the mucosal defect (Color 1). Next, ESD at the ascending colon was performed by using a flush knife, and it took about 2 hours without complications. Although we assumed that the tumor treated by EU fell out naturally, colonoscopy at 5 days after EU revealed that the treated lipoma in the transverse colon was not changed from the previous observation, and the EU-inducted ulcer had started to heal (Color 2). After 40 days of EU, the tumor in the transverse colon still remained with complete covering by the regenerative

Fig. 1 A lipoma sized 2.5cm in the transverse colon.

Fig. 2 An electric snare wringing the mucosal and submucosal tissue of the tip of the tumor (EU).

Fig. 3 A mucosal defect after EU.
mucosa (Fig. 4). On the other hand, ESD resulted in the scar without remnant tumor. Histopathological findings showed that the submucosal tumor in the ascending colon was a lipoma covered by a fibrous capsule and was located under the submucosal layer, and the resected mucosa in the transverse colon did not include any lipoma. One year follow-up colonoscopy showed that the lipoma remained in the transverse colon in the same size and the patient did not address any symptoms. After discussion with the patient, resection by ESD or EU would be considered if it would have grown over 3.0cm or any symptom would be recognized.

**Discussion**

Endoscopic unroofing (EU) is an endoscopic technique, in which a snare is applied to obtain partial resection of an intestinal submucosal tumor, and the residual tumor naturally falls off. The initial application of EU, which was applied to colonic lymphangioma, was reported by Mimura et al. in 1997. EU does not cause any serious complications, such as intestinal perforation or hemorrhage, which are likely to occur in conventional technique, because only the upper half of the tumor is resected. In addition, histopathological examination is possible because tumor is partially resected. Previously, colonic submucosal tumor has been treated with polypectomy or EMR, but the risk of perforation can increase in tumors larger than 2.0–2.5cm in diameter, and these cases are preferably treated surgically. Recently, ESD for tumors larger than 2.5cm have also been reported, as we performed for the resection at the ascending colon.

ESD of the giant lipoma in the ascending colon was successful without any complications, such as hemorrhage or perforation, but the lipoma in the transverse colon could not be eradicated by EU, which might be due to an insufficient roofing of the mucosa and tumor. In other words, mucosal unroofing with upper-half of the tumor must be necessary to eradicate completely. In addition to the conventional treatment of colonic submucosal tumor with polypectomy and EMR, our case revealed the potential of ESD and EU as the alternatives.

**References**

3) Okada K, Shatari T, Suzuki K et al: Is endoscopic submuco-

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**Fig. 4** The lipoma still remained which mucosa was completely healed after 40 days from EU.

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**ESDとendoscopic unroofingを 施行した大腸多発脂肪腫の1例**

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**和文要旨**

Endoscopic unroofing(EU)は消化管粘膜下腫瘍に対する内視鏡治療の一つで、腫瘍の上半分を切除すると残った腫瘍が自然に脱落し出血・穿孔などの合併症が少ないとされる。今回大腸多発脂肪腫に対してEUとEUを施行したので報告する。患者は62歳女性。検診の大腸内視鏡(CF)で粘膜下腫瘍(SMT)が認められ紹介となった。CFで上行結腸に5cm、横行結腸に2.5cmのSMTが認められ、いずれも表面平滑・黄色で脂肪腫と診断した。上行結腸の巨大脂肪腫は腸重積の可能性からEUによる切除を予定し、横行結腸の脂肪腫は肉眼観察も可能であったが患者のinformed consentによりEUを予定した。EUは経過良好であったが、EUは腫瘍の突出は途中で止まり、粘膜の再生が起こり結果的に腫瘍切除には至らなかった。EU時の粘膜と粘膜下組織の切除量が少ない事が原因と考えられた。脂肪腫など大腸SMTに対する内視鏡治療として従来までのpolypectomyやEMRに加え、EUや合併症の少ないEUは有効な方法の一つになる可能性があると考えられた。