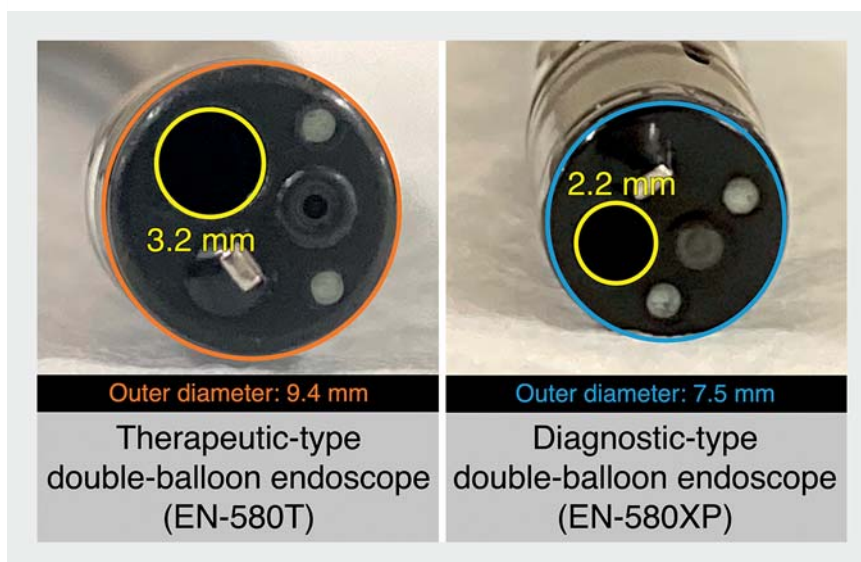


Ischemic polypectomy using a diagnostic-type double-balloon endoscope with a modified detachable snare

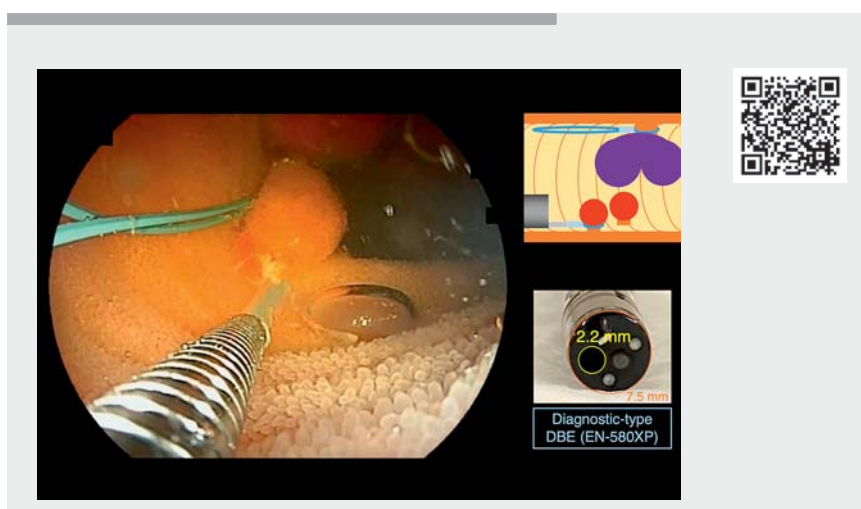
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Polypectomy of small-bowel polyps larger than 10 mm is recommended in patients with Peutz-Jeghers syndrome (PJS) [1]. During double-balloon enteroscopy (DBE) for polypectomy in patients with PJS, deeper insertions are sometimes difficult owing to post-surgical adhesions. When bi-directional DBE using a therapeutic-type scope fails to reach polyps, a diagnostic-type scope with a smaller outer diameter (► **Fig. 1**) is an alternative. However, a hemoclip and a detachable snare are unavailable in this scope because its outer casing is larger than the working channel (2.2 mm). Therefore, it is considered challenging to perform conventional polypectomy and ischemic polypectomy [2, 3].

A 35-year-old woman with PJS failed total enteroscopy because of post-surgical adhesions, even with bi-directional DBE using a therapeutic-type scope (EN-580T; Fujifilm, Tokyo, Japan) (► **Video 1**). Endoscopic enteroclysis revealed polyps in the unreachable area (► **Fig. 2**). Therefore, retrograde DBE using a diagnostic-type scope (EN-580XP, Fujifilm) was performed with the water exchange method [4] for further insertion. A cluster of 10- to 30-mm polyps was observed 20 cm proximal to the reachable limit of the therapeutic-type scope. To perform ischemic polypectomy, a detachable snare (HX-400U-30; Olympus, Tokyo, Japan) was modified. The outer casing was removed and cut to 85 mm and then used as a sheath for inserting the bare detachable snare into the working channel (► **Fig. 3**). A small amount (0.5 ml) of olive oil was used for lubrication. Although preligation was skipped because of the lack of the outer casing, 10 polyps were treated by ischemic polypectomy using the modified detachable snare (► **Fig. 4**). There were no perioperative adverse events.



► **Fig. 1** The therapeutic-type double-balloon endoscope has a 3.2-mm working channel. The diagnostic-type double-balloon endoscope has a 2.2-mm working channel.

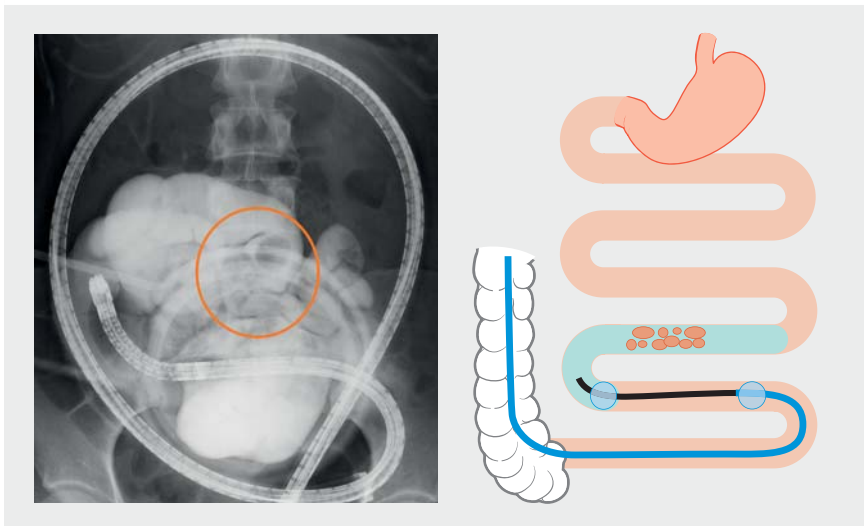


► **Video 1** Ischemic polypectomy using a diagnostic-type double-balloon endoscope with a modified detachable snare in a patient with Peutz-Jeghers syndrome.

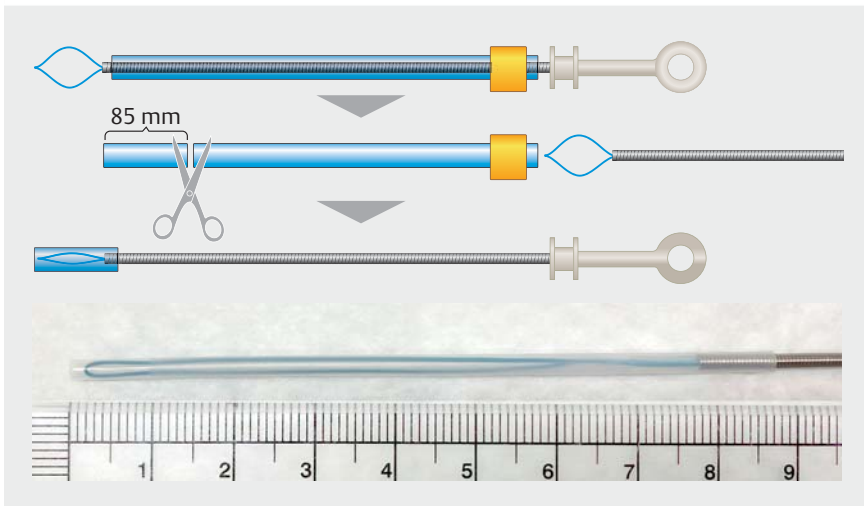
This method was performed for 17 polyps in three patients (five DBE procedures) between June 2020 and September 2022 without adverse events. The modified detachable snare enables ischemic polypec-

tomy during DBE using a diagnostic-type scope.

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► **Fig. 2** Endoscopic enteroclysis revealed polyps in the unreachable area using a therapeutic-type scope.



► **Fig. 3** A disposable detachable snare (HX-400U-30, Olympus) was modified for use through a 2.2-mm working channel.

Competing interests

Hironori Yamamoto has patents for double-balloon endoscopy and a consultant relationship with Fujifilm. Tomonori Yano has received research funding and honoraria from Fujifilm. No other authors have personal financial relationships with a commercial entity producing healthcare-related products and/or services relevant to this article.

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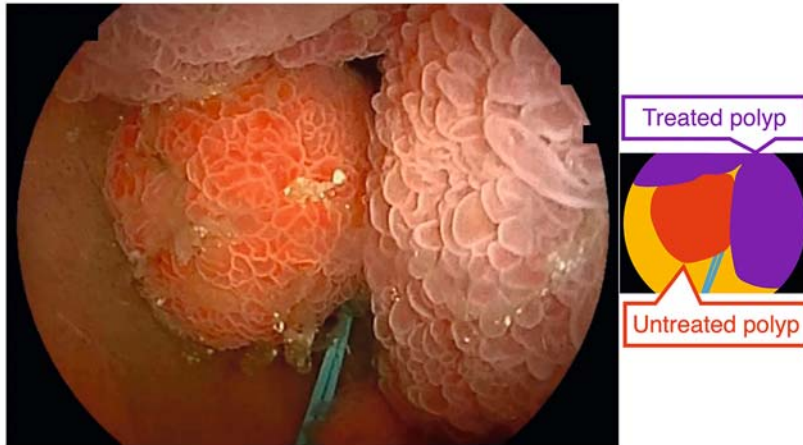
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► **Fig. 4** Placing the modified detachable snare on the polyp's stalk changed the color of the polyp to purple owing to ischemia.

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