A calibrated, small-caliber tip, transparent hood to aid endoscopic balloon dilation of intestinal strictures in Crohn’s disease: successful use of prototype

Endoscopic balloon dilation (EBD) has become a standard minimally-invasive therapy for Crohn’s disease-related small-intestinal strictures [1]. However, the strictures are usually accompanied by inflammatory changes, which can hinder the passage of the balloon catheter through the strictures. Moreover, often several strictures are present that can require multiple consecutive dilations in a single procedure. Because accurate measurement of the stricture diameter is essential to the selection of the correct size of balloon catheter, we devised a prototype calibrated, small-caliber tip, transparent (CAST) hood to overcome this difficulty (Fig. 1a).

The CAST hood is designed to fit the tip of a therapeutic-type double-balloon endoscope (DBE; EN450-T5; Fujifilm, Tokyo, Japan). The hood has a tapered shape with calibration lines marked along its side (Fig. 1b). Once the tip of the DBE reaches a stricture, we align the inner ring of the CAST hood with the orifice of the stricture. The diameter of the stricture is measured by pressing the CAST hood into the stricture, so that the measurement can be read from the calibration lines (Fig. 2). A guidewire and an appropriate-sized balloon catheter are then inserted (Fig. 3). The endoscope with the CAST hood is then simply advanced through the stricture, like a bougie, and subsequent strictures are managed in the same fashion.

Between April 2009 and March 2011, the CAST hood was prospectively evaluated in 19 patients with Crohn’s disease-related intestinal strictures. All of the patients had more than one stricture and multiple EBDs were successfully performed with the CAST hood. The maximum number of EBDs performed in a single procedure was 10. By comparing the diameter of the impression ring to the calibration lines, we were able to precisely measure the stricture sizes.

The CAST hood can facilitate consecutive EBDs of intestinal strictures in Crohn’s disease. Accurate measurement of the stricture diameter using the CAST hood is safe and helpful for selection of the correct size of balloon catheter for EBD.

Endoscopy_UCTN_Code_TTT_1AQ_2AF

Competing interests: Yoshikazu Hayashi has applied for a patent in Japan for the CAST hood described in the article. Hironori Yamamoto has patents in Japan for the double-balloon endoscopy system described in this article.

Yoshikazu Hayashi, Hironori Yamamoto, Tomonori Yano, Aya Kitamura, Takahito Takezawa, Yuji Ino, Hirotugu Sakamoto, Yoshimasu Miura, Hakuei Shinhata, Hiroyuki Sato, Keijiro Sunada, Kentaro Sugano

Department of Medicine, Division of Gastroenterology, Jichi Medical University, Shimotsuke, Japan

Acknowledgments

We thank Dr. Kunut Kijsirichareanchai of the Department of Internal Medicine at Texas Tech Physicians of Lubbock for his assistance in the language editing of this manuscript.
Fig. 3 Use of the calibrated, small-caliber tip, transparent (CAST) hood allows a guidewire to be passed easily into the stricture in a straight line: a schematic of guidewire delivery; b endoscopic view of a guidewire in position.

References

Bibliography
DOI http://dx.doi.org/10.1055/s-0033-1344800
Endoscopy 2013; 45: E373–E374
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

Corresponding author
Hironori Yamamoto, MD
Department of Medicine, Division of Gastroenterology
Jichi Medical University
3311-1 Yakushiji, Shimotsuke
Tochigi, 329-0498
Japan
Fax: +81-285-448297
yamamoto@jichi.ac.jp