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## Safe and Proper Management of Esophageal Stricture Using Endoscopic Esophageal Dilation

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See "Health-Care Utilization and Complications of Endoscopic Esophageal Dilation in a National Population" by Abhinav Goyal, Kshitij Chatterjee, Sujani Yadlapati, et al., on page 366-371.

Treatment of esophageal stricture is important because esophageal stricture reduces the quality of life of patients by increasing their risks of dysphagia, weight loss, nutritional imbalance, and pneumonia due to aspiration.

Esophageal stricture is mainly classified as benign or malignant esophageal stricture, and may occur as fibrous production and collagen deposition due to chronic ulceration or chronic inflammation or as complications after chemotherapy, radiotherapy, and surgery such as esophagectomy, or endoscopic procedures such as endoscopic mucosal resection and endoscopic submucosal dissection for the treatment of esophageal cancer.<sup>1,2</sup> Esophageal stricture caused by active peptic ulcer or gastroesophageal reflux can be treated with drugs such as proton pump inhibitors, which inhibit gastric acid secretion. However, esophageal dilation has been used as the first-choice treatment modality for esophageal stricture without acute inflammatory response.

Esophageal dilation generally involves esophageal bougienation, balloon dilation, and stent insertion.<sup>3</sup> Among these, endoscopic balloon dilation using a through-the-scope bal-

loon is widely used as an important treatment approach for esophageal stricture owing to its lower complication rates than other methods.<sup>4</sup> Endoscopic balloon dilation can be operated under direct endoscopy, and the risk of perforation is lower than that with esophageal bougienation because the force is not applied to the longitudinal axis of the stricture zone and the radial pressure is applied completely.<sup>5</sup> Moreover, the possibility of pressure or damage to the pharynx and larynx is also relatively low.<sup>6</sup> However, in the case of malignant esophageal stricture, esophageal bougienation or balloon dilation can provide a short-term symptom improvement and is usually used as an auxiliary procedure prior to stenting or photodynamic therapy.<sup>5</sup>

In this issue of *Clinical Endoscopy*, Goyal et al. retrospectively analyzed the health-care utilization of endoscopic dilation for the treatment of esophageal strictures in the inpatient setting, and defined the rate of complications and outcomes of this procedure by using data from the National Inpatient Sample (NIS) database.<sup>7</sup> They analyzed 591,187 hospitalizations involving esophageal stricture that occurred between 2007 and 2013, and endoscopic dilation was performed in 29% of esophageal stricture cases. Compared with the benign stricture group, the malignant stricture group had more frequent utilization, longer hospital stays, higher in-hospital mortality rate, and higher incidence of esophageal perforation. Although they already mentioned some limitations in the Discussion section, they presented evidence-based conclusions by analyzing data from the NIS database.

In a previous large-scale study, the major complications re-

Received: June 20, 2017 Revised: July 18, 2017

Accepted: July 18, 2017

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lated to esophageal dilation were perforation (0.1%–0.4%) and bleeding (0.3%), similar to those in this study.<sup>8</sup> Other studies reported high incidence of esophageal-related complications as follows: First, in the case of stricture caused by malignant diseases such as esophageal cancer, the perforation rate related to dilation therapy was high. Second, in the benign diseases, the stricture caused by radiotherapy and surgery were related to the risk of perforation.<sup>8</sup>

Various methods have been reported to reduce the complications of esophageal perforation and to increase the success rate of esophageal dilation. Several studies have reported that esophageal dilation does not attempt to expand balloons more than 3 mm at a time, or if the resistance is felt in bougienation, the risk of perforation is reduced by not sequentially expanding more than three times.<sup>8,9</sup> Another study reported that local injection of steroid after balloon dilation would be effective because it suppresses local inflammatory reactions and inhibits collagen formation.<sup>10</sup> A method of incision of the stricture site by using an argon plasma coagulation method or an endoscopic incisional knife has been proposed for the purpose of sufficiently expanding the lumen of the esophagus by separating the fibrotic tissue and restraining the regeneration of fibrotic tissue.<sup>11</sup> Although methods for introducing self-expanding stents in refractory benign esophageal strictures have been reported, the stent has to be removed 4 to 12 weeks after stenting, and the success rate of esophageal stenting after stenting is approximately 24%.<sup>12,13</sup>

In conclusion, endoscopic esophageal dilation is a useful treatment for patients with esophageal stricture, although complications such as esophageal perforation are more common in patients with malignant strictures. Therefore, the timing of endoscopic esophageal dilation in patients with esophageal stricture should be determined. Moreover, considering the advantages and disadvantages of various endoscopic esophageal dilation procedures, the appropriate method of endoscopic esophageal dilation should be chosen in accordance with the cause and condition of the stricture.

## Conflicts of Interest

The author has no financial conflicts of interest.

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