中文題目：利用經口內視鏡括約肌切開術治療經導管微創主動脈瓣植入術後病人之食道弛緩不能症

英文題目：Use of Per-oral endoscopic myotomy to treat Achalasia patient with history of transcatheter aortic valve implantation.

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Introduction: Achalasia is a rare esophageal motility disease characterized by impaired relaxation of the lower esophageal sphincter and the absence of esophageal peristalsis. Patients may present with dysphagia, regurgitation, retrosternal pain, food stasis in the esophagus, and weight loss. With the advance in high-resolution esophageal manometry and timed barium esophagography, the diagnosis of achalasia becomes more accurate and easier. Novel endoscopic treatment with per oral endoscopic myotomy also provides an alternative treatment method in patients with comorbidity. Here, we describe an elderly female with a history of cerebral infarction, hyperthyroidism, and rheumatic heart disease with mitral valve replacement 20 years ago. After receiving transcatheter aortic valve implantation for the treatment of severe symptomatic aortic stenosis, she gradually developed dysphagia, nausea, esophageal food retention, and retrosternal pain in 5 years. Achalasia was diagnosed. For the treatment of achalasia, per oral endoscopic myotomy was performed with Enoxaparin as bridging anticoagulation. No complication was encountered during the procedure. After the endoscopic therapy, the patient's symptoms subsided without recurrence to date.

Case presentation:

This is a 62-year-old female with a history of left mid-brain infarction, hypertension, hyperthyroidism mitral valve regurgitation with mitral valve replacement 20 years ago. She received transcatheter aortic valve implantation (TAVI) for the treatment of severe symptomatic aortic stenosis six years ago, and she received long-term anticoagulant therapy with warfarin. Her cardiac function improved; however, dysphagia gradually developed since half a year after TAVI. She also had nausea, reflux sensation, and retrosternal pain due to food impaction in the esophagus. As her dysphagia and retrosternal pain progressed, with Eckardt's score achieving 9/12 points, she went to the outpatient clinic of Taipei Veterans General Hospital for help. Esophagogastroduodenoscopy showed a tortuous esophagus with food material retention in the esophagus, and a muscle spasm was noted at the esophagogastric junction. Barium esophagography revealed a beaklike narrowing of the distal esophagus adjacent to the gastroesophageal junction with tertiary waves. Timed esophageal esophagography showed 40 mm fluid accumulation 5 minutes after 120 ml barium ingestion. High-resolution esophagography showed an absence of esophageal peristalsis and increased lower esophageal sphincter pressure without relaxation during swallowing. Type I achalasia was diagnosed. After a two-year follow-up without intervention,

her retrosternal pain deteriorated. Timed barium esophagography disclosed 243 mm fluid accumulation 5 minutes after 120 ml barium ingestion, while results of other studies were still compatible with achalasia. Enoxaparin 5000 units twice per day was administered subcutaneously as bridging anticoagulation. Peroral endoscopic myotomy (POEM) was performed by a posterior approach. The double-scope method was used to confirm the distant extent of the submucosal tunnel. The length of myotomy of the circular muscle was 9 cm, and hemoclips were used to close the wound. Post-treatment barium study showed the uneventful passage of contrast into the stomach. No postoperative delayed bleeding or perforation was noted after POEM. The patient's symptoms were alleviated without recurrence to date.

Discussion: To the best of our knowledge, this is the first reported case of achalasia in patients with a history of aortic stenosis treated with transcatheter aortic valve implantation and the first case successfully treated with peroral endoscopic myotomy as well. Due to the rarity and slow progression of achalasia, it often takes 2-10 years until the diagnosis is confirmed. Patients often present with regurgitation and progressive dysphagia to solids and liquids first, followed by retrosternal pain, food retention, and significant weight loss. In the early stages of achalasia, the endoscopic finding is unremarkable, and many patients are diagnosed with the gastroesophageal disease instead.

High-resolution esophageal manometry provides more detailed esophageal peristalsis data and increases the diagnostic yield of achalasia. Timed barium esophagography helps evaluate the function of esophageal emptying. Due to the above methods, the diagnosis of achalasia is more easily and accurately nowadays. The definite pathogenesis of achalasia is still unclear, while loss of enteric neurons in esophageal wall has been assumed to result from an aberrant immune response in a genetically susceptible individual. Since the vagus nerve injury may happen during TAVI, secondary achalasia post-TAVI is suspected to be the cause of achalasia in this patient. In patients with major cardiac disease and anticoagulant use, the risk of surgery is high. Peroral endoscopic myotomy is a novel mini-invasive third space endoscopic treatment method. In a recent large international multicenter study, only 35 of 2895 patients were anticoagulant users. In patients taking anticoagulants, three had major bleeding, and none had thromboembolism. Peroral endoscopic myotomy is an effective and safe treatment method in achalasia.

Conclusion: In conclusion, esophagogastroduodenoscopy, high-resolution esophageal manometry, and timed barium esophagography are useful tools to establish the diagnosis of achalasia. Achalasia may occur after transcatheter aortic valve implantation, which is suspected to be related to the vagus nerve interference. Peroral endoscopic myotomy can be used safely in the treatment of achalasia in patients with major cardiovascular comorbidities and anticoagulant use.