Fluoroscopy to document the extent of cardiomyotomy during peroral endoscopic myotomy

Fig. 1 Endoscopic view showing the endoclip being deployed on the wall opposite to the submucosal tunnel immediately distal to the gastroesophageal junction.

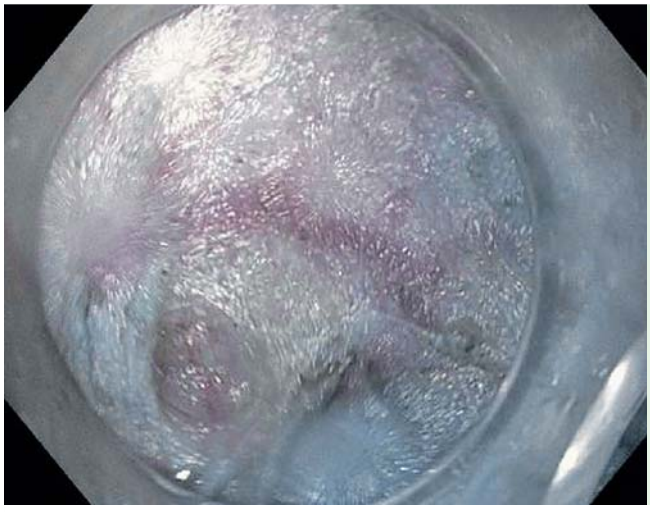

Fig. 2 Endoscopic view as the endoscope is inserted to the most distal aspect of the submucosal tunnel prior to performing the myotomy.

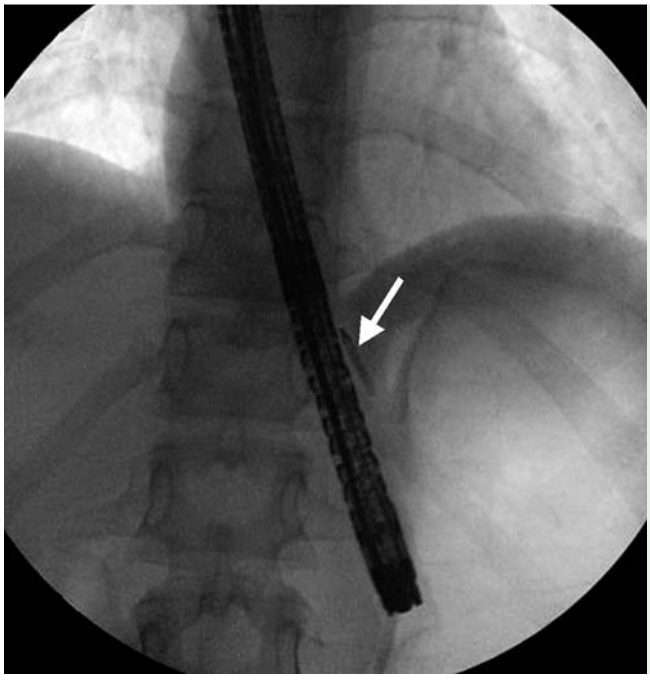

Fig. 3 Fluoroscopic image showing the endoscope positioned in the submucosal tunnel. The tip of the endoscope is 3 cm distal to the endoclip (arrow) and hence 4 cm below the lower esophageal sphincter. At this point, further tunneling is unnecessary and the myotomy can commence.

Peroral endoscopic myotomy (POEM) is being increasingly performed for the management of achalasia. One of the major technical challenges in performing POEM is assessing the extent of the submucosal tunnel, as this will determine the extent of the myotomy. The myotomy should extend 2 – 3 cm beyond the lower esophageal sphincter, as an adequate cardiomyotomy is critical to achieve the high response rates observed with POEM [1,2]. Methods used to assess whether the submucosal tunnel has extended sufficiently beyond the lower esophageal sphincter include: measurement of insertion depth, resistance to the passage of the gastroscope at the lower esophageal sphincter, change in vasculature of the gastric cardia, injection of epinephrine, and double-endoscope transillumination [3]. We herein present a novel technique to accurately determine the extent of the submucosal tunnel using fluoroscopy and an endoclip.

The submucosal tunnel is created as previously described [4]. The endoscope is removed from the submucosal tunnel and an endoclip is deployed immediately distal to the gastroesophageal junction on the wall opposite to the side where the submucosal tunnel has been created (**Fig. 1**). The endoscope is then reinserted to the most distal aspect of the submucosal tunnel (**Fig. 2**). A fluoroscopic image is obtained in the anterior–posterior axis using a C-arm (**Fig. 3**). The distance between the endoclip and the endoscope tip can be calculated using the length of the endoclip as a scale. The lower esophageal sphincter is 1 cm proximal to the gastroesophageal junction and this allows the length to be calculated of the extent of the submucosal tunnel below the lower esophageal sphincter. If the submucosal tunnel appears to extend less than 2 – 3 cm below the lower esophageal sphincter then further tunneling can be performed. At the end of the procedure, the endoclip is left in position until it migrates spontaneously.

We herein demonstrate a novel, yet simple and efficient, method of confirming the adequacy of the extent of the submucosal tunnel created during POEM.

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Mouen A. Khashab is a consultant for Boston Scientific and Olympus America and has received research support from Cook Medical.
The remaining authors have no conflicts of interest to declare.

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References

1 *Von Renteln D*, *Fuchs KH*, *Fockens P* et al. Peroral endoscopic myotomy for the treatment of achalasia: an international prospective multicenter study. Gastroenterology 2013; 145: 309 – 311
2 *Inoue H*, *Tianle KM*, *Ikeda H* et al. Peroral endoscopic myotomy for esophageal achalasia: technique, indication, and outcomes. Thorac Surg Clin 2011; 21: 519 – 525
3 *Baldaque-Silva F*, *Marques M*, *Vilas-Boas F* et al. New transillumination auxiliary technique for peroral endoscopic myotomy. Gastrointest Endosc 2014; 79: 544 – 545
4 *Khashab MA*, *Messallam AA*, *Saxena P* et al. Jet injection of dyed saline facilitates efficient peroral endoscopic myotomy. Endoscopy 2014; 46: 298 – 301

Bibliography

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