



Clinical Case Study



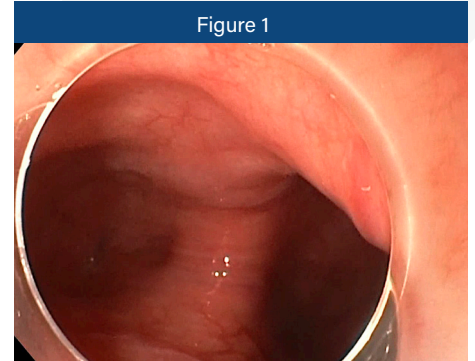
POEM with Septotomy in a Case with Large Epiphrenic Diverticulum Using Novel Bipolar Speedboat™ Device

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Patient History



A 62-year-old gentleman presented with dysphagia to solids, regurgitation and chest pain for five-years. Evaluation with endoscopy revealed a dilated oesophagus and resistance at the gastroesophageal junction. In addition, a large epiphrenic diverticulum was noticed at the lower end of the oesophagus (fig. 1). High resolution oesophageal manometry suggested type I achalasia cardia. Per-oral endoscopic myotomy (POEM) was planned in this case.



Procedure



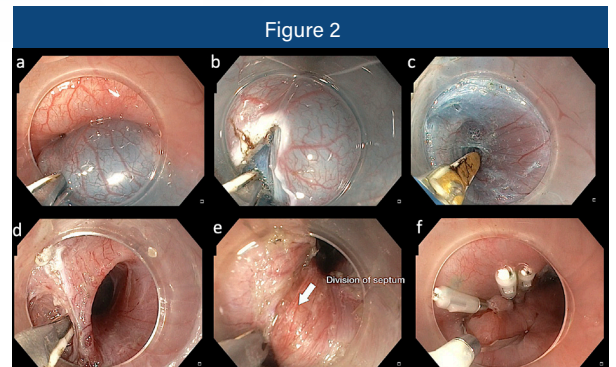
- POEM with division of the septum was performed via the posterior route (5 o'clock). In this case series, we used a novel bipolar device (Speedboat Inject). This device uses advanced bipolar radiofrequency (RF) energy for submucosal dissection (400KHz and 35W) and microwave energy for coagulation (frequency 5.8 GHz, power setting 10W).

The POEM technique using Speedboat:

- Submucosal injection using diluted indigo carmine dye was given to create an adequate mucosal bulge (fig. 1a-c). This was achieved using the device's integrated injection needle reducing the need for instrument exchanges.
- The device was rotated so that the lateral cutting edges were in perpendicular orientation to the oesophageal mucosa. Mucosal incision was performed by gently pressing the device over the bulge created in the previous step (fig. 1d). Due to the device delivering Advanced Bipolar technology, contact of both electrodes with

the mucosa was needed to obtain a precise and effective cut.

- Submucosal tunnelling was performed with the device in the neutral position (protective hull at the bottom, curved cutting edges on the lateral sides, and golden yellow insulated surface on the top) (fig. 1e). Safety was provided by the insulated protective hull and I was able to work closer to the muscle bed, allowing safety to the mucosa.
- Dissection of the submucosal fibres was performed in a left to right or vice versa direction (fig. 1f). RF energy with similar settings was used for mucosal incision, submucosal dissection, and myotomy. Advanced Bipolar technology during the incision, dissection, and myotomy provided focused safer energy delivery to the tissue to provide a cleaner and precise cut.



- Coagulation of intervening vessels was performed using microwave energy. Active bleeding was controlled with the device, without the need for instrument exchange.
- Myotomy was performed after rotating the knife in an orientation similar to the one used for mucosal incision (fig. 2d). After completion of myotomy along oesophageal and gastric side, division of the septum was performed (fig. 2e). Finally, the mucosal incision was closed using endoclips (fig. 2f). Wide open gastroesophageal junction could be appreciated after completion of the procedure. There were no intraprocedural adverse events.

Conclusion

- POEM can be safely and effectively performed using the Speedboat Inject.
- Utilising a multifunctional device for this procedure provides both a clinical advantage and a cost saving to the hospital.
- The clinical advantages include a cleaner, precise dissection reducing possible thermal injury compared to monopolar devices and a more controlled and consistent coagulation.
- The cost savings can include the reduced need for additional devices such as a needle, coagulator, or clips.
- Also, from a patient and procedure perspective - reducing the risk of thermal damage and mucosal injury could lead to shorter hospital stay. Additionally, a multifunctional device with a focused and precise energy delivery, a shorter procedure time can also be achieved.