

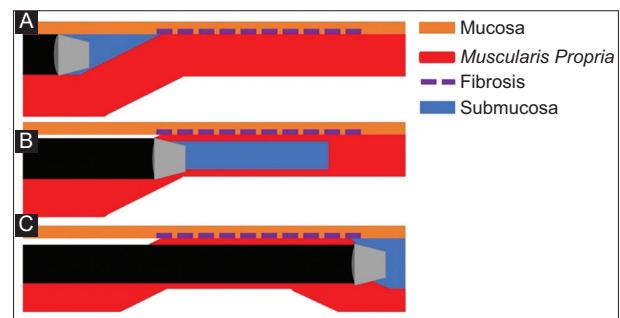
# In the thick of it: peroral endoscopic myotomy with intramuscular tunneling in end-stage achalasia

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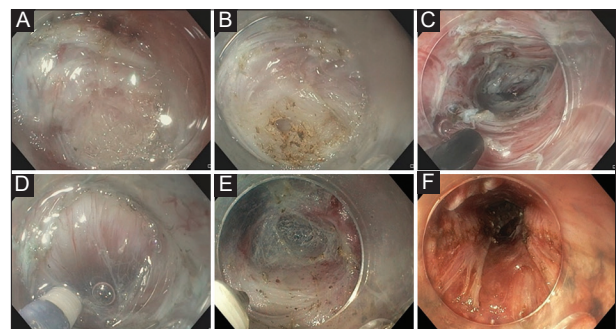
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An 80-year-old man with end-stage achalasia presented with aspiration pneumonia, weight loss, and debilitation. He was not deemed a surgical candidate for palliative esophagectomy. Previous treatment with dilation was unsuccessful. A posterior-like anterior peroral endoscopic myotomy (POEM) was performed [1,2]. Following mucosotomy and an initial 2-cm submucosal tunnel creation, excessive fibrosis within the submucosa was encountered. The fibrosis-laden submucosa elevated the risk of inadvertent mucosal injury and impeded subsequent dissection. We therefore decided to veer the axis of dissection below the dissection plane and created an intramuscular tunnel through the hyperplastic *muscularis propria* (Fig. 1,2). After 4 cm of intramuscular tunneling, the submucosal space became accessible again, and the axis of dissection was redirected between the mucosa and the *muscularis propria*. Full-thickness myotomy of the cardia was performed and the mucosotomy site was closed. The patient was discharged after 48 h. He had an uneventful recovery and remains asymptomatic at 6 months of follow up.

Mucosal injury is a recognized complication of POEM, occurring in up to 5% of cases [3]. Mucosal and submucosal fibrosis is a major risk factor for such a complication and typically occurs following prior therapies, such as botulinum toxin injection and dilation, or in the setting of long-standing achalasia with hyperkeratotic mucosa. In this report, we present a rescue approach when encountering severe mucosal/submucosal fibrosis. Instead of aggressive dissection through the plane of



**Figure 1** Schematic representation of intramuscular tunnelling. (A) Initiation of the submucosal tunnel. (B) Deviation of the axis of dissection through the *muscularis propria*. (C) At the end of the fibrotic segment, the submucosal space is reaccessed



**Figure 2** Endoscopic images of intramuscular tunnelling. (A) Excessive fibrosis. (B) Creation of a small hole through the *muscularis propria*. (C) Intramuscular tunnel. (D) Reaccessing the submucosal space. (E) Submucosal tunnel at the cardia. (F) Full-thickness myotomy

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fibrosis, which can result in mucosal injury, we proceeded with intramural dissection of the thickened *muscularis propria*.

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