

Response to the reviewers

Reviewer #1:

This manuscript presents an interesting and novel case study exploring the use of peroral endoscopic myotomy (POEM) in an unconventional setting—specifically, for the treatment of distal esophageal segmental spasm induced by muscular metastasis arising from lung adenocarcinoma. While POEM has become a standard treatment for achalasia, its application in this unique clinical scenario is both intriguing and informative, warranting further discussion and consideration. The problem of dysphagia caused by esophageal stenosis can be solved through POEM, thus improving the nutritional status of patients and preparing for the systemic treatment of patients with lung cancer. In addition, in the process of establishing the esophageal submucosal tunnel, the author also performed muscle biopsy on the right posterior wall of the narrow muscle layer, and finally confirmed the diagnosis of esophageal muscle metastasis of lung adenocarcinoma through pathology and immunohistochemical staining results. We know that non-locally invasive metastatic esophageal cancer is relatively rare, and lung cancer with esophageal muscle metastasis is even rarer. Hence, the report of this case is indeed valuable and contributes to the limited literature on this topic. To enhance the quality of the manuscript, there are several aspects that require further consideration and amelioration.

1. Was esophageal high-resolution manometry (HRM) performed before the procedure of Per Oral Endoscopic Myotomy (POEM)? If the results of HRM are available, they would significantly contribute to a better understanding of the classification of esophageal spasms and provide a more objective assessment of the severity of the disease.

Thanks for your review. HRM was performed before the treatment. The report has been added to History of present illness.

2. How does it differ surgically compared to traditional POEM, particularly when it comes to the establishment of submucosal tunnels and the process of myotomy? Are there any difficulties or complications that are unique to this process? Furthermore, are there any potential risks or issues that may arise during and after the performance of POEM? These are the key points of this case,

and we hope the author can make a more detailed description and discussion on these aspects.

Thanks for your review. The operational details have been added to TREATMENT and DISCUSSION.

3. In the discussion section, the authors compared esophageal stenting and POEM, and analyzed the reasons why the former was not chosen in this case. Whether the selection of POEM increases the risk of further spread of the tumor through the tunnel and incision? It is suggested to further analyze the limitations and potential risks of this POEM application in the discussion section.

Thanks for your review. The operational details have been added to TREATMENT and DISCUSSION.

4. The indirect metastasis of lung cancer to the esophageal myometria is indeed a rare occurrence. The authors have reported the pathological and immunohistochemical results in the "Treatment" section. However, it would be interesting to know if further genetic testing of the tumor was performed to guide the choice of treatment and to better understand the uniqueness of this case compared to other instances of lung cancer. If done, please give a clear description even if it is negative.

Thanks for your review. PIK3CA mutations were detected via next-generation sequencing (NGS), which has been added to *History of present illness*.

5. Did the patient undergo gastroscopy follow-up after POEM? How was the local mucosal healing? It is important to know if the tumor, which was located in the muscular layer, invaded the mucosal layer or not. This information would provide valuable insights into the long-term outcomes and recurrence patterns in such cases.

Thanks for your review. The patient did not receive gastroscopy but esophagography during the follow-up. Repeated esophagography indicated that the segmental stenosis had vanished and that barium flowed smoothly into the stomach on postoperative Days 18 and 54 (Figure 2I), 203 and 745, respectively. Additionally, the esophageal mucosal folds were not interrupted or destroyed even on POD 745 (Figure 3).

As reported, needle tract seeding following endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) is a rare but serious complication that may lead to poor prognosis[15]. To reduce the risk of tumor dissemination, EUS-FNA should be performed only when the results obtained via this procedure are useful for therapeutic decision-making. From a technical perspective, the procedure of our individualized POEM is more like an endoscopic unroofing technique for gastric gastrointestinal subepithelial tumors[16] rather than EUS-FNA. Although tumor translocation caused by endoscopic unroofing gastric muscle biopsy has not yet been reported, the risk of tumor dissemination to the mucosal incision must be estimated. Fortunately, for this case, all post-POEM esophagography examinations revealed continuous mucosal folds.

6. Please recheck if the format of the references is correct and consistent throughout.

All references have been edited by the Auto-Analyser.

Editorial Office's comments.

Summary of the Peer-Review Report:

Please indicate whether high resolution manometry (HRM) of the oesophagus was performed prior to the oral endoscopic myotomy (POEM) procedure.

Thanks for your review. HRM was performed before the treatment. The report has been added to History of present illness.

It is recommended that the limitations and potential risks of this POEM application be further analysed in the discussion section.

The limitations and potential risks of this POEM have been analyzed in DISCUSSION.

Clearly describe whether further genetic testing of the tumour was performed to guide the choice of treatment and to better understand the uniqueness of this case compared to other lung cancer cases.

Thanks for your review. PIK3CA mutations were detected via next-generation sequencing (NGS), which has been added to *History of present illness*.

Whether the patient was followed up with gastroscopy after POEM.

Thanks for your review. The patient did not receive gastroscopy but esophagography during the follow-up. Repeated esophagography indicated that the segmental stenosis had vanished and that barium flowed smoothly into the stomach on postoperative Days 18 and 54, 203 and 745, respectively. Additionally, the esophageal mucosal folds were not interrupted or destroyed even on POD 745.