

## Peer Review File

Article information: <http://dx.doi.org/10.21037/ccts-20-136>.

Comment 1: The image before re-operation was lacking. In this case, it is more important. Authors should show radiological images and operative findings.

Reply 1: Dear reviewer, thank you for this comment. We do agree that the image before re-operation is crucial to further clarify our management. We added the pre-operative radiological image (CT of the chest and abdomen – Figure 5) showing no recurrence of gastric herniation, though a partial splenic herniation. This finding demonstrates that the new onset of clinical symptoms was not related to gastric herniation recurrence, and that the diaphragmatic defect was not fully covered by the gastropexy. Therefore, most likely the complaints experienced by our patient were due to the configuration of the gastropexy itself or due to partial splenic herniation. The only option to solve both scenarios was to take down the gastropexy and the omentum. We do not have any intra-operative images of the re-exploration (due to technical issues). We do regret this and would like to apologize for this inconvenience. We added extra information in the case report to further point out our operative findings.

Changes in the text:

- Section 3.5, lines 120-122.
- Section 3.5, lines 124-126.
- Section 4.4, lines 199-201.
- Section 9, lines 330-334 (figure 5).

Comment 2: The weakness of the first operation was obscure. Authors should discuss about it politely.

Reply 2: Dear reviewer, we do agree that we can more precisely describe why we opted for the re-exploration and taking down of the gastropexy. As suggested during this review, adding the CT scan executed before re-exploration (Figure 5), is therefore essential. This CT shows that no recurrence of gastric herniation occurred. In this regard, the gastropexy was effective. Nevertheless, we did observe a partial splenic herniation which demonstrates that the gastropexy did not fully cover the diaphragmatic defect. In this regard, the gastropexy failed. Moreover, our patient experienced a new onset of symptoms after creation of the gastropexy, suggesting that these complaints might be related to the configuration of the gastropexy itself for example by traction on the omentum that is fixed on the greater curvature or by the diaphragmatic sutures put in place for the creation of the gastropexy. Another possible scenario is development of pain due to partial splenic herniation. In conclusion, the gastropexy did not fulfil the foreseen advantages and probably led to a new onset of invalidating pain. In either way taking down the gastropexy - and the omentoplasty as well - was the sole solution.

Changes in the text: Section 4.4, lines 201-209.

Comment 3: Figure 6 doesn't look good. They should modify it more luminously.

Reply 3: Dear reviewer, we do agree with this comment and adjusted the figure accordingly. Changes in the text: Section 9, lines 340-341.

Comment 4: The suggestion for the author is to add a figure of treatment algorithm (the flow chart approach) for IDH.

Reply 4: Dear reviewer, thank you for this suggestion. We indeed understand the need for a treatment algorithm for IDH. Because of the very rare occurrence of such cases, we believe there is not enough evidence to create a flowchart on the treatment of IDH. By proposing a treatment algorithm, we might evoke a controversy. With this case we tried to illustrate that there are many factors you should take into consideration when dealing with a complicated

IDH.

Changes in the text: Not applicable.

Comment: A question from Reviewer B. The present case suffered from IDH after performing a pedicled thoracic omentoplasty for recurrent empyema. The treatment dilemma lies in the balance between the prevention of recurrent empyema and/or mesh infection and repair of diaphragmatic defect. Would you please clarify the impact of the patient's primary disease on the treatment strategies?

Reply:

First of all, I would like to thank the reviewer for this comment/suggestion as we indeed want to highlight the presence of patient's immunosuppressive status and its consequences for the treatment algorithm in this specific case of IDH. We certainly took it into account and tried to further clarify our considerations by adding some extra explanations in the manuscript (marked in red in this response letter).

In the case presentation we try to describe that our patient deals with therapy-resistant rheumatoid arthritis leading to treatment with certolizumab, an immunosuppressive agent, maintaining recurrent pleural effusions, pneumonias, and eventually a pleurocutaneous fistula. Therefore, initially a thoracic omentoplasty was opted for.

Lines 75-82: His past medical history included rheumatoid arthritis, initially treated with methotrexate, nonsteroidal anti-inflammatory drugs and glucocorticoids. As his condition became refractory to the treatment regimen, a therapy-switch was made to certolizumab, a monoclonal antibody specific to tumor necrosis factor alpha. In the following years, the patient presented with recurrent left pleural effusions, pneumonias and empyemas, which were treated by sequential explorative thoracotomies and pleurodeses. Eventually a chronic pleurocutaneous fistula developed. After a year of conservative treatment, a thoracic omentoplasty was created by transferring the omentum, pedicled on the left gastro-epiploic artery, into the thoracic cavity through a 2 by 2 cm hole in the lateral diaphragm using a hybrid approach i.e. left thoracotomy and laparoscopic approach to successfully repair the fistula.

In this case an IDH occurred, leading to a clinical urgent presentation. In this setting, we took into consideration that his previous infections probably made the thoracic region hostile for an intervention, and opted therefore for a laparoscopic approach. As we dealt with an immunosuppressive setting we were also convinced that less morbidity would be involved if a minimal invasive approach i.e. less surgical trauma was executed.

Lines 163-167: As our patient's condition was stable and extensive thoracic adhesions due to previous infections and interventions were awaited, a laparoscopic approach was opted for. Furthermore, laparoscopy offers, particularly in this case, a good view on the omental flap pedicle, and is associated with less surgical trauma, which likely leads to less morbidity in our patient under immunosuppressive therapy.

As we dealt in our patient with the need for continuing immunosuppressive therapy we initially opted to preserve the omentoplasty to prevent recurrent fistulas, but also again to minimize surgical trauma, and to avoid the necessity of a mesh repair.

Lines 168-170: As the rheumatologic condition of our patient necessitates lifelong immunosuppressive therapy, preservation of the omentoplasty in order to prevent relapse of the pleurocutaneous fistula was considered crucial. A conforming repair therefore becomes more complex.

Lines 179-183: Furthermore, the prolonged immunosuppressive therapy and potentially

contaminated environment with strangulated abdominal contents, could lead to a considerable greater risk of mesh infection (4). Therefore, and especially in the light of preserving the omentoplasty, we created a pexy with the use of body's own tissue to cover the major defect.

Nevertheless, later on our patient presented with disabling pain, in our opinion most likely due to the gastropexy (see text lines 192-195). We technically considered no adequate mesh repair could take place with the omentoplasty in situ. Therefore, we reconsidered the need to keep the omentoplasty. As previously stated, we wanted to minimize the surgical trauma but on the other hand we dealt with a clinical stable situation during 1 year and it was stated that the vasculature of the omental flap pedicle probably becomes independent. Therefore, we considered it safe to take down the omentoplasty.

Lines 194-197: These persisting complaints are likely ischemic in origin due to traction of the omentum on the fixed greater curvature, or due to traction on the vasculature of the spleen caused by its partial herniation, or related to the diaphragmatic sutures put in place during the creation of the gastropexy. In either scenario, the sole solution is taking down the gastropexy.

Lines 198-205: As we did not believe in the harmony because of the medially oriented pedicle, preserving the omentoplasty and adequate mesh repair, the omentoplasty was taken down too. We considered it to be safe in our patient with at that time a 1-year clinical stable condition. We certainly would have been less reluctant to do so if no immunosuppressant therapy was associated. On the other hand, some have stated that the vasculature of the omental flap pedicle becomes independent making it possible to leave the omentoplasty in place after transecting the pedicle and repair the diaphragmatic defect with a prosthesis at the same time (19). This is a promising finding; however more evidence is needed.

Mesh repair was in our opinion inevitable after removal of the omentoplasty. We did consider the use of biological meshes in this specific patient setting but did not opt for it due to the limited data available and accompanied higher cost.

Lines 2011-216: Biological meshes may be more beneficial when potentially infected areas need to be repaired, as they do not have to be removed when abscess formation occurs (12). Also less problems related to scarring are believed to be seen with the use of biological meshes but experience is limited and the small available data on long-term durability is not that promising, therefore we did not opt for this mesh type in our patient who already underwent several procedures and in whom we wanted to avoid future procedures (12).

In addition, we must say that after applying these adjustments we exceeded the maximum number of words of 2500 (in accordance to the guidelines for authors). We do apologize for this inconvenience and hope this is not a problem. Thank you for your time and consideration of our manuscript. We look forward to your response and are eager to answer further questions.