

Laparoscopic Transhiatal Transabdominal Resection of Epiphrenic Diverticulum – A Case Report and Review of the Literature

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Abstract Epiphrenic diverticula are outpouchings of the distal third of the oesophagus and represent an uncommon benign oesophageal disease, the rarest of all oesophageal diverticula. Because of its rarity, the surgical treatment options and the directions towards management of complications, if sustained, only come from sporadic case reports in the literature. We report a case of a 52 year old patient with epiphrenic diverticulum treated with laparoscopic transhiatal transabdominal diverticulectomy complicated with a post-operative leak from the staple line which was managed conservatively. The challenges of surgical treatment and the recommendations towards management of complications are emphasised in this case report.

Keywords: epiphrenic diverticulum, surgery, laparoscopic, leak, complication, oesophageal stent

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1. Introduction

Epiphrenic diverticula are outpouchings of the distal third of the oesophagus and represent an uncommon benign oesophageal disease. They become symptomatic in only 15-20% of patients and most of the cases are diagnosed incidentally during routine upper GI work up with endoscopy and radiology performed during investigation of other symptomatic upper GI common disorders such as gastroesophageal reflux disease or hiatal hernias.

As they represent the rarest entity of all oesophageal diverticula, there is no definite consensus regarding surgical management amongst surgeons worldwide. Most commonly, surgical treatment is recommended only for symptomatic epiphrenic diverticula. Furthermore, the approach towards management of complications following surgery is highly debatable and is derived from sporadic data, case reports in the literature and individual surgeon experience. With advancements in minimally invasive procedures in recent years, the laparoscopic transhiatal transabdominal surgical approach seems to be favoured over the more ‘traditional’ approach of thoracotomy.

We report a case of a 52 year old male Caucasian patient with epiphrenic diverticulum treated with laparoscopic transhiatal transabdominal diverticulectomy (first case performed in Cyprus).

The patient had an uneventful intra-operative procedure but sustained a staple line leak on the 15th post-operative day which was managed conservatively. We report our

experience on the laparoscopic transhiatal transabdominal surgical approach to diverticulectomy and recommendations on the therapeutic choice for leak management, including stent placement.

2. Materials and Methods

A 52 year old male Caucasian was admitted to the surgical department of Larnaca General Hospital with the diagnosis of a symptomatic epiphrenic diverticulum. The patient had undergone barium meal and upper GI endoscopy identifying the defect in the lower third of the oesophagus (Figure 1, Figure 2, Figure 3) prior to admission. The symptoms sustained by the patient were mainly post prandial right hypochondrium pain, dysphagia and on occasions nausea and vomiting.



Figure 1.



Figure 2.

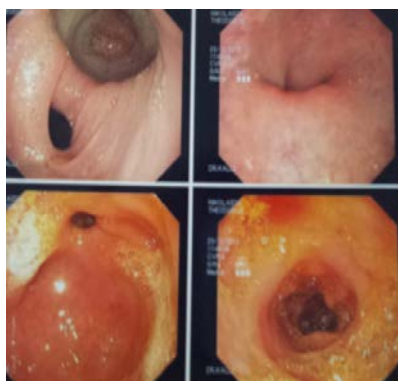


Figure 3.

After a thorough discussion with the patient about the indications of surgery, various surgical treatment options and all the possible intra- and post-operative complications, the patient consented to surgery. The operative approach was laparoscopic transabdominal transhiatal resection of the diverticulum performed using an Endo GIA™ 45mm-3.5mm (Figure 4). The integrity of the staple line was checked intra-operatively using methylene blue dye with no apparent evidence of leakage. Two drainage tubes were left in place, one next to the stapled line and the second into the posterior mediastinum.

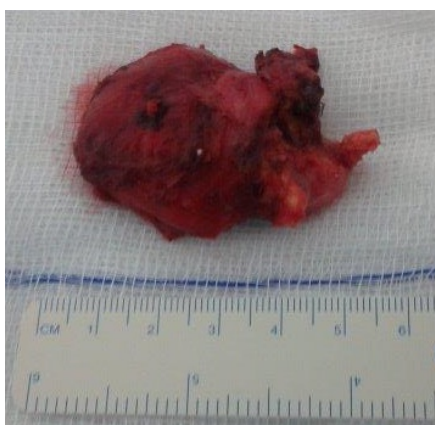


Figure 4.

Post-operatively the patient was transferred to the surgical ward having a nasogastric tube (NG) in situ and kept on a nil by mouth protocol.

On the 3rd post-operative day we performed a gastrografin follow-through fluoroscopy (Figure 5) which showed no signs of leakage from the staple line. Consequently, the NG tube and the abdominal drainage

tubes were removed and the patient was commenced on clear fluid diet.



Figure 5.

Prior to discharge on the 6th post-operative day, the patient underwent a second gastrografin follow-through fluoroscopy which revealed a small leak at the inferior border of the staple line, approximately 3-4cm from the gastroesophageal junction (GEJ) (Figure 6).



Figure 6.

Subsequently, taking into consideration both the aforementioned finding and the deteriorating clinical condition of the patient, he was taken to theatre for a second look exploratory laparoscopy. At laparoscopy there was no evidence of any free fluid in the abdominal cavity as in generalised peritonitis. However, after a meticulous and careful exploration of the GEJ and the staple line, we confirmed a small leakage as the fluoroscopy suggested accompanied by localised peritonitis. Therefore, we performed a thorough washout of the abdominal cavity with warm normal saline and inserted two drains, one transhiatally into the posterior mediastinum and one at the GEJ next to the staple line. A NG tube was left in place and the patient was then transferred to the ICU for closer monitoring.

In the ICU a central venous catheter was inserted and the patient was initiated on Total Parenteral Nutrition (TPN) and broad spectrum antibiotics. In the immediate post-operative period the patient showed signs of clinical improvement, he was afebrile and did not complain of any abdominal pain. As confirmed by repeated gastrografin

fluoroscopies the leakage was fully controlled and the site of the defect was adequately drained by the two abdominal drains (Figure 7), as one of our major concerns was to prevent an ongoing catastrophic mediastinitis. Initially, the fistula created was of low output, draining approximately 70-200ml daily and this amount showed was gradually reduced in the following weeks to 20-40ml daily. Early in the post-operative period the patient was commenced on enteral nutrition through the NG tube in addition to the TPN which was finally abandoned as the former was well tolerated by the patient.

insertion of an esophageal stent as an attempt to resolve the problem which showed no tremendous signs of improvement. The insertion of a 12.5cm stent was performed by the gastroenterologist under combined endoscopic and radiologic guidance with success (Figure 8 & Figure 9). Unfortunately, the stent was displaced upwards and required removal the following day (Figure 10).



Figure 7.



Figure 8.



Figure 9.

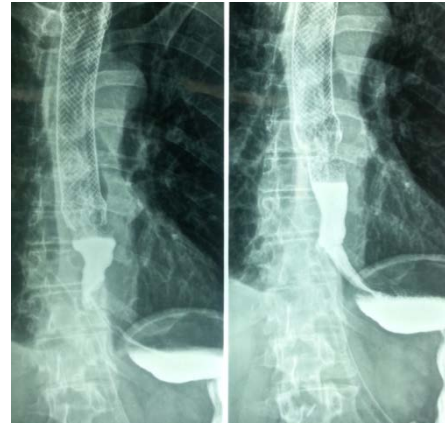


Figure 10.



Figure 11.

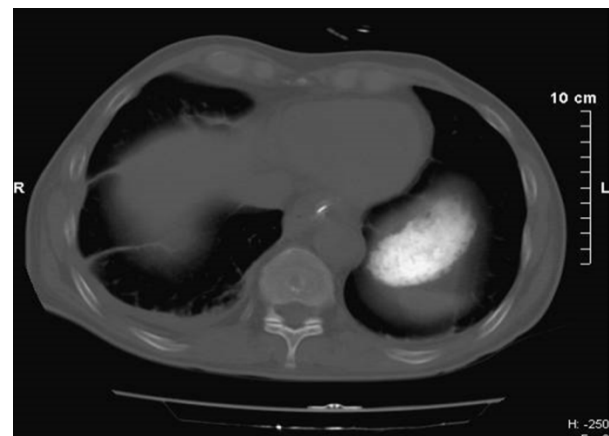


Figure 12.

On the 49th post-operative day it was decided by our surgical team and in agreement with the patient, for

Conservative management continued for another three weeks with NG tube enteral feeding. Eventually, the drain next to the staple line was removed and only the mediastinal one was left in place, the output of which gradually decreased and finally the leak seized on the 75th post-operative day. As a result the NG tube was removed

and the patient was put initially on a clear fluid diet and then proceeded on a soft diet with no complications. The final checks with gastrografin fluoroscopy (Figure 11) and CT (Figure 12) showed complete resolution of the leak and the patient was discharged home on the 79th post-operative day.

3. Discussion

Epiphrenic esophageal diverticula represent a rare entity. Most surgeons agree on operating only symptomatic diverticula [1]. There are, however, controversies over the surgical approach. While thoracotomy had been the traditional surgical approach, many authors now agree on the laparoscopic transabdominal transhiatal diverticulectomy with or without myotomy and antireflux fundoplication [2].

Surgery appears to be an effective treatment for epiphrenic diverticula but is associated with significant morbidity and mortality [2,3,4]. Therefore, the decision to operate or not remains solely on the extent of the symptoms experienced by the patient, the patient's own preference and the surgeon's expertise.

The leak rate reported in the literature reaches up to even 33% [5] with an average of 18-20% even after performing fundoplication [3,5,6]. Regarding the management of the leak there is no agreement amongst the authors/surgeons. Some surgeons perform re-intervention [6], while others [3,4] prefer a conservative management, the method we are suggesting as well. There is no experience reported regarding the placement of an esophageal stent for resolution of the leak. Our experience has shown that placement of the stent should be reserved as a secondary method and only when the conservative management does not result in improvement of the leak or when mediastinitis worsens the clinical picture.

Great patience should be shown by the surgeon regarding the conservative management of the leak, where perseverance to the plan of nil by mouth and NG tube feeding should be continued for as long as it takes until the staple line seals.

4. Conclusions

The surgical management of epiphrenic esophageal diverticula represent a challenge even for experienced surgeons. Even more, there are only very few and sporadic recommendations on how to manage complications like leakage from the staple line. Taking into consideration our own experience and management of a leak, we suggest the laparoscopic transabdominal transhiatal diverticulectomy using Endo GIA™ 45mm-3.5mm as the surgical approach of choice and the conservative management regarding any incidence of leak.

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Statement of Competing Interests

The authors have no competing interests.

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