Omentopexy reduces the incidence of symptomatic post-esophagectomy diaphragmatic herniation following laparoscopically assisted esophagectomy: 15 years of experience from a UK specialist center

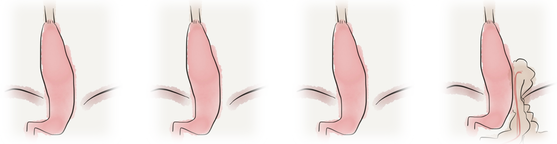
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Background

Post-Esophagectomy Diaphragmatic Herniation (PEDH), also termed Para-Conduit Herniation, occurs in up to 26% of patients who undergo laparoscopic gastric mobilisation. In our previously published experience, 13.2% of patients experienced symptomatic hernias. Prophylactic techniques including cruro-plasty, conduit-gastropexy and colopexy have been employed in an attempt to minimise PEDH but little is known about their efficacy.



Methods

PROSPECTIVE PATIENT IDENTIFICATION

Consecutive patients undergoing oesophagectomy in our unit were prospectively included in a database. Those undergoing laparoscopic gastric mobilisation and lymphadenectomy between 2005 and 2020 were included in the study.

CLINICAL FOLLOW-UP

Patients were followed up for a minimum of 2 years. They were offered routine surgical appointments at 3 monthly intervals for the first year, 6 monthly intervals for two further years and annually thereafter. They were additionally reviewed when they presented with symptoms of potential complications.

DATA COLLECTION

Both electronic and paper records were reviewed to collect baseline demographics, surgical technique and complication data. All patient's records were reviewed to validate data and to confirm latest follow up, survival and PEDH-free survival. Where patients were referred from another unit, records (including imaging) were reviewed locally. Although omentopexy was introduced by unit protocol in 2014, all operation records were reviewed to confirm documented inclusion of the technique.

Follow-up was completed at the earliest of patient mortality, or December 2021.

ANALYSIS

Data were collected in Microsoft Excel® and analysed in Stata®

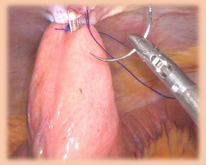
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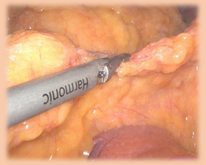


Following publication of our data, a novel laparoscopic technique for omentopexy was adopted, involving suturing the omentum to the left-lateral abdominal wall around a feeding jejunostomy

This study compares the incidence of symptomatic PEDH before and after introduction of omentopexy in our specialist esophagogastric centre

Laparoscopic Omentopexy







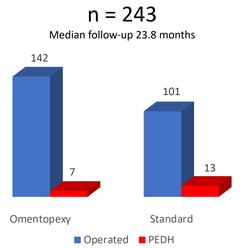
After a feeding jejunostomy is formed, the omentum is divided and each leaf is pulled inferior to the jejunostomy. The omental leaves are then sutured together to the anterior abdominal wall.

Where there is no indication for a jejunostomy, or splitting is either not optimal or feasible, the omentum is sutured to the left anterior abdominal wall in an equivalent position.

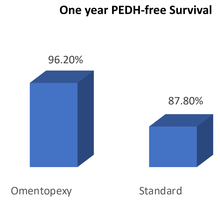
In either case, the site of fixation is chosen to minimise redundant omentum between the colon and anterior abdominal wall.



Results

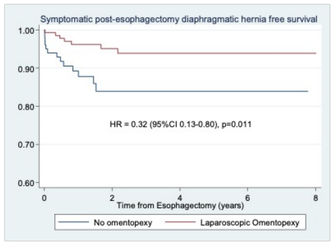


Within the omentopexy group, 4.9% of patients developed a symptomatic PEDH necessitating repair compared to 12.9% in the standard, non-omentopexy group. Hazard Ratio = 0.35 (95% CI 0.12-0.8, p=0.011)



At one year, 96.2% (91.1-98.4%) of patients who had an omentopexy did not have a symptomatic hernia, compared to only 87.8% (78.9-93.1%) of patients undergoing the standard procedure.

Notably, only one PEDH from the omentopexy cohort occurred within 30 days of esophagectomy, compared to six from the standard cohort (p=0.329).



No demographic or treatment factors were identified which contributed to PEDH, and no complication were identified which could be attributed to omentopexy

Discussion

PEDH is a significant complication of laparoscopic gastric mobilisation in esophagectomy and can lead to major morbidity including return to theatre.

We found about a 1/8 (12.9%) chance of developing a PEDH following laparoscopic abdominal phase of esophagectomy which required return to theatre and which was roughly equivalent to our previously published rate (13.2%). With Laparoscopic Omentopexy, we observed that the rate of PEDH significantly dropped to approximately 1/20 (4.9%).

Although the 30-day data did not meet the threshold for significance, the survival curve strongly suggested that the benefit of omentopexy is most marked in the early post-operative phase when, arguably, avoidance of additional morbidity is most critical.

We also observed that the addition of omentopexy to the operation did not increase the rate of complications, implying that the procedure is safe in its own right.

These findings are limited by the observational design of the study, however are nonetheless encouraging and we would advocate Laparoscopic Omentopexy being routinely considered in both laparoscopic-assisted and totally minimally-invasive esophagectomy. The benefit is likely to be similar in robotic esophagectomy.

Further work should include similar observational studies of other techniques designed to prevent PEDH, such as colopexy and subsequent multi-centre randomised controlled trials to fully assess the risks and benefits of routine application of these techniques.

Conclusions

- Omentopexy reduces the rate of symptomatic PEDH
- Omentopexy appears to be most effective in the early post-operative stages
- Omentopexy is safe and should be considered routinely in esophagectomy

There were no conflicts of interest.
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