

ANZASM Case of the Month July 2024 Edition

(case selected by the ANZASM Committee for your information)

Postoperative mortality after oesophagectomy

General Surgery

Case summary

A 79-year-old man presented electively for a thoracoscopic 3-stage oesophagectomy following neoadjuvant chemoradiotherapy for a locally advanced oesophageal adenocarcinoma. An end-to-end oesophagogastric anastomosis was performed at the level of the neck. The operation note suggests there were no particular issues with the technical aspects of surgery. The patient was extubated at the end of the procedure and moved to the intensive care unit (ICU) as per standard practice.

On postoperative day 1, the patient was on inotropes consistent with a thoracic epidural. Some bubbling was noted in the chest drain. Overnight on day 2/3 the patient became confused and pulled out his epidural and one of his chest drains; this had no obvious clinical consequence. Anastomotic leak testing with oral green cordial was performed on day 3 and day 4, with no colour seen to transit to any drains. The patient continued to slowly recover. Although he was frailer than usual, all trends were in the right direction. By day 7, his postoperative C-reactive protein had decreased to less than 50% of the day-2 level, with an associated normal white cell count. He was believed to be fit for discharge on day 8 and was sent home on a soft diet.

The patient re-presented to the same hospital emergency department (ED) 2 days after discharge (day 10 post-initial surgery date) with sudden onset chest pain after eating meatballs. He was seen promptly in the ED and appropriately referred to the on-call general surgery team. A computed tomography (CT) scan with oral contrast was performed, which did not reveal an anastomotic leak.

The following morning, due to ongoing concerns about a leak (sepsis, very high inflammatory markers), the patient was taken to theatre for endoscopy. This confirmed an anastomotic leak and necrosis of the proximal 5 cm of the gastric conduit. Discussion with the patient's family occurred, and an attempt to salvage the situation was made via bringing out an oesophagostomy, disconnecting the anastomosis and resecting the non-viable conduit.

The patient was transferred to ICU postoperatively and extubated the following day. The ICU notes suggest the patient was in poor condition. It was noted he would not be reintubated or receive cardiopulmonary resuscitation (CPR) in the event of arrest. On postoperative day 4, the patient complained of chest pain. (In retrospect, he likely had a myocardial infarct, which precipitated congestive cardiac failure.) From that point onwards, the patient failed to thrive, despite significant efforts from the surgical team, the medical teams (including cardiology and respiratory), and allied

health. Fluid balance and oxygenation became increasingly difficult to manage. The patient ultimately succumbed to a combination of fluid balance issues, pleural collections and pneumonia.

Discussion

This case involves a postoperative mortality after oesophagectomy (as defined by in-hospital death or death within 30 days of oesophagectomy). The patient had an initial 8-day stay post-surgery, with readmission on day 10 post-oesophagectomy. He did not survive an anastomotic leak. The first-line assessor requested a review of the first admission to determine whether there were any clues that the patient was heading towards the leak that precipitated the second and final admission. Thus, both hospital stays and the postoperative course have been considered in total.

Reviewing both admissions suggests a surgical team with a high level of motivation and focus on oesophagectomy patient care. The case note record is considered excellent in terms of the quality and frequency of documentation. There are no apparent issues regarding technical approach, postoperative supervision/decision-making during the first admission, or issues with the substantial efforts made to salvage the situation at the second admission.

The concern for the second-line reviewer is patient risk assessment, as poor patient fitness is ultimately the most likely cause of demise for this patient. The patient signed an operative consent form quoting a postoperative mortality risk of 1–2%. This was a patient with a history of previous myocardial infarction, atrial fibrillation and an ejection fraction of 43%. He had evidence of intrinsic lung disease (probably due to a smoking history many years previously), with a diffusing capacity for carbon monoxide (DLCO) of 63%. He had a body mass index of only 20.

The patient had a history of very poor tolerance of chemotherapy for a previous malignancy. While he managed 460 metres at his 6-minute walk test at the time of oesophageal adenocarcinoma diagnosis, this had fallen to 280 metres post-neoadjuvant chemoradiotherapy. Surgery was performed 6 weeks post-completion of the neoadjuvant therapy. There was an opportunity to delay surgery to give the patient a chance to rehabilitate back to his pre-treatment level of function, but this was not taken. Consultant anaesthetic review at the time of diagnosis to assess risk was prescient: 'High risk of delayed post-surgical recovery...little to optimise...need to ensure patient's desired outcomes are realistic and match what can be surgically achieved.'

The postoperative mortality rate for oesophagectomy in Australia has been reported to be 3.5%.¹ Much of this mortality sits in the patient group older than age 75. Using a risk prediction model for mortality after oesophagectomy suggests a 90-day mortality of >10% for this patient.² A 6-minute walk test of <450 metres is strongly associated with postoperative morbidity. Thus, while the quoted mortality risk on the surgical consent form is not at great variance with the outcomes for a complete cohort of oesophagectomy patients, it was not tailored to this individual. With the patient having a ypT3N1 resection specimen after trimodality therapy, 5-year survival is in the order of 20%, suggesting the patient had little to gain from surgery. This is not to say that a patient would not still choose surgery if given accurate information about the surgical risk. But this patient did not receive realistic advice about his true mortality risk.

Clinical lessons

Surgical assessment of risk must be realistic and reflect the individual patient rather than a generic cohort undergoing the procedure, with specific consideration given to potential patient frailty³.

Patients confronted with a significant cancer diagnosis are often desperate for a chance of surgical cure. They need very honest conversations about the risks and impacts of an operation as major as an oesophagectomy.

Oesophagectomy patients should be fit enough not just to survive the initial operation but fit enough to survive any complications that may follow.

References

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2. D'Journo XB, Boulate D, Fourdrain A, Loundou A, van Berge Henegouwen MI, Gisbertz SS, *et al.* Risk Prediction Model of 90-Day Mortality After Esophagectomy for Cancer. *JAMA Surg.* 2021;156(9):836-45.
3. Shinall MC, Jr., Arya S, Youk A, Varley P, Shah R, Massarweh NN, *et al.* Association of Preoperative Patient Frailty and Operative Stress With Postoperative Mortality. *JAMA Surg.* 2020;155(1):e194620.