Clinical

Case Report - Spontaneous oesophageal rupture following laparoscopic sigmoid colectomy with covering ileostomy,

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Introduction
Oesophageal perforation was first described by Dr Hermann Boerhaave in 1724, when the Grand Admiral of the Dutch Fleet Baron Jan Gerrit van Wassenaer heer van Rosenberg, followed his large meal with a customary bout of emetic-induced vomiting. In this case the Admiral was dead within 24 hours. Currently, spontaneous oesophageal perforation is a rare but potentially life-threatening condition. With mortality ranging from 10%-50% depending on time to diagnosis. A wealth of literature exists on the normal presentation of spontaneous oesophageal rupture and how to diagnose the condition. We present a case report on the presentation of oesophageal rupture in a patient following laparoscopic sigmoid colectomy with covering ileostomy who was managed on the “Enhanced Recovery Programme” and subsequent difficulties in obtaining the correct diagnosis.

Case report
A 83 year-old gentleman was admitted for elective laparoscopic sigmoid colectomy for removal of a sigmoid tumour. Past medical history included diverticular disease, chronic kidney disease, and squamous cell carcinoma of the lung for which he had a partial lobectomy in 2006.

The patient was successfully intubated with an endotracheal tube without evidence of difficulty or trauma prior to surgery. No nasogastric tube was inserted prior to, or during surgery. He underwent his laparoscopic procedure with no intra-operative complications, and had an uneventful recovery from anaesthesia. There was no reported vomiting or blood loss post-operatively.

Two days post-operatively, the patient began to deteriorate. His rate of respiration increased from 11 to 27 rpm, his blood pressure dropped from 170 systolic to 125, and his saturations decreased despite increase in oxygen supply. Arterial blood gases revealed respiratory acidosis with a pH 7.25, PCO2 7.69, PO2 9.70 and a lactate of 3.29, with subsequent lactate levels as high as 4.0. A chest radiograph revealed surgical emphysema and left sided pneumothorax with effusion. A chest drain was inserted, which proceeded to drain 1.5L of bile-stained fluid. CT abdomen, thorax and pelvis was performed with IV and water-soluble contrast. This CT confirmed the surgical emphysema, pneumothorax, effusion and a pneumomediastinum. It also revealed a pneumoperitoneum which was consistent with the previous laparoscopic surgery, but there was no definite evidence of leakage of contrast from the oesophagus and thus no confirmation of oesophageal perforation.

Despite a negative CT, a clinical suspicion of oesophageal rupture was maintained, so the patient went on to have a water-soluble contrast swallow. This demonstrated leakage of contrast from the oesophagus just above the gastro-oesophageal junction, posterolaterally on the left side. It was also noted that the patient aspirated some of the contrast. A diagnosis of distal oesophageal perforation was made.

The patient’s respiratory condition continued to deteriorate. In light of the perforation, a decision was made for the patient to receive
rapid sequenced intubation. Once the patient was stabilised, he was taken back to theatre to have a left sided thoracotomy, gastrostomy, with a feeding jejunostomy. Ten days later the patient was taken back to theatre to have a tracheostomy for long-term wean. The patient spent 22 days in ITU, but went on to successful discharge to local rehabilitation hospital 6 weeks later.

Discussion
Spontaneous oesophageal rupture, also known as Boerhaave's syndrome, presents a diagnostic challenge. Classically, it presents with Mackler's triad of vomiting, chest pain and subcutaneous emphysema. These symptoms are not always identifiable; leading to a long differential diagnosis list. Diagnosis is further hindered by the clinical status of the patient who is often critically ill. Yet it should be noted that a toxic clinical picture can be positively associated with the diagnosis.

Our patient was managed on the “Enhanced Recovery Programme” which aims to improve patient outcomes and speed up a patient’s recovery after surgery. This has four main elements to the programme, which are: 1. Pre-operative assessment, planning and preparation, 2. Reducing the physical stress of the operation, 3. A structured approach to immediate post-operative management and 4. Early mobilisation. Included in the post-operative management it is advised that nasogastric tubes are not to be routinely used in elective gastrointestinal surgery and that nausea and vomiting management is a key area of the post operative care. This patient had a straight forward intubation with no reported trauma or nausea and vomiting, and in accordance with the protocol had not had a nasogastric tube inserted. This makes it unlikely that the cause of this injury was iatrogenic, although this is a recognised rare complication of endotracheal intubation or nasogastric tube insertion.

Despite being referred to as a ‘spontaneous rupture’, in many cases an identifiable increase in oesophageal intra-luminal pressure can be found. There have been a number of cases reporting Boerhaave’s syndrome following post-operative nausea and vomiting. The cause of oesophageal rupture in this case remains unknown. There was no recorded evidence of vomiting, nausea or chest pain, although there was clinical and investigative evidence of subcutaneous emphysema. It is important to recognise that there may be no evidence of vomiting but that patients may still retch, which can also raise the intra-luminal pressure high enough to cause Boerhaave’s syndrome.

Diagnosis often relies on investigative findings; first-line investigation often is chest radiography, with the most common findings being a left sided pleural effusion as in this case. Contrast studies may be more accurate, as chest radiographs can be normal in 12-33% of patients. Yet recent reports suggest contrast studies have a higher false negative rate of between 10-66%. Our patient went on to have oral contrast which has become increasingly popular in making the final diagnosis. Indeed the Oxford Textbook of Surgery now suggests that a gastrografin swallow be the diagnostic investigation of choice. Though Corns and Edward presented a case where this had in fact been negative and the perforation was confirmed by CT.

Due to the low incidence of this condition, there is very little evidence about the most appropriate management. However, the mainstay of all treatments includes prevention of further contamination from the perforation, lavage and drainage of the infected areas and to eliminate infection. Recent work by Muir et al. found that the only independent predictor of mortality identified was the time to diagnosis from perforation (beta 0.429, p=0.001), with immediate diagnosis 5%, early diagnosis (1 - 24hours) 14% and late diagnosis (>24 hours) 44% (p>or=0.002) irrespective of site of perforation, aetiology and treatment option decided upon.

Conclusion
Boerhaave's syndrome is a rare but potentially fatal condition, which is not always considered as a post-operative complication. Yet due to high correlation between the speed of diagnosis after perforation and improved
outcomes, it is important that clinicians have an awareness of Boerhaave’s syndrome, and its varied presentations. A high level of suspicion should be maintained when a patient presents with both gastrointestinal and respiratory symptoms. This is particularly important as there is no gold standard for diagnosis. If perforation is highly suspected in the presence of normal CT scans and chest radiographs, then further contrast enhanced studies are recommended.

References

1. Adams BD, Sebastian BM, Carter J. Honoring the Admiral: Berhaave-van Wassenaer’s

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