Chapter Connection

9th Issue - January 2010

Chapter Connection **is a newsletter specially brought to you by the Chapter of General Surgeons under the purview of the College of Surgeons, Singapore. The Board of the Chapter of General Surgeons is well represented with members from different institutions and this would mean that you could find the latest happenings of the general surgery community of these institutions in this newsletter. This newsletter is published quarterly and will be distributed to the Members of the Chapter of General Surgeons. On the goodwill of the Chapter Board, this quarterly newsletter will also be distributed at no cost to the Trainees and Fellows of General Surgery in various public hospitals.**

Message from Chapter Chairman

Dear surgical colleagues,

As we bid farewell to a difficult year, let us reflect on our achievements in the face of adversity. Singapore has pulled through the worst recession in the last eighty years. Life has gone on, in spite of H1N1, and we have emerged stronger. The year ahead must surely be the most optimistic one we have looked forward to for a long time.

Chapter activities will pick up speed in 2010. We have the APSITE exams for all GS trainees in February. This is a new requirement, designed to help identify areas of weakness and assist trainers to focus on improving these.

The first batch of GS residents will start their training in May, with a more structured training programme, which will be extended in stages to cover all disciplines, further raising our training standards. Our successful Exit Examination Preparatory Course for the exiting trainees will continue and be better organized too. We hope to attract wider participation, including from regional trainees.

Lastly, the Tri-partite meeting of the Academies of Hong Kong, Malaysia and Singapore will be held in November 2010 in Hong Kong, and we hope to participate in numbers and make it a great success. Not forgetting the annual dinner of our parent College of Surgeons which will be hosting its 5th College of Surgeons Lectureship and the 15th Yahya Cohen Memorial Lectureship, the dinner will be held in either the 3rd or 4th quarter of 2010. I invite as many as possible to participate in both events.

Let me take this opportunity to wish one and all a Happy New Year!

Warm regards,
Dr Swaminathan I.
Chairman, Chapter of General Surgeons
College of Surgeons, Singapore

Wishing everyone
Happy Holidays on:

1 Jan 2010 – New Year's Day
14-16 Feb 2010 – Chinese New Year

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Contribution of any interesting news & articles from Chapter Members are welcome for consideration to publish in *Chapter Connection*.

Spontaneous Perforation of the Oesophagus

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CLINICAL CASE

A 70-year-old Chinese gentleman presented with a short history of vomiting and diarrhoea associated with colicky abdominal pain. Initial examination and investigations were unremarkable. He was observed in the Emergency Department with a provisional diagnosis of gastroenteritis. During the following few hours he continued to vomit and became increasingly unwell. Repeat examination revealed hypotension, tachycardia and reduced breath sounds over the left chest. A chest radiograph was performed and showed a small left pleural effusion. After fluid resuscitation an urgent CT thorax was undertaken, which demonstrated a large left hydropneumothorax and pneumomediastinum (Figure A). A drain was inserted into the left chest cavity, which drained brown liquid suspicious for enteric fluid.

A clinical diagnosis of oesophageal perforation was made and the patient was transferred to the operating theatre. An on-table endoscopy confirmed the diagnosis and demonstrated a perforation in the distal oesophagus opening into the left pleural cavity. A left thoracotomy was undertaken and a 3cm tear in antero-lateral aspect of distal esophagus was confirmed (Figure B). Mediastinal toilet and oesophageal debridement was undertaken. A silicone T-tube was placed into the oesophgeal defect and brought out through a separate incision in the chest wall (Figure C). No attempt was made to repair the oesophageal tear. Additional chest drains were placed into the left pleural cavity and a feeding jejunostomy was also inserted.

Postoperatively he was transferred to the intensive care unit where he required ongoing ventilatory and inotropic support. After initial improvement he began to manifest features of recurrent sepsis. A CT thorax demonstrated multiple loculated pleural collections in the left chest adjacent to the mediastinum. Given the position and loculated nature of these collections, along with the deterioration in the clinical condition of the patient, it was decided to perform a repeat thoracotomy. The collections were drained and decortication of the abscesses was performed. The T-tube was left undisturbed in the oesophagus. Subsequently, the patient's condition began to improve. Chest drains were sequentially removed and a water-soluble contrast swallow was performed (Figure D). This showed no evidence of leakage from the oesophagus and diet was introduced. Five weeks after admission the T-tube was removed and the patient was discharged from hospital. He continues to recover well.

DISCUSSION

Historical Perspective

There is some debate as to whether Alexander the Great died of spontaneous oesophageal rupture but there is no doubt that Dutch physician Hermann Boerhaave described the first recorded case of spontaneous oesophageal perforation in 1724[1]. That patient was Baron Jan van Wassenaer, Grand Admiral of the Dutch Fleet, a 50-year-old notorious glutton who practiced auto-emesis after a heavy meal. He consulted Boerhaave after a severe episode of chest pain post auto-emesis and died 18 hours later. Post mortem showed a rupture in an otherwise normal looking oesophagus with roast duck in his thoracic cavity. The condition has since become synonymous with 'Boerhaave's syndrome'.

Pathophysiology

Sudden increase in intra-abdominal pressure may lead to raised pressure within the oesophagus. Uncoordinated relaxation of the upper oesophageal sphincter can increase intraluminal oesophageal pressures higher still leading to barotraumatic perforation of the oesophagus. The site of perforation most commonly involves the distal oesophagus and is usually into the left chest due to a developmental weakness in the left lateral oesophageal wall at this site. The condition is most commonly associated with alcohol-induced vomiting, but other reported cases include perforation during weightlifting, defecation and parturition.

By definition Boerhaave's syndrome occurs in an otherwise healthy oesophagus. Overall, the most common cause of oesophageal perforation remains iatrogenic perforation following endoscopy, especially if oesophageal dilatation is also undertaken.

Clinical Features and Investigations

Clinical presentation of spontaneous oesophageal rupture is classically described as Mackler's triad of vomiting followed by severe chest pain and the subsequent development of surgical emphysema[2]. However, it is estimated that the triad is only evident in around 25% of cases and over-reliance on these features may lead to diagnostic delay. Typically, sudden, severe epigastric pain and retrosternal pain have been described. Early signs are that of subcutaneous and mediastinal emphysema and these features may be present on a chest radiograph before they become clinically evident. Features of sepsis develop as chemical and septic mediastinitis ensue. Further respiratory complications include pneumothorax, pleural effusions and lung collapse. Hamman described a 'crunching' sound as the heart beats against air filled tissues.[3]

Due to the rather non-specific clinical presentation, the initial diagnosis of oesophageal perforation is often mistaken for other conditions, such as acute pancreatitis, bowel perforation, aortic aneurysm dissection, and medical conditions including myocardial infarction and pneumonia. Diagnostic delay is, therefore, common and is unfortunately associated with worse outcome.[4] Spontaneous oesophageal perforation should always be considered in any unwell, septic patients with an abnormal chest radiograph, particularly if there is a history of vomiting.

Investigations are generally directed at confirming the diagnosis. A plain chest radiograph may demonstrate a pleural effusion, pneumomediastinum, subcutaneous emphysema, or hydropneumothorax. The 'V-sign of Naclerio' (mediastinal widening due to retrocardiac emphysematous dissection of the fascial planes) may be an early radiographic sign.[5] The presence of enteric content in a chest drain confirms the diagnosis, but subsequent investigations are required to confirm the site and direction of perforation. Water-soluble contrast studies fail to detect up to 22% of cases of oesophageal rupture and should be read with caution.[6] Computerised tomography with oral contrast has lead to improved diagnostic yield and carries the advantage of determining into which pleural cavity the perforation has occurred. This is clearly important when deciding on operative approach. Recent trends have utilised endoscopy to directly visualise the site of the oesophageal perforation, confirm its position and to exclude any underlying oesophageal pathology, such as malignancy.

Management Strategies and Outcome

Management considerations range from conservative management to surgical repair. Patients who present late but remain clinically well can often be successfully managed conservatively.[7] These patients require close observation and any deterioration merits investigation with CT and drainage of any collections. Patients who are unwell should be managed surgically. A thoracotomy is performed on the same side as the perforation and a thorough washout and oesophageal debridement is undertaken. Subsequent management may vary and options include primary repair of the oesophageal perforation, intercostal flap repair, oesophageal exclusion by oesophagostomy, oesophagectomy, and T-tube drainage. Our preferred method is drainage by T-tube. This technique allows drainage of the oesophagus by producing a controlled fistula, especially in the setting of localised sepsis.[8,9] Several series have reported the use of oesophageal stents in the management of oesophageal perforations with some reported success. However, the main indication for stenting remains for the management of iatrogenic perforations of oesophageal cancers, especially following dilatation.

Spontaneous oesophageal rupture remains an uncommon condition, especially among Asian communities. However, it is associated with high rates of morbidity and mortality. Early recognition and diagnosis remain the best methods of improving outcome for these patients.

☺ ***A Note of Thanks to A/Prof Jimmy So for contributing this article.***

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Figure A
A coronal view computerised tomography scan following administration of oral contrast. Mediastinal gas and a large left-sided hydropneumothorax can be clearly seen.

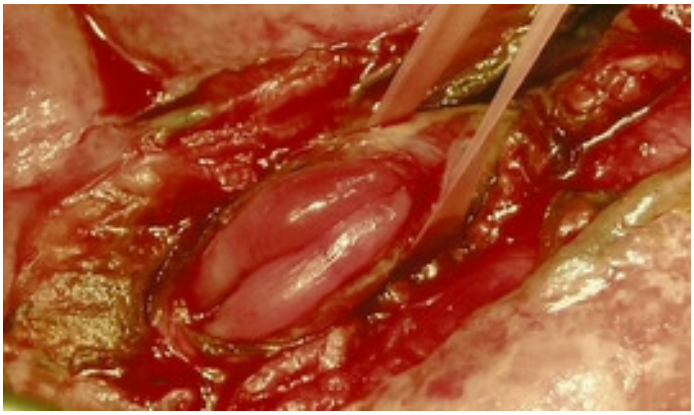

Figure B
Intra-operative photograph taken during left thoracotomy demonstrating a 3cm tear in the antero-lateral aspect of distal esophagus.

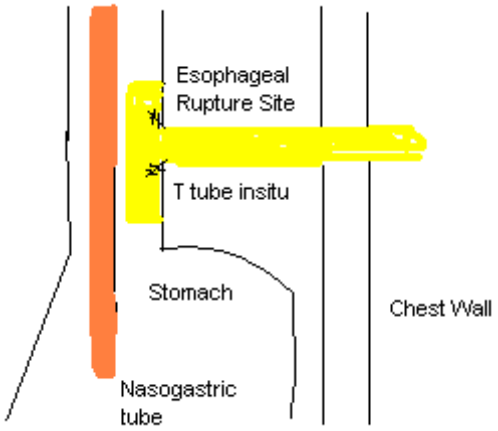

Figure C
An illustration demonstrating the arrangement of T-tube placement within the oesophageal perforation.

Figure D
A water-soluble contrast swallow demonstrating free passage of contrast through the oesophagus into the stomach with no evidence of a leak from around the T-tube. Some contrast can be seen opacifying the T-tube drain.

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