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Introduction

This third CHASM Casebook continues the theme of continuing education by considering the learnings from the fifteen cases reported. Where possible, we have tried to address issues of interest to surgeons in general.

In 2011, the theme of the Casebook is the recognition and management of the deteriorating patient, complemented by a commentary from Dr Charles Pain, Director of Health Systems Improvement at the Clinical Excellence Commission and CHASM Committee Member. Many of the cases illustrate delays or failures to recognise this important group of patients.

It is hoped these learnings will assist consultant surgeons, surgical trainees and the wider health professional community to consider and if appropriate to improve their practices. We believe that reflective learning using clinical cases encourages a thoughtful approach to clinical decision making and will ultimately be of benefit to the patients under our care.

Again, we gratefully acknowledge the contribution and participation of surgeons to the CHASM program. Without your support there would be no audit and no cases for discussion and reflection. The CHASM Committee hopes you will find this Casebook useful and we welcome any feedback you may care to provide.
A vascular cause of lower abdominal pain

Case 1

An elderly man was admitted to hospital with acute colicky lower abdominal pain starting on the day of admission. He had a prior history of diverticulosis confirmed by a previous colonoscopy and was receiving warfarin for atrial fibrillation. Following a provisional diagnosis of diverticulitis, he was started on intravenous antibiotics. When reviewed the next day by the surgical team, his pain had improved and abdominal examination was normal. In view of the improvement, further investigation, including imaging, was not considered necessary and the diverticulitis was considered to be resolving.

The next day (day two following admission) in the early hours of the morning, his pain recurred and rapidly worsened, such that he was unable to lie still. He was afebrile and there were minimal abdominal signs. Access to CT scan services after hours was not available. He was found dead in the bathroom. An autopsy revealed a ruptured aortic aneurysm.

SURGICAL LEARNINGS:

- In a patient with atypical abdominal findings for diverticulitis (afebrile, physical agitation, lack of peritonism) who has vascular disease (arrhythmia or anticoagulation), vascular causes of abdominal pain should be considered.

- An ultrasound examination of the abdomen would have identified the aortic aneurysm and clinical attention would have been re-directed. A CT scan would also have provided the diagnosis.
A vascular cause of lower abdominal pain

Case 2

An elderly patient over 90 years of age was admitted with right groin pain. No mass or tenderness was evident on examination and he was haemodynamically stable. There was a prior history of an endoluminal repair of an abdominal aortic aneurysm. He was receiving warfarin. A CT scan performed the next morning was initially reported as normal, but a revised report revealed an aortic aneurysm with stranding of the para-aortic tissues. Contrast had not been given, because of a raised serum creatinine. He was reviewed by the general surgical team who did not appreciate a pulsatile aneurysm on abdominal examination and requested following-up the CT scan report.

A further 24 hours elapsed before there was a recording in the notes that the aneurysm had been palpated and a further 10 hours until the scan report was recorded in the medical record. A vascular surgical review had been requested. Shortly after, an intra-peritoneal rupture of the aneurysm occurred. The patient collapsed and subsequently died on the operating theatre table.

SURGICAL LEARNINGS:

• The combination of groin pain with no local findings, an aortic aneurysm and stranding of the para-aortic tissues, suggests a retroperitoneal bleed.

• There was delay in accessing the CT scan report. Results of investigations should be made known to the responsible clinical team the day they are performed.
Who was in charge?

Case 3

An elderly patient, who had been living in her own home independently, was admitted to hospital following a fall. Her injuries included a scalp laceration, fracture of the C2 vertebra and bilateral fractured wrists. They were complicated by a myocardial infarction. The wrist fractures were treated with back slabs and the C2 fracture managed by immobilisation in a cervical collar. Neurosurgical and medical teams declined to take responsibility for her care, which remained under Orthopaedics.

Four days after admission, it was recorded that she was to be discharged from Cardiology and that, from a neurosurgical perspective, she could mobilise with her collar on. On day eight following admission, she deteriorated with distress and a poor urine output. A diagnosis of acute pulmonary oedema was made, but treatment was ineffective and she died on day nine.

SURGICAL LEARNINGS:

- Although there were no deficiencies in care, management by different teams focusing on one aspect of care removes the principle of one consultant taking overall responsibility and co-ordinating care.
- Aged patients need to be co-managed with geriatricians or general physicians who are experienced in the total care of the elderly.
An elderly patient was admitted with hematemesis and melaena. There was a history of polymyalgia rheumatica and she had been treated with prednisone for many years. Co-morbidities also included renal disease and hypertension. Physical examination revealed generalised abdominal tenderness. Her haemoglobin was 6g% and the white cell count 26 x 10^9/L. She was resuscitated and transfused.

A gastroscopy revealed blood in the stomach, but no bleeding point was seen. Melaena continued and there was a further decrease in her haemoglobin. A second gastroscopy identified a bleeding duodenal ulcer which was injected with adrenaline. The bleeding ceased. Over seven days following the second gastroscopy, she had evidence of sepsis, was confused and continued to experience acute abdominal pain.

On day eight, a chest x-ray revealed free intra-peritoneal gas. A laparotomy identified a sigmoid diverticular perforation and associated pelvic abscess, with free turbid peritoneal fluid. Peritoneal lavage and drainage of the diverticular abscess was performed. Post-operatively, there was evidence of ongoing sepsis. A CT scan revealed a continuing pelvic collection, despite the drainage. Despite intensive treatment, deterioration continued and the patient died on day 18.

**Surgical learnings:**
- Long-term corticosteroids often mask clinical symptoms and physical signs.
- Consider abdominal CT scan early in cases of likely abdominal sepsis where the cause is unknown.
- Resection of the diverticular disease (Hartmann’s procedure) may have been a better choice of operation, rather than drainage.

**Case 4**

Dual abdominal pathology
The deteriorating patient and communication

Case 5
An elderly patient, previously independent, was admitted with severe upper abdominal pain and no other bowel symptoms. She had a prior history of an abdominal hysterectomy for fibroids 40 years earlier and was taking warfarin for atrial fibrillation. Physical examination was unremarkable, but an abdominal CT scan showed a complete distal small bowel obstruction. The surgeon on call was not immediately notified and she was transferred from the emergency department to the surgical ward with non-operative management of IV fluids and a gastric tube.

Management by junior medical staff did not adequately replace fluid losses. When the surgeon saw her the next day, she had signs of acute peritonitis. Her anti-coagulated state and fluid imbalance were then treated appropriately. Surgery was further delayed by an emergency caesarean section. When she eventually came to surgery, a band across the ileum had caused infarction of most of her small bowel, which required resection. Despite intensive treatment, she required a further bowel resection and died two weeks after the first operation.

SURGICAL LEARNINGS:
- For management of an ill patient, it is imperative that all members of the surgical team, particularly those in charge, are informed of the patient’s condition and any changes.
- If earlier surgery had been performed, it may have been limited to simple division of adhesions.
An elderly male patient was admitted for a routine total hip replacement, which proceeded without complication. There was a prior history of an open cholecystectomy and appendicectomy. In the post-operative period respiratory function deteriorated. A chest x-ray and a CT scan of the abdomen revealed free gas in the abdominal cavity.

On the third post-operative day, laparoscopic exploration of the abdomen was performed and drains inserted. Intra-operative installation of methylene blue by a nasogastric tube did not reveal a perforation. A provisional diagnosis was made of a ruptured duodenal ulcer which had sealed over. The peritoneal fluid grew Candida. He was managed in the intensive care unit post-operatively and was able to be extubated on day four.

Gastrointestinal bleeding occurred on day seven and gastroscopy showed old blood in the stomach and oesophagitis. A further abdominal CT scan on day eight revealed a collection in the lesser sac, which was drained percutaneously. Thereafter, increasing abdominal distension with large gastric aspirates were recorded. When abdominal distension and deterioration were noted, there was some delay in calling senior staff and in the insertion of a nasogastric tube. Aspiration of gastric contents further compromised respiratory function. Despite a laparotomy where no abdominal pathology was identified, respiratory function continued to deteriorate prior to death.

**SURGICAL LEARNINGS:**

- Communication with senior staff is essential when a patient’s condition deteriorates.
- Earlier insertion of a nasogastric tube may have minimised the likelihood of aspiration.
- Where a patient has had previous abdominal surgery, the possibility of adhesions may make viewing through a laparoscope difficult. An alternative may have been earlier laparotomy, rather than an initial laparoscopic washout.

**A reference for further reading:**

Nashi, M & Bannerjee, B

*Acute Abdomen After Total Hip Replacement*

Deterioration while awaiting transfer

Case 7

A patient in his fifties was admitted to hospital A, with lower abdominal pain and tenderness evident several weeks prior to admission. There was a history of diabetes, obesity and coronary artery disease. Examination revealed mild abdominal tenderness. An abdominal x-ray showed dilated large bowel, with fluid levels in the small bowel. Sub-acute large bowel obstruction was diagnosed. He was treated appropriately with intravenous fluids, subcutaneous heparin and transferred to the high-dependency unit (HDU). A CT scan suggested that the obstruction was in the sigmoid colon, possibly cancer. Transfer to hospital B was ordered.

Transfer did not occur until the morning of the following day. The patient had deteriorated overnight with hypotension, tachycardia, oliguria and large volumes of nasogastric aspirate. The consultant at hospital A was unaware of the delay in transfer and of the patient’s deterioration. On arrival at hospital B, the patient deteriorated further. A cardiac arrest occurred and he was unable to be resuscitated. The autopsy revealed myocardial ischaemia and large bowel obstruction, due to a diverticular stricture.

SURGICAL LEARNINGS:

- Fluid management was a contributing factor to the patient’s deterioration. He had been placed on maintenance fluids and the pathological losses had not been replaced. When recognised, appropriate measures were taken, including a fluid bolus, transfer to HDU and central line insertion.

- The consultant at hospital A was not informed of the delay or the patient’s deterioration. Notification of senior medical staff is mandatory when such deterioration is identified.

- When inter-hospital transfer for a sick patient is planned, management must continue until the time the ambulance arrives. Not only did this patient deteriorate in hospital A, there was a further deterioration during transport.
Recognising and managing the deteriorating patient

Failure to recognise and respond to clinical deterioration is a major patient safety problem in hospitals. This is a national and international problem not unique to NSW. NSW is addressing the problem of clinical deterioration by implementing the Between the Flags (BTF) program across the State. The central premise is that vital signs predict patient deterioration.

In the surgical context, patients are often at risk of deterioration for a number of reasons: the type of surgical procedure performed, sepsis, co-morbidities, age, care being provided in non-surgical wards due to bed shortages, etc. The evidence shows that the deterioration of surgical patients is commonly unrecognised. Even when their observations clearly show deterioration, nurses and doctors may not escalate care and respond appropriately, with tragic consequences.

The Between the Flags program addresses this risk by putting a safety net in place. It consists of five elements – Standard Observation Charts, Clinical Emergency Response Systems (CERS), Education, Evaluation and Governance. It builds upon the Medical Emergency Team concept developed at Liverpool Hospital by Professor Ken Hillman.

Observation charts are the cornerstone of Between the Flags. They have colour-coded zones (yellow and red), which correspond to early and late signs of deterioration for the vital signs most sensitive to patient deterioration (respiratory rate, oxygen saturation, blood pressure, heart rate and neurological status). This track and trigger system allows a clinician to track a patient’s vital signs and know when to trigger escalation.

The escalation criteria, both for clinical review and rapid response used for a more serious clinical picture, follow this section. Instructions are given on the reverse of the standard chart about what to do if a patient enters the yellow zone (requiring a clinical review within 30 minutes by the home team) or the red zone (requiring an immediate rapid response by an individual or team with advanced life support skills). The system has been introduced in most, but not all, NSW hospitals.

To guard against inappropriate calls, Between the Flags has explicitly allowed discretion and the use of clinical judgment by nurses, in consultation with the nurse in charge, before calling for a clinical review. Education materials developed for the program, called DETECT*, are also intended

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1 Source: NSW Patient Safety and Clinical Quality Program, Incident Reporting System.

*DETECT stands for detecting deterioration, evaluation, treatment, escalation and communication in teams.
to improve skills and knowledge about when it is necessary to escalate care.

Communication is an essential part of caring for patients and requires teamwork. Surgical patients are the subject of many clinical handovers in hospital. The patient is handed over from ward to operating theatre staff, operating to recovery staff and recovery to ward staff. A standardised systematic approach ensures that communication is clear and succinct. Communication is often the reason for adverse outcomes and is therefore an essential skill in caring for patients. Communicating within teams is also crucial in day-to-day handovers and in emergency situations.

Communicating between multidisciplinary teams, in an emergency and in challenging situations, are included in the DETECT training.

The Clinical Excellence Commission is developing a patient and family initiated calling mechanism, because it is known that family and friends are often the first to recognise that a patient may be deteriorating. Patient and family activated rapid response calls have led to improvements in outcomes such as reduction in mortality rates, without an overload of false positive calls.

Education is delivered to all front-line staff. This is particularly important for those non-surgically trained staff caring for surgical patients accommodated on outlying wards. Tier 1 consists of awareness training and is for all staff. Tier 2 consists of education targeted at all front-line clinical staff in recognising and providing early treatment for deteriorating patients. Tier 3 is for staff who respond to rapid response calls and is intended to give skills in advanced life support. The success of the program depends on all relevant staff receiving Tier 1 and 2 education. Support and involvement by senior surgeons for this training will be vital.

More information on the Between the Flags program can be found at: www.cec.health.nsw.gov.au/programs/between-the-flags

Dr Charles Pain
Director of Health Services Improvement
Clinical Excellence Commission
CHASM Committee Member

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THESE INSTRUCTIONS EXPLAIN WHEN TO MAKE A CLINICAL REVIEW OR RAPID RESPONSE CALL, YOUR LOCAL ESCALATION PROTOCOL WILL EXPLAIN HOW TO MAKE A CALL

Clinical Review Criteria
- Poor peripheral circulation
- Excess or increasing blood loss
- Respiratory Rate 5 - 10 or 25 - 30 breaths per minute
- SpO2 90 - 95% and/or increase in oxygen (O2) requirement
- Systolic Blood Pressure 90 - 100 or 180 - 200mmHg
- Heart Rate 40 - 50 or 120 - 140 beats per minute
- Decrease in Level of Consciousness from alert (A) to rousable only by voice (V) in the AVPU or new onset of confusion
- Temperature < 35.5 °C or > 38.5 °C
- Anuria, failure to void in 24 hours or urine output < 200ml over 8 hours
- Greater than expected fluid loss from a drain or polyuria (> 200 ml/hr for 2 hours in the absence of diuretics)
- Blood Glucose Level 1 - 4 mmol/L
- New, increasing or uncontrolled pain (including chest pain)

IF A PATIENT HAS ANY ONE (1) OR MORE CLINICAL REVIEW CRITERIA PRESENT, YOU MUST CONSULT PROMPTLY WITH THE NURSE IN CHARGE AND ASSESS WHETHER A CLINICAL REVIEW IS NEEDED (REFER TO YOUR LOCAL ESCALATION PROTOCOL) AND

1. You MUST initiate appropriate clinical care
2. Repeat and record observations as indicated by the patient's condition, but at least within 30 minutes
3. If you called for a Clinical Review and it has not been attended within 30 minutes, you MUST ACTIVATE YOUR LOCAL RAPID RESPONSE
4. If the patient's observations enter the RED Zone while you are waiting for a Clinical Review, you MUST ACTIVATE YOUR LOCAL RAPID RESPONSE (see below)
5. You may call for a Clinical Review at any time if worried about a patient or are unsure whether to call.

You should consider
1. Whether abnormal observations reflect deterioration in your patient
2. What is usual for your patient or if there are altered calling criteria (see front of chart)
3. Whether there is an adverse trend in observations

Rapid Response Criteria
- ALL respiratory and cardiac arrests
- Airway obstruction or stridor
- Seizures
- Deterioration not reversed within 1 hour of Clinical Review
- Patient deteriorates further, before or during Clinical Review
- Arterial Blood Gas: P2O2 < 60, or P5CO2 > 60, or pH < 7.2, or BE < -5
- Venous Blood Gas P5CO2 > 65 or pH < 7.2
- Respiratory Rate < 5 or > 30 breaths per minute
- SpO2 < 90% and/or increase in oxygen (O2) requirement
- Systolic Blood Pressure < 90 or > 200mmHg
- Heart Rate < 40 or > 140 beats per minute
- Only responds to central pain (P) or unresponsive (U), or sudden decrease in Level of Consciousness of ≥ 2 points on GCS
- Blood Glucose Level < 1 mmol/L
- Serious concern by any staff member

IF A PATIENT HAS ANY ONE (1) RAPID RESPONSE CRITERION PRESENT, CALL FOR A RAPID RESPONSE (REFER TO YOUR LOCAL ESCALATION PROTOCOL) AND

1. You MUST initiate appropriate clinical care
2. Inform the Nurse in Charge
3. Repeat observations as indicated by the patient's condition

CHECK THE CLINICAL RECORD FOR ADVANCE CARE DIRECTIVES OR ALTERATIONS TO CALLING CRITERIA WHICH MAY AFFECT WHETHER A CLINICAL REVIEW OR RAPID RESPONSE CALL IS INDICATED

DOCUMENTATION
1. Write interventions on the front of the chart under 'interventions'
2. Write treatment, escalation process, and outcome in the clinical record
3. Write date, signature and designation with each entry
The importance of consultant handover

Case 8

A patient in her thirties was admitted to hospital A with abdominal pain, under surgeon 1. Radiological investigations identified gallstone pancreatitis, which was treated conservatively. It was planned that once the pancreatitis improved, the patient would undergo laparoscopic cholecystectomy. Generalised abdominal pain developed on a Friday, with no evidence of an exacerbation of pancreatitis.

Care was transferred to surgeon 2 for the weekend. On the Sunday, she deteriorated, with colicky lower abdominal pain and complete constipation. A chest x-ray revealed gas under the diaphragm. She was transferred to hospital B under surgeon 3 where, on admission, she was moribund with peritonitis, shock and multi-organ failure. An emergency laparotomy was performed after resuscitation. The operative findings were faecal peritonitis and a perforation of the sigmoid colon. A Hartmann’s procedure was performed. She was managed in the intensive care unit, but did not improve and died.

Surgical learnings:

- The patient was transferred among several wards, with different medical and nursing staff. Discontinuity in care was a factor. Try to avoid frequent ward changes and optimise communication between teams when change is necessary.
- The blood investigations suggested a worsening infective process. When she deteriorated with abdominal pain on the second occasion, the abdominal pain was colicky and her serum lipase did not rise. A further CT scan or abdominal x-ray would have identified the free gas in the abdomen.
- There was a delay in diagnosis, because of inappropriate interpretation of the results, investigations and management, largely by junior staff and a lack of senior clinical review.
- It may have been desirable to perform the operation at hospital A and then transfer for ICU management. There was an eight-hour delay between the diagnosis of a perforated viscus and the operation at hospital B.
- A handover policy from consultant to consultant is mandatory where clinicians are not able to review their patients when on leave.
A 73-year old patient was admitted to hospital A, following a fall and complaining of pain in the thigh. He was taking medications for hypertension and chronic airways disease. An initial x-ray showed possible undisplaced fractures of the left ilium and pubic bones. Orthopaedic opinion was that he should have bed rest and mobilisation when the pain improved. A CT scan of the pelvis, however, was said to show “significant fractures”. Skeletal traction was applied. After admission, pain management was difficult and he required large doses of narcotic analgesics. He received oxycodone (OxyContin or Endone).

On day two he was given, orally, a total of 30mg; day three 40mg; day four 50mg and day five 35mg of oxycodone. In the evening of day five, he was found to be unrousable, with pinpoint pupils and vomit on the sheets. He was managed in the intensive care unit for aspiration pneumonia and septic shock. Treatment was unsuccessful.

**SURGICAL LEARNINGS:**

- Oral oxycodone (Oxycontin or Endone) is approximately twice as potent as oral morphine. The patient received an excessive dose over the four days.
- Care is required when prescribing narcotic analgesics in general. This should be considered when prescribing oxycodone. Alternative strategies to reduce narcotic dosage might include patient-controlled analgesia (PCA) or a multimodal approach, using regular paracetamol and/or non-steroidals, if appropriate.
- Skeletal traction effectively immobilises a patient. The risk of inhalation of vomitus, particularly in the elderly, is increased.
- Gastric emptying is inhibited by narcotic analgesia, leading to an increased risk of aspiration.

**A reference for further reading:**

Liukas, A & Kuusniemi, K et al.

*Plasma Concentrations of Oral Oxycodone are Greatly Increased in the Elderly*

Omission of routine medications

Case 10

An elderly male, with a history of lung cancer, was admitted for removal of a basal cell carcinoma (BCC) from the right leg using a skin graft. There was a prior history of a cerebral metastasis from the lung cancer having been removed at a craniotomy three months earlier, followed by five cycles of chemotherapy. The surgical procedure, performed under general anaesthesia, was uncomplicated. On day one post-operatively, the patient had an epileptic seizure and several more followed, with progressive loss of consciousness.

Despite treatment with anticonvulsants, the patient did not improve and died. On review of the documentation, it seemed likely that the evening dose of anticonvulsant prior to surgery was omitted. The pre-admission questionnaire listed “lung problems” only. The patient’s regular medications of phenytoin and dexamethasone were not included. The pre-anaesthetic assessment form listed an incomplete set of medications and similarly, omitted phenytoin and dexamethasone.

SURGICAL LEARNINGS:

• It is likely that the treating staff were not fully aware of the co-morbidity and the patient’s regular medications which, in this case, were most important.

• Omission of the medication may have contributed to the patient’s deterioration.

• Comprehensive pre-operative documentation is important, particularly in cases of epilepsy, where patients are receiving regular anticonvulsant medication and in this case, corticosteroids.

• An alternative plan may have been to obtain an estimate of life expectancy from the oncologist managing the lung cancer and to observe the rate of growth of the BCC, if expectancy was limited.
Stop smoking before surgery

Case 11

A) An elderly patient with poor lung function underwent a left upper lobectomy for cancer. Prior to the operation, he did not stop smoking. The operation was uncomplicated. On day two, left lower lobe collapse occurred due to secretions and he required several bronchoscopies to permit lung re-expansion. It became septic and developed renal failure, requiring haemodialysis. Despite intensive treatment, he did not survive.

B) An elderly patient with multiple co-morbidities underwent an urgent but planned procedure for unstable angina. He was a chronic smoker and continued smoking until he underwent the coronary artery bypass graft. The surgery was uncomplicated. Post-operatively, he had a protracted course in the intensive care unit, with ventilation, tracheostomy, haemodialysis, agitation and confusion.

SURGICAL LEARNINGS:
- Each of these patients continued to smoke heavily until the time of surgery. Stopping smoking may lessen the post-operative complications and improve the outcomes.
- Where a patient has not stopped smoking and requires urgent surgery, intensive respiratory support will be necessary post-operatively.
Cirrhosis and cholelithiasis

Case 12

A patient aged in her mid-sixties was referred for an elective cholecystectomy in hospital A. She had a history of treated polycythaemia vera. An ultrasound scan of the abdomen revealed a normal liver and spleen, a thickened gall bladder and cholelithiasis. A laparoscopic cholecystectomy was planned and at surgery, the liver looked irregular. As dissection proceeded, the patient started to bleed and the operation was converted to an open procedure and completed successfully.

Post-operatively, the patient developed ascites and there was a large amount of drainage from the site. The operating surgeon maintained regular consultation with hepatobiliary surgeons for advice in the post-operative period. She remained in hospital A for 11 days and was discharged, only to be re-admitted several days later with multi-organ failure and septicaemia. She was transferred to hospital B for treatment in the intensive care unit. She required life support, but did not survive.

SURGICAL LEARNINGS:

- The patient had underlying cirrhosis of the liver and portal hypertension, which had been undiagnosed.
- If unsuspected liver cirrhosis is diagnosed at the time of an elective cholecystectomy, it may be prudent to consider abandoning the procedure and referring the patient to a specialised hepatobiliary unit. Where there is evidence of portal hypertension, the risk of intra-operative bleeding, post-operative ascites and liver decompensation is increased.
Complications of cholelithiasis

Case 13

An elderly patient was treated with an elective endoscopic retrograde cholangiopancreatogram (ERCP) with sphincterotomy, for calculi in the common bile duct. Following the procedure, which was technically uncomplicated, he developed pancreatitis, sepsis and cardiogenic shock. Despite appropriate treatment, he also developed pancreatic necrosis.

He remained under the primary care team until a CT scan confirmed pancreatic necrosis and a pseudo-cyst, at which time he was referred for surgical intervention. Pus was drained and pancreatic necrosectomy performed. He remained severely compromised and died from multi-organ failure.

SURGICAL LEARNINGS:

- Elderly patients may not exhibit the usual symptoms of sepsis, namely fever and leukocytosis, until the infective process is advanced.
- Where complications following an ERCP are suspected, early investigation and consultation with a surgeon is desirable.
- Early CT scan is indicated for severe or persisting pancreatitis, or if there is a suspicion of sepsis or necrosis.
With a background of a prior history of colectomy for cancer, an elderly patient presented with small bowel obstruction. An oral contrast abdominal CT scan on the day of admission revealed complete obstruction of the small bowel. Attempted insertion of a nasogastric tube was unsuccessful. Vomiting continued, resulting in aspiration pneumonitis, deterioration and acute renal failure.

Laparotomy was performed in the early hours of the morning of day three following admission, some 60 hours later. The surgical findings were of simple obstruction due to adhesions, which were divided. The bowel was viable. The patient was managed in the intensive care unit post-operatively, where he deteriorated and died 10 days later.

**SURGICAL LEARNINGS:**

- There was a delay in surgery, despite an oral contrast CT scan demonstrating complete obstruction. An earlier operation should have been considered.
- Failure to pass a nasogastric tube and decompress the stomach probably led to aspiration pneumonitis.
A perforation following colonoscopy

Case 15

An elderly patient with co-morbidities of ischaemic heart disease treated with anti-platelet medication, osteoporosis, peptic ulceration and renal failure on dialysis, was admitted to hospital A for investigation of bright rectal bleeding requiring transfusion. She was transferred to hospital B for further investigation where she was admitted under surgeon 1, but there was little communication between the referring physicians at hospital A and the surgeon.

A CT angiogram revealed no active bleeding site, but there was an unusual appearance of the caecum and hence a colonoscopy was performed to further investigate both the bleeding and the appearance of the caecum. During colonoscopy, a sigmoid perforation occurred, but was not recognised. The patient reported post-colonoscopy abdominal pain and she was kept in hospital. An abdominal x-ray on day two following the colonoscopy showed free gas within the abdomen, but no immediate action was taken. Care had been transferred to surgeon 2 when handover had not been thorough.

On day three, she deteriorated further and required resuscitation. By this time, she had been transferred to surgeon 3, who saw her in an emergency situation. At laparotomy, a Hartmann’s procedure identified a perforation of the distal sigmoid colon. Despite further treatment and following discussion with the family, active treatment was eventually withdrawn.

SURGICAL LEARNINGS:

- Perforation of the bowel during a colonoscopy is a recognised complication of the procedure and should have been suspected when the patient complained of persisting abdominal pain. Not until there was deterioration in her physiological parameters did further investigations occur. There was a delay in the diagnosis.
- Where multiple surgeons take responsibility for management, handover information must be clearly and comprehensively provided.
CHASM committee membership between July 2010 and June 2011

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