Royal Australasian College of Surgeons

CASE NOTE REVIEWS

VOL 3 DECEMBER 2010

Government of South Australia

SA Health

SAAPM

South Australian Audit of Perioperative Mortality

Contents

Introduction

The South Australian Audit of Perioperative Mortality (SAAPM) monitors trends in surgical mortality in order to improve the safety and quality of healthcare in this State.

As part of this process, surgeons are provided with feedback in the form of first and second line reviews, as well as the Audit's Annual Report.

In addition, there are periodic publications of case reviews, which are intended to highlight areas where care may have been improved.

These are de-identified and consist of local cases as well as others from the national audit process, governed by the Australian and New Zealand Audit of Surgical Mortality (ANZASM).

Cases are chosen which underline principles of care extending across the surgical specialties, and previous publications have been well received by the clinical community.

The current reviews highlight the following issues:

·Patients with chronic illnesses may have severe complications after common procedures, and multidisciplinary care needs to be well coordinated.

·Complex emergency admissions, particularly in the elderly, require a high level of consultant input, both in regard to definitive decision making and operative procedures.

·The current trend towards early hospital discharge should not be at the expense of careful postoperative management.

The Audit Management Committee hopes you will find these cases informative and we welcome any feedback on the publication.

Finally, I wish to thank our Surgical Assessors, without whose efforts these reviews would not be possible, and the staff at SAAPM and ANZASM for their daily work in maintaining the audit process.

Paul Dolan
SAAPM Clinical Director

Postoperative decompensation in cirrhotic patients

Case Summary

An elderly patient had liver cirrhosis due to hepatitis C infection and was admitted with a suspected diagnosis of a liver tumour. The case notes supplied for this review included the inpatient notes of the final hospital admission, with no previous outpatient notes and no official radiology reports.

The patient was admitted for laparoscopy and biopsy of a liver lesion which was said to be "newly diagnosed hepatocellular carcinoma (HCC)". A markedly elevated alpha-feto protein (AFP) level in excess of 1900 units was noted.

The case notes stated that the patient had been investigated four months previously for ascites, at which time malignant cells had been found in the ascitic fluid.

A CT scan was said to show a cirrhotic liver, portal vein thrombosis, an enlarged spleen and oesophageal varices.

In addition to this, there were several regions of arterial phase enhancement in the liver on CT, raising the possibility of a multifocal tumour. The reason for admission was for the biopsy of one or more of these lesions.

A preoperative platelet count was low at 72,000 and while there was no record of preoperative liver function tests in the notes, it is assumed these had been ordered.

The patient underwent a laparoscopy by a consultant surgeon on the day of admission and had an intraoperative ultrasound and biopsies of three separate regions in the liver.

The operative note did not describe the size of the lesions, but clearly there was evidence of severe portal hypertension at laparoscopy. One of the biopsy sites continued to bleed, and the procedure had to be converted to an open operation for control of haemorrhage.

The anaesthetic charts indicate that the procedure took just over two hours in total and the estimated blood loss was approximately 800mls. It was not clear from the notes whether a blood transfusion was given.

The day following surgery the patient was sitting out of bed and making steady progress. The patient had required a urinary catheter for postoperative urinary retention. Blood screens showed a stable haemoglobin level and reasonable liver function, with a normal bilirubin level, a reduced albumin level and INR of 1.4.

The patient's renal function had temporarily deteriorated with a rising creatinine level but within the next 48 hours this had returned to normal.

Over the following four days the patient made steady improvement and resumed a ward diet.

The patient's routine diuretics were withheld during this period. On the 5th postoperative day the intern noted that there was discussion on the ward round about possible subsequent resection of the biopsy proven tumour in the patient's right lobe of liver.

The following day the patient was febrile and had a raised white cell count and was found to have a urinary tract infection, which was treated with antibiotics.

The following day the patient was noted to have some peripheral oedema and abdominal distension consistent with ascites. Diuretic therapy was recommenced and the patient was reviewed by the gastroenterology registrar who made a diagnosis of decompensated cirrhosis, although at that time the patient had a normal bilirubin level and INR.

Drainage of the ascites was recommended and approximately four litres of fluid was drained over the next 48 hours. The patient was then moved to the gastroenterology ward.

Two days after this transfer, and on the 12th day following admission, the patient was found collapsed on the bathroom floor in the ward. The cardiac arrest team was called but the patient was unable to be resuscitated.

It is not clear from the notes whether an autopsy was performed or whether the case was reported to the coroner.

Assessor's Comment

The first line assessor in this case queried the reason for the original procedure. The question arose as to whether a tissue biopsy was required in this patient to confirm the diagnosis of HCC.

The case notes indicated that the patient had known cirrhosis, hypervascular lesions on CT scan and a highly elevated AFP level. The patient also had evidence of portal hypertension and was said to have malignant cells diagnosed in ascitic fluid some months prior to this admission.

Given these details it may have been possible to accept a diagnosis of HCC in this patient without resorting to biopsy. The size of the lesions on CT was not recorded, which is relevant if the lesions are small (less than 2cm) and hard to characterise.

Another form of imaging such as contrast enhanced MRI scanning may have been of value to assist with the diagnosis, and might have avoided the need for a biopsy.

It is also unclear what therapy was intended, although there was comment in the case notes about a possible liver resection. In the setting of previous malignant ascites this would not seem justified, and in the setting of severe portal hypertension resection would be contraindicated.

Based on the evidence available it is difficult to see how a biopsy would have altered this patient's management. When bleeding occurred during the biopsy procedure, it was managed quite expeditiously by an experienced consultant surgeon, and the patient made a reasonable recovery in the early postoperative period.
The decision to withhold the patient's diuretics was presumably triggered by the early postoperative renal failure.

Renal function rapidly improved and continued withdrawal of the routine preoperative diuretics probably contributed to the development of ascites. Management of the ascites was reasonable under the circumstances.

The surgical case form was filled in by an advanced trainee who stated that the patient developed postoperative liver failure and that this was the cause of death.

This was not the case, as the patient's liver function was well compensated on blood tests done less than 24 hours before death. The fact that the patient died suddenly some 12 days postoperatively, while moving independently around the ward, would suggest either a pulmonary embolus or a cardiac event.

Appropriate DVT prophylaxis was used from the day of admission. Unfortunately without an autopsy the exact cause of death cannot be certain. Overall this patient died from a compounding series of problems which occurred following a laparoscopy for a liver biopsy to confirm a diagnosis of malignancy.

It seems likely that this diagnosis could have been achieved by other methods, so the main lesson of this case is to carefully consider the indications for any invasive procedure on a patient with chronic liver disease.

Fatal aspiration following early postoperative feeding

Case Summary

An elderly patient was admitted for an elective right hemicolectomy for a proven carcinoma of the caecum. There was a past medical history of treated hypertension, a coronary artery stent and a previous TIA some years prior to admission.

The case notes did not contain details of a preoperative assessment, but the operation record indicated that the procedure was done on an afternoon list during normal working hours, with a consultant surgeon as the primary operator and an advanced trainee assisting. The procedure took approximately two hours and appears to have been uneventful.

The following morning the medical note indicated that the patient was stable, with a soft abdomen. The plan was the patient could start clear fluids that day. The nursing notes later in the day indicated that the patient was nauseated and that antiemetics were administered. The following day, 36 hours postoperatively, the medical note indicated a stable patient and free oral fluids were commenced.

There was no record of an abdominal examination or whether there was any sign of bowel function returning. The nursing notes indicated that the patient was continuing to take oral fluids, although there were also entries indicating that the patient was nauseated at times. The patient did not seem to have any significant abdominal pain and was refusing offers of analgesia. The IV fluids were ceased on the same day on the basis that oral intake was tolerated.

The following morning it was noted that the patient had felt weak and the abdomen was noted to be distended and tympanic. The patient had not passed flatus at this time but bowel sounds were noted to be present. The medical note concluded with a comment that the patient was to remain on free fluids. There was no mention of restarting intravenous fluids or inserting a nasogastric tube.

During the course of the 3rd postoperative day, the patient complained to the nursing staff of feeling unwell and did not wish to get out of bed. Late in the afternoon of the same day the patient vomited on two occasions and was given antiemetics. Oral fluids were refused and an IV line was inserted in the early evening.

Later that evening the patient's condition deteriorated suddenly, with desaturation noted and the surgical cover was asked to make an assessment.

The comment in the notes was that the patient had gross abdominal distension. The nursing notes indicated that the patient's desaturation occurred after an episode of vomiting. Over the next few hours, there was further deterioration, resulting in a transfer to the Intensive Care Unit. After review by the duty Intensive Care Specialist and Anaesthetist, discussions were held with the surgeon and family. There was concern the patient may have had an anastomotic leak or ischaemic intestine.

In the early hours of the morning the patient sustained a cardiac arrest in the Intensive Care Unit but was successfully resuscitated and following this, a decision was made to take the patient to theatre urgently.

At operation there was a small amount of free fluid in the abdomen. The anastomosis was intact and there was no evidence of bowel ischaemia. The small bowel was noted to be grossly distended up to the point of the anastomosis. The patient already had a nasogastric tube inserted and the small bowel content was aspirated via this.

The patient was returned to the Intensive Care Unit where there was continued deterioration despite increasing isotropic support. The situation was discussed with the family who indicated that the patient had previously stated that they did not want excessive life support measures.

In view of this, a decision was taken to limit treatment and the patient died in the intensive care unit some seven hours following the second laparotomy.

Assessor's Comment

This elderly patient was clearly always at considerable risk in undergoing major abdominal surgery but with proven colon cancer there was little choice but to go ahead with the procedure.

Technically the management of the initial resection seems to have been perfectly adequate and the patient tolerated the procedure very well.

It appears however, that the postoperative management was not optimal. The patient was commenced on oral fluids approximately 15 hours after a major bowel resection without any apparent recognition of the possibility of a postoperative ileus.

The patient seems to have had little in the way of postoperative pain initially, and this may have caused a false sense of security in the medical attendants.

The nursing charts indicated that the patient took in nearly one litre of oral fluid on the first postoperative day, and two litres the following day, by which time the IV fluids had been ceased and the patient was being encouraged to drink.

Unfortunately there was no evidence of bowel activity and the oral intake was simply compounding the postoperative ileus by increasing small bowel distension. By the third postoperative day, the patient was recorded as having a distended tympanic abdomen, which should have been a signal to the surgical team that all was not well.

A nasogastric tube placed at this point, with aspiration of the stomach and restarting intravenous fluids may have prevented the subsequent series of events. The desaturation which occurred later that day seems directly related to recurrent episodes of vomiting earlier in the evening.

The final laparotomy findings which showed grossly distended small bowel but no evidence of anastomotic leak would also support this.

There is currently a move towards fast track postoperative recovery for all types of major surgery. Unfortunately some aspects of postoperative care cannot be imposed arbitrarily and intestinal function returns at a variable rate following a laparotomy.

It seems that in this case a more cautious postoperative approach would have been more appropriate, with delay in oral feeding until there was some evidence of a return of bowel function.

Haemorrhage post prostatectomy associated with chronic myelocytic leukaemia

Case Summary

This elderly man had been catheterised for urinary retention for a month and was admitted electively for a transurethral resection of the prostate (TURP). He had known chronic myelocytic leukaemia (CML) but there was no documentation of the date of diagnosis or any known thrombocytopenia.

However after a cystoscopy, litholapaxy and bladder neck incision several years prior he suffered an unconscious collapse and cardiac arrest secondary to massive haematuria requiring a six unit blood transfusion and fresh frozen plasma (FFP).
There was no mention of his CML or thrombocytopenia in the discharge letter at the time.

Thrombocytopenia was noted in the pre-admission clinic and a preoperative platelet transfusion was planned. He was admitted to hospital the day before surgery.

A duty haematologist was contacted and advice given to transfuse one unit of platelets the next day one hour prior to surgery.

The following day he received a platelet transfusion then a very small TURP was performed. There was no mention of anything untoward in the operation note. His urine was described as being dark rose on return to the ward and then overnight he started bleeding, went into clot retention and became hypotensive.

He was given Gelofusin, transfused and returned to theatre later that morning. At cystoscopy, clots were evacuated and the only bleeding site was a resected area in the bladder. He was taken to ICU still intubated and ventilated after a major blood transfusion, two units of FFP and two units of platelets.

Two days later he was transferred back to the ward with a catheter and irrigation. The catheter was removed two days later but he failed to void adequately and was recatheterised the next day.
Irrigation was started again because of haematuria and clots. Bleeding continued and that evening he was noted to be anaemic and hypotensive. After further discussion with a haematologist, blood was transfused but platelets were not given.

The patient continued to bleed and required bladder washouts. He remained hypotensive and tachycardic until suffering a cardiac arrest. He was resuscitated, intubated, ventilated and transferred to ICU but died soon afterwards.

Assessor's Comment

This patient had a very significant complication of his previous urological procedure, namely a cardiac arrest from profound haemorrhage related to chronic myelocytic leukaemia with thrombocytopenia. This should have led to an extremely careful preparation for this potentially life-threatening surgery.

I would have thought that there should have been very active involvement by the haematologists pre- and postoperatively. If this was unavailable at this hospital perhaps the surgery should have been performed at a more central location.

It appears likely that there was inadequate platelet function, despite at times a platelet count that was above the usual recommended threshold for platelet transfusion.

The management appears to have been very reactive rather than proactive, and the patient probably should have been monitored in HDU or ICU for longer, or returned earlier when the situation deteriorated. It appears that there is virtually no documentation in the notes of any platelet counts or haemoglobin levels.

Elderly patient with complicated pelvic sepsis

Case Summary

This elderly patient was admitted under the colorectal surgical unit with a short history of lower abdominal pain and distension associated with urinary retention. Co-morbidities included steroid dependent polymyalgia, mild congestive cardiac failure (CCF), type 2 diabetes, temporal arteritis and oesophageal reflux. Medications included 35 mg prednisolone daily, frusemide, esomeprazole, metformin, and clopidogrel.

Examination revealed low abdominal tenderness and distension but no frank signs of peritonitis. Clinical diagnosis was probable sigmoid diverticulitis with possible bladder involvement.

A CT scan showed what appeared to be a large ischio-rectal collection as well as a complex right sided adnexal cystic mass abutting the rectum. Initial treatment was conservative, with IV antibiotics, and cessation of clopidogrel in case surgery was required.

An examination under anaesthetic (EUA) and drainage of an ischio-rectal abscess took place 3 days later. Progress was slow and a further CT was obtained showing a persistent pelvic/pararectal collection with the possibility of an underlying diverticular abscess. A decision was made to reduce the prednisolone dosage, and a further EUA and drainage per rectum were performed.

The patient was in hospital for just over month in total. During this time the patient underwent a total of four EUAs before a decision was taken, after a month, to perform a laparotomy due to continuing sepsis and poor progress. A code blue collapse occurred during this period, probably due to hypoglycaemia.

The eventual laparotomy revealed a complex diverticular abscess with an adherent cystic ovarian mass. The general surgeon and gynaecologist (both trainees) performed a Hartmann resection and removal of the ovarian mass.

This procedure was complicated by persistent bleeding from the presacral region. The patient was transferred to ICU for blood transfusion and correction of coagulopathy. The patient was returned to theatre the following day, due to continued bleeding from the presacral veins. This was partially controlled, and the abdomen closed with packs in situ.

Back in ICU the patient deteriorated with worsening coagulopathy and multi organ failure. In consultation with family, a decision was taken to withdraw any further active treatment and the patient died just over a month after the original admission.

Assessor's Comment

I feel that there are two significant areas of concern here.

Firstly the decision to perform a laparotomy was made far too late in my view. An elderly patient on a significant dosage of corticosteroids who presents with a pelvic/para-rectal abscess secondary to diverticulitis needs early definitive surgery to have any hope of survival.

This patient was in hospital for a month, and had several EUAs and attempts at abscess drainage, before the decision to perform the Hartmann procedure. The patient's frailty and clopidogrel therapy influenced the delay in definitive surgical treatment, but ICU and haematologist support can allow surgery in these circumstances.

The suggestion is that after the first attempted drainage was unsuccessful in controlling pain and sepsis, the Hartmann procedure should have been done within the first week.

Secondly, it appears that all of the procedures were performed by surgical trainees. There is no evidence of direct consultant involvement in the operations. The Hartmann operation in a complex case of diverticular abscess can tax the most experienced surgeon and requires a careful and methodical approach.

The ureters are at risk and the presacral veins in the pelvis are easily torn. A consultant should either have performed the procedure or scrubbed in to assist the trainees.

On a positive note, the medical documentation was excellent throughout the admission.

A final more global comment on cases such as this:

This elderly patient with significant co-morbidities spent just over a month in hospital including several days in ICU, had large numbers of pathology tests (mainly bloods), multiple abdominal CT scans and chest x-rays, repeated transfusion of blood, platelets and FFP, and underwent six surgical procedures.

Despite all this the patient died. One remembers the oft-quoted statistic that 90% of medical resources are directed to patients in the last stages of their lives.

Clinicians have an obligation to make sure these resources are used wisely and in a timely manner.

Delayed diagnosis of perforated ischaemic intestine

Case Summary

An elderly patient was admitted to a major metropolitan hospital with a short history of being unwell with abdominal distension and vomiting. The patient had significant co-morbidities including dementia and was unable to give a history.

The past history included a recent admission to the same hospital under a different unit for a small bowel obstruction which was successfully managed conservatively.

The patient was noted by the registrar to have abdominal distension with right sided tenderness and guarding. Abdominal x-ray showed multiple fluid levels. The registrar diagnosed recurrent adhesional small bowel obstruction and admitted the patient for IV fluids and nasogastric suction.

The following day the patient was reviewed by the consultant of the original treating unit, who assessed the patient as being moribund due to an acute abdomen.

At operation there were extensive adhesions with a perforated ischaemic terminal ileum and gross peritonitis. A bowel resection without anastomosis was performed, leaving the abdomen open, and the patient was managed in ICU.

Several days later at a second laparotomy, the small bowel was anastomosed. The patient underwent a third laparotomy to close the abdomen several days later. The treating surgeon expressed serious concern about the patient's nutritional state and requested parenteral nutrition.

Several days later, due to concerns about wound infection, ICU staff were asked to remove skin staples but apparently the sheath suture also was cut leading to abdominal dehiscence. The patient was returned to theatre for the fourth time to resuture the abdomen.

Subsequent progress was poor with progressive development of multi organ failure. Consultation with the family resulted in a decision to withdraw active treatment and the patient died three weeks after admission.

Assessor's Comment

Clearly this patient's prognosis was poor from the outset (elderly demented patient with other co-morbidities and ischaemic gut/gross peritonitis). However a number of management issues arise.

From a reading of the case notes, the gravity of the patient's condition and significant overnight deterioration was not appreciated by the junior staff.

When consultant review took place the following day, immediate surgery was scheduled. Elderly patients with ischaemic gut may appear deceptively well however a high index of suspicion is needed.

Localised tenderness and guarding in a patient with small bowel obstruction should ring an alarm bell. A CT scan might well have helped in diagnosis. The delayed diagnosis of ischaemic gut is a recurring theme in mortality reviews and needs to be emphasised to junior surgical staff.

Clearly this patient was going to have a prolonged postoperative ileus, and parenteral nutrition should have been commenced much earlier rather than at a week postoperatively after repeated requests by the surgeon.

It appears that an error occurred in ICU when staff were requested to remove skin staples, also cut the sheath suture which led to abdominal dehiscence and the need for a another operation.

There may have been miscommunication between teams here, and in a busy ICU, communications need to be clear and well documented.

As noted previously in these reviews, in this case, enormous hospital resources were expended on an elderly patient who clearly had a dismal prognosis from the first operative procedure.

Given the subsequent cascade of postoperative problems, consultation with family and withdrawal of active treatment at a much earlier stage might have been appropriate.

Main message

There should be a high index of suspicion for ischaemic gut in an elderly patient with an acute abdomen.

Abbreviations

AFP	Alpha-feto protein
ANZASM	Australian and New Zealand Audit of Surgical Mortality
CCF	Congestive cardiac failure
CML	Chronic myeloid leukaemia
CT	Computed tomography
DVT	Deep vein thrombosis
EUA	Examination under anaesthetic
FFP	Fresh frozen plasma
HCC	Hepatocellular carcinoma
HDU	High dependency unit
ICU	Intensive care unit
INR	International normalised ratio
IV	Intra venous
MRI	Magnetic resonance imaging
SAAPM	South Australian Audit of Perioperative Mortality
TIA	Transient ischaemic attack
TURP	Transurethral resection of the prostate

SAAPM
South Australian Audit of Perioperative Mortality

South Australian Audit of Perioperative Mortality
Royal Australasian College of Surgeons
199 Ward Street
North Adelaide SA 5006
PO Box 3115, Melbourne Street
North Adelaide SA 5006

Telephone: +61 8 8239 1144
Facsimile: +61 8 8239 1244
Email: saapm@surgeons.org
Website: www.surgeons.org

- The information contained in this case note review booklet has been prepared by the Royal Australasian College of Surgeons South Australian Audit of Perioperative Mortality.

- SAAPM is a confidential project with legislative protection at a state level under the SA Health Care Act 2008 under Part 7 (Quality improvement and research) and Part 8 (Analysis of adverse incidents).

- The Australian and New Zealand Audit of Surgical Mortality (ANZASM), including the South Australian Audit of Perioperative Mortality, is protected as a 'quality assurance' activity under the Commonwealth Qualified Privilege scheme, Part VC of the Health Insurance Act 1973 (Gazetted 6 November 2006).

Royal Australasian College of Surgeons

CASE NOTE REVIEWS VOL 3 DECEMBER 2010

Government of South Australia
SA Health