

Royal Australasian College of Surgeons
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National Case Note Review Booklet

Lessons from the Audit

LACK OF CONSULTANT SUPERVISION

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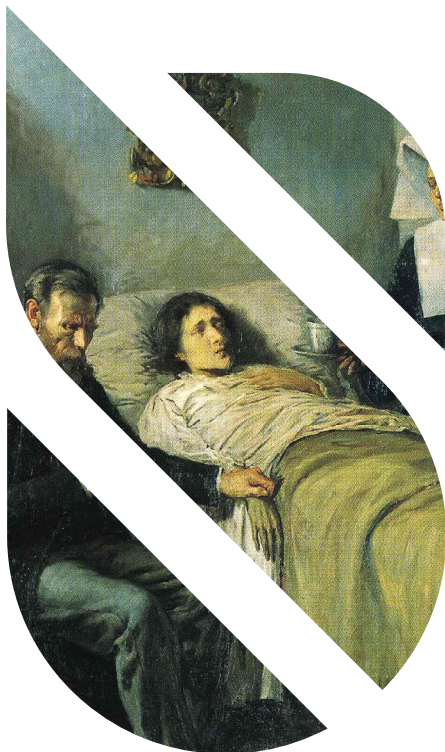
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Chair's Report

Surgical health care is delivered in an increasingly complex environment. Within our public hospital systems there are multiple layers of responsibility and care, including consultant medical staff rostered for particular hours, junior medical staff often with interrupted service to manage the patients in the hospital, and shared responsibility particularly occurring over weekends and public holidays. Often the person who carries the ultimate responsibility is the consultant under whose bed card the patient is placed. In this environment, it becomes vital that responsible oversight of the patient occurs.

Some of the cases in this booklet highlight the lack of consultant engagement and responsibility for the care of patients within the hospital. Daily surveillance of the compromised patient is essential and should be performed by an individual competent to identify the changing states in the acute care of surgical patients. This does not always happen. There are often unacceptable delays, responsibility is shirked, and individuals find their competing demands in either the public or the private system fails patients in one or other of these settings. As surgeons we have a responsibility to care for our patients first and ensure that the systems in which we work enable this to occur.

This current list of cases may encourage surgeons to speak to their hospital administration and look at their own practice to ensure that mechanisms are in place to deliver safe, reliable and predictable care to all patients. We do have competent junior staff to help us, but these are individuals who are learning and need to be carefully supervised. With elaborate electronic health systems enabling us to look at X-rays and case notes without even being in the hospital, the temptation to completely ignore seeing the patient is great. It remains essential to clinically review the patient rather than rely on imaging, blood results and electronic health records only.

This latest booklet from the Audit of Surgical Mortality provides examples that could have been easily fixed if the surgeons caring for patients chose to alter their practice, bring to the attention of their organisations weaknesses in the system, and not accept second rate surgical care. The challenge is clear, each of us has a responsibility to grasp it.

As always, any constructive feedback is gratefully received.



Guy Maddern

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Case Studies

Case 1: Ischaemic small bowel masquerading as gastroenteritis

General Surgery

CASE SUMMARY

An 88-year-old man presented to the emergency department (ED) with nausea, vomiting, watery diarrhoea (10/day) and right-side abdominal pain. His medical history included right hemicolectomy, hypertension, atrial fibrillation (AF) and chronic obstructive pulmonary disease (COPD). On examination, he had a low-grade fever but otherwise stable observations. He was tender in the right lower quadrant with no peritonism. Bloods revealed an elevated white cell count (WCC) of $11.9 \times 10^9/L$ and C-reactive protein (CRP) of 72 mg/L. A computed tomography (CT) scan of his abdomen showed thickened small bowel loops on the right side of the abdomen, which were dilated and fluid-filled, with an abnormal course of the superior mesenteric artery and superior mesenteric vein. There was also mesenteric fat stranding and congestion of the mesenteric vasculature with a small volume of free fluid in the pelvis. The patient was reviewed by the surgical registrar, who concluded that the patient had gastroenteritis and recommended a medical admission. The surgical registrar acknowledged a possible internal hernia and recommended ongoing surgical review. It seems that this initial consult was not discussed with a surgical consultant.

The patient was reviewed the next morning by the team registrar, who also felt that gastroenteritis was most likely and an internal hernia unlikely. The patient was commenced on clear fluids. The following day the patient was feeling unwell with a raised heart rate and poor appetite when reviewed by the surgical team, but the abdomen was soft and non-tender. His diet was upgraded again to free fluids. Later that day, the patient had worsening abdominal pains and a subsequent medical emergency team (MET) call for increased respiratory rate, hypertension and tachycardia. The patient underwent a repeat CT scan of the abdomen, which showed the small bowel loops on the right to be more dilated with a slightly increased amount of free fluid compared to the previous scan but otherwise largely unchanged. The patient was examined, and the scans reviewed by the surgical consultant, who decided to perform a laparoscopy or laparotomy given the patient's worsening abdominal pains with no clear cause.

At laparotomy, the patient was found to have purulent free fluid in the right abdomen with an ischaemic distal ileum extending from the ileocolic anastomosis to 40 cm proximally. The cause was thought to be embolic rather than an internal hernia. The anastomosis and ischaemic small bowel were resected, and the abdomen was closed for a planned relook and anastomosis in 24–48 hours after physiological improvement.

The patient was relatively stable in the intensive care unit (ICU) and was taken for a relook laparotomy with anastomosis three days later. He was extubated the day after surgery and initially improved but then deteriorated on the second postoperative day. Another CT scan was consistent with postoperative changes and no obvious leak. The patient continued to deteriorate the following day with fevers, rapid AF, worsening renal function and increasing confusion. The decision was made with the family to palliate the patient and he was discharged from ICU to the palliative care team. He died the next day.

DISCUSSION

This case illustrates the problems that arise when surgical patients are admitted under medical teams. If this patient, with an abnormal CT scan, had been admitted under the surgical team, he would have been more likely to have had an earlier consultant review and possibly his surgical pathology would have been diagnosed sooner. After being on call, consultants should review all their new patients at the following morning ward round. This ward round must include the consultations made under other teams. This did not occur for this patient, and he was only seen by a consultant following a MET call and a repeat CT scan.

This case also highlights the importance of prompt diagnosis and treatment in the elderly patient group, especially when it comes to small bowel ischaemia. Given the history and CT findings, the most likely cause for ischaemia in this patient would have been an internal hernia infarcting the bowel rather than something embolic, but this is difficult to know for certain. The assessor agrees that the notes did suggest a case of enteritis, which did not warrant a trip to theatre on initial presentation; however, it is also hard to believe that an abdomen would present as soft and non-tender a few hours before a MET call and a laparotomy showing dead gut with purulent free fluid. Nevertheless, the decision to go to theatre was correct and there were no issues with the operative management of this patient. The decision for a relook with delayed anastomosis in the setting of ischaemia was correct, but the patient should have been returned to theatre after 24–48 hours rather than waiting 72 hours.

CLINICAL LESSONS

Surgical consultants should review their new patients after being on call. This should include patients admitted under other teams.

It is in the elderly patient's best interest to be extubated as soon as possible. Delaying the second surgery prolonged the period of sedation and intubation, which may have contributed to this patient's poor outcome with postoperative confusion and sepsis, ultimately leading to palliation.

Case 2: Need for consultant-to-consultant communication for care of critically ill patients in teaching hospitals.

Orthopaedic Surgery

CASE SUMMARY

A 64-year-old man was admitted under internal medicine with infective exacerbation of chronic airways disease on a background of rheumatoid arthritis, gout, anaemia and hypertension. The patient deteriorated the following day with methicillin-susceptible *Staphylococcus aureus*, septicaemic shock from an unknown source, and a likely chest infection. The patient had several MET calls and was not deemed a candidate for ICU admission.

The patient was first noted to have swelling of the right hand on day seven, and after an aspirate revealed pus, an orthopaedics consult was requested. The patient was seen by the orthopaedic team and an appropriate diagnosis of right forearm abscess was made. He underwent drainage the following day.

The patient's general health fluctuated in the weeks thereafter, with ongoing septicaemia, acute kidney injury, fluid overload, electrolyte imbalance and respiratory distress. Five days after the drainage procedure, the patient was noted to have developed additional abscesses on the right forearm, left triceps and on the buttocks. The medical team decided to treat these lesions with aspiration and consulted the orthopaedic team five days later. The abscesses were drained in theatre by the orthopaedic consultant three days later. The patient unfortunately passed away from multifactorial respiratory failure 35 days after admission.

DISCUSSION

Given the multiple medical comorbidities and the poor general health of this patient, he could not recover from septicaemia and respiratory failure, despite appropriate medical care and surgical intervention. The documentation by the medical and orthopaedic teams was accurate, the surgical procedures performed were required and appropriate, and the patient and his family were kept involved and appraised of the prognosis. There was a delay in the second operative intervention for almost a week, for various reasons that are not documented: perhaps the patient was too ill and unstable for operative intervention? While the delay did not affect the ultimate outcome, it is not optimal care and may be seen to reflect a lack of close communication between treating teams. The decision to drain the abscesses with needle aspiration or by surgery should better have been made by the orthopaedic consultant after discussion with the admitting physician.

CLINICAL LESSONS

Direct discussion between consultants is essential for appropriate care of critically ill patients and documentation of that communication and subsequent care plan is essential.

Case 3: Unsatisfactory medical management – failure to act on elevated lactate

Orthopaedic Surgery

CASE SUMMARY

A 64-year-old man was admitted to an inner-city hospital complaining of abdominal and back pain that had been present for some time. He had recently been admitted to a district hospital for a similar complaint and had been discharged five days earlier. No notes for this admission were supplied. He was known to have hepatitis C and alcohol-related chronic liver disease, and a tentative diagnosis of a hepatocellular carcinoma had been made at the district hospital.

Within a few hours of admission, the patient collapsed on the ward and a MET call was made. He was deemed to be septic and was moved to ICU where high-level support including ventilation, inotropes, renal replacement therapy, enteral feeding and intravenous (IV) antibiotics was provided. After 48 hours, an orthopaedic consult was made due to cellulitis in the right leg. A fasciotomy/debridement was completed the following day, and a repeat washout and debridement occurred two days later. An above-knee amputation (AKA) was completed the next day. Although he had been off inotropes for some days and on paper had seemed to be improving, the patient deteriorated rather suddenly and died two days after the amputation.

DISCUSSION

The first-line assessor posed the questions: Was this an ischaemic leg or necrotising fasciitis? Should the AKA have happened earlier? Would earlier palliation have been appropriate considering the medical history? All of these are valid questions that may already have been raised by the reporting surgeon. There are several significant areas of concern with this case:

- failure to appreciate the significance of early warning signs
- delay in recognising the right leg pathology as a major driver for this man's illness
- lack of focus precipitated by concerns about the pre-existing illness.

Several early blood tests identified an elevated lactate of 8.7 mmol/L on arrival (normal lactate is 1.0 mmol/L). This is a marker of mortality, which should have precipitated escalation of this patient's case even though many other markers were relatively normal. This escalation did not occur.

The leg was only identified as a problem after more than 48 hours. Significantly, there is no documentation of the status of the leg prior to this, although there are some suggestions in the nursing notes of mottling and that the right leg was worse than the left. This should have been escalated. The orthopaedic team member who reviewed the patient records noted a pedal pulse on the right. In light of the subsequent finding of an occluded superficial femoral artery, this is unlikely. The assessor feels there was a reliance on doppler signals in the foot as a surrogate for pulses—a very high-risk practice. Earlier attention to the vascular status of the leg would likely have resulted in earlier consultation being sought and involvement of a vascular surgeon. Whether the ultimate problem was necrotising fasciitis or ischaemia is, to some extent, irrelevant. Delay in appreciation of the leg as a problem and then failure to manage this definitively was a significant contributor to the patient's subsequent demise. Allowing the leg to reperfuse in such a physiologically precarious situation was an unwise choice; a prompt AKA may have been transformative.

It seems that a significant lack of intensity in the care of this man resulted in a failure to identify a working diagnosis in the early stage, which was a major problem in his care. In a patient with such an elevated lactate, it is imperative that the source of the problem is identified early and managed promptly. It is clear that there was significant pessimism in the minds of many of this patient's carers regarding his prognosis. Perhaps an earlier decision to palliate may have been appropriate, but in practical terms the lack of a clear diagnosis renders such a decision hard to make.

CLINICAL LESSONS

This was clearly a taxing case where an initial diagnosis was elusive. The different teams treating the patient failed to appreciate significant findings and identify the source of the problem; whether this was due to apathy or confirmation bias can only be surmised. The surgical team was involved late and was unable to reverse this trend. The patient's prior comorbidity certainly contributed to the outcome. Whether the outcome could have been altered by a different approach is uncertain but given that this man walked into hospital, one believes it is quite possible.

Case 4: Failure to consider diagnosis of ischaemic bowel

General Surgery

CASE SUMMARY

A 73-year-old woman presented to the ED at 21:00 with abdominal pain, vomiting and diarrhoea. She was clinically well with normal observations and a soft abdomen; her WCC was $18 \times 10^9/L$ and lipase $<60 U/L$. The differential diagnosis was alcoholic gastritis or gastroenteritis. IV fluids were commenced, and the patient was observed in ED overnight. Medical history included COPD on a background of smoking. Over the next 24 hours, the patient's condition worsened. She became tachycardic and hypotensive. Urine output was not accurately measured. A CT of the abdomen/pelvis performed 15 hours after presentation demonstrated ascites and dilated gut. An ascitic tap performed at 12:15 returned bloodstained fluid and the patient was referred to the surgical team.

The patient was seen in ED the following evening at 19:00 by the principal house officer (PHO). A thorough history and examination was performed, and the patient was admitted under surgery for observation. There was no clear working diagnosis recorded. The following morning at 07:00 the patient suffered a cardiac arrest. At that time, lactate was 12.9 mmol/L , glomerular filtration rate had fallen to $18 \text{ mL/min/1.73m}^2$ and WCC had risen to $29 \times 10^9/L$. The patient was successfully resuscitated and transferred to ICU, from where, after further resuscitation and discussion with the family, she was taken to theatre. A laparotomy found extensive small bowel ischaemia. It was felt that resection of the ischaemic gut would not leave enough viable bowel for survival. The abdomen was closed with no resection performed.

DISCUSSION

The initial assessment in ED was thorough and the working diagnosis was consistent with the findings. Likewise, the assessment performed by the PHO was comprehensive and well recorded.

It does appear that there was a delay in diagnosis in this case. The ascitic tap was noted to be heavily bloodstained, but it seems this did not raise any suspicions from ED staff or the surgical PHO. The tap was performed in the context of a rising heart rate and falling blood pressure, and with a CT scan showing dilated bowel and the presence of ascites. The PHO appears not to have appreciated the significance of this. The PHO had not reached a working diagnosis when arranging the admission and there is nothing to suggest that the patient was discussed with

the on-call consultant at that time.

It is also of concern that ICU had to contact the director of surgery to get the on-call consultant to come and see the patient following the cardiac arrest. The reason for this is not stated but suggests a communication problem. Had there been consultant involvement sooner, the possibility of ischaemic bowel might have been considered and an earlier operation planned.

CLINICAL LESSONS

It appears that a delay in diagnosis and possible communication problems contributed to a poor outcome in this case.

Case 5: Temporal haematoma secondary to ruptured arteriovenous malformation with delayed craniotomy

Neurosurgery

CASE SUMMARY

A man in his late-60s presented via ambulance with severe headache of eight hours duration and progressive neurology. He was rated 13 on the Glasgow coma scale (GCS) on arrival at the ED, dropping to GCS 11 (E3V2M5-6) with a right-side hemiparesis (2/5 power) at the time of review by the neurosurgical registrar.

A brain CT/CT angiography demonstrated a 'large' (no measurements provided) left temporal haematoma secondary to an arteriovenous malformation (AVM) with 8 mm midline shift. An external ventricular drain (EVD) was inserted via a right frontal approach (entering the left frontal horn) and the intubated patient was returned for management in ICU.

The documented plan on admission from the admitting neurosurgical consultant was for an EVD, intracranial pressure (ICP) monitoring and medical management with consideration of clot evacuation if this approach failed. The patient was kept sedated and a note made of spontaneous movement on the left and withdrawing from painful stimuli. An iatrogenic pneumothorax from central line insertion required treatment.

Magnetic resonance imaging the following day demonstrated an increase in the degree of midline shift (10 mm) due to oedema, with no other new findings. ICP measurements via transduction of the EVD remained stable and within the normal range (10–15). Anisocoria developed that evening (left = 3 mm, right = 5 mm) and the EVD was promptly revised through the same tract, with cerebrospinal fluid (CSF) noted to be low pressure. An ICP monitor was inserted (ICP 15) during the same procedure. Documentation notes show: 'Post procedure right pupil down to 3 mm, still non-reactive'.

A repeat brain CT the next day (around 11:00) identified an entrapped right lateral ventricle. ICP remained unchanged. The case was discussed with a different neurosurgical consultant and options explored for another EVD, craniotomy and clot evacuation/resection of the AVM, or palliation. After a family meeting the decision for craniotomy was made. Cerebral angiography was pursued that afternoon and the craniotomy proceeded that evening (around 20:00). One episode of raised ICP (documented as 25–30 minutes, and responsive to hypertonic saline and sedation) was noted at 14:30.

The postoperative course was complicated by suspected seizure activity (day one post-op), ventilator-associated pneumonia (day eight post-op) and poor neurological recovery (best GCS E4VtM4). Imaging demonstrated complete excision of the AVM and no specific cause for failure of recovery. Reinsertion of an ICP monitor confirmed no increased ICP. After family discussion concerning the poor prognosis and the patient's wish not to live with disability, extubation proceeded on postoperative day 17. Comfort care on the ward continued until he passed away six days later.

DISCUSSION

Overall, no adverse events or areas of concern were identified in this case. An area of consideration raised by the first-line assessor is valid, regarding whether the intracranial haemorrhage could have been evacuated earlier. While a trial of conservative management in the setting of a ruptured AVM is a reasonable course of action, for this patient the presence of deteriorating neurology at the time of presentation associated with local mass effect from the haematoma would have provided justification for early operative management.

In reviewing the case in detail, the following areas were worthy of note:

The deterioration of the patient from GCS 15 to 11 and development of hemiparesis over the approximately eight hours between ictus and presentation (in the absence of an alternative cause such as seizure or hydrocephalus) is suggestive of the likely need for operation.

The treating consultant's assessment of the initial clot causing 'minimal mass effect' is subject to discussion given the degree of midline shift and early uncal herniation. The likelihood of progression from oedema over the coming days was also significant.

There is no documentation of consultant review of the patient at any time during admission, although there is documentation of consultant opinions being sought. One presumes that consultant ward rounds were occurring. This is unlikely to have altered the outcome but would have been supportive of the decision-making paradigm for this patient.

The initial decision for best medical management with CSF drainage/ICP monitoring was reasonable; however, the end point for 'failure' of this approach was not clear. It was noted that the patient was only intermittently obeying commands at the time of admission and subsequent sedation/intubation would predictably limit clinical assessment as a tool for monitoring deterioration. The use of ICP as an isolated endpoint also has limitations.

The treating consultant noted in the feedback form that increasing ICPs led to the decision to operate. This is not supported by the available documentation beyond the changes seen on CT scan (entrapment of the right lateral ventricle). The measured and documented pressures remained in the normal range during this period. One episode of medically managed raised ICP was noted, but this was documented as occurring after the decision to proceed to operative management. The increase in midline shift on the scan the previous day was also concerning but not used as a trigger to change management. The argument that there was no prolonged period of high ICP is supported by the documentation as well as the lack of infarct in brainstem or posterior cerebral artery territories.

If operative intervention was deemed likely for this patient, then progressing to cerebral digital subtraction angiography could have been considered earlier to minimise any delay in commencement once the decision to proceed was reached.

CLINICAL LESSONS

Given the patient's age and clinical status at the time of presentation, the outcome in this case may not have been any different if immediate clot evacuation/AVM resection was pursued; however, it represented a reasonable care pathway and could have been considered.

Greater consultant involvement may have assisted in decision-making for this patient.

Case 6: Failure to communicate with senior staff

General Surgery

CASE SUMMARY

A 61-year-old man presented to his general practitioner (GP) with scrotal pain and swelling, hypotension and tachycardia. He was a smoker and had gout, hypertension and dyslipidaemia. The GP sent him to the ED, where staff recognised his condition as septic shock from a soft tissue infection. He was managed appropriately and promptly (involving discussion with the infectious diseases unit) with IV broad-spectrum antibiotics via central and arterial lines, IV fluid and noradrenaline.

There was some difficulty in finding an admitting team. Referrals were made to general surgery and urology registrars. The urology registrar requested ultrasound with a call back with results. The general surgery registrar was contacted, and despite being informed that the patient was very unwell with sepsis from a groin soft tissue infection, the registrar felt that this was a urology issue. The ultrasound showed necrotising fasciitis. This was communicated to the general surgery registrar, who again deferred to urology.

The urology registrar's phone was answered by the urology consultant who stated that general surgery would do the debridement, but Urology would deal with the scrotum if needed. The urology consultant advised he would talk to the teams and plan for surgery and ICU post-op. By 4.5–5 hours after admission to triage, anaesthetics and ICU had seen the patient, and both the urology and general surgery registrars had reviewed the patient.

He underwent debridement 5.5 hours after admission and was admitted to ICU postoperatively. He remained on noradrenaline and was taken back to theatre on day two for further debridement. Afterwards, he required no further inotropes but went into rapid AF and his lung function deteriorated, requiring diuresis. He was thought to be relatively stable, so Plastic and Reconstructive Surgery was consulted regarding possible reconstruction.

The wound deteriorated on day four. The patient had worsening sepsis with fever, inotrope requirement and declining renal function. A third debridement was performed, during which it was noted that infection was tracking around the anus from the 12 o'clock to 7 o'clock position, raising the need for a diverting stoma to manage soiling. Following the debridement, the patient's inotropic requirements decreased but he was developing acute respiratory distress syndrome (ARDS) and having difficulty ventilating.

On days five and six the patient was reviewed by the colorectal registrar regarding a stoma planned for when he was improving or stable. At day eight he was seen by the colorectal Fellow and planning commenced for a stoma. This was done at day 10 and a laparoscopy converted to an open loop ileostomy was performed as the patient could not tolerate the pneumoperitoneum. Due to intraoperative instability there was no further debridement.

The patient continued to deteriorate, particularly from ARDS, and he passed away on day 12 from respiratory failure due to sepsis. The surgical unit registrar spoke with his family, who were satisfied that all had been done.

DISCUSSION

This patient presented in septic shock from necrotising fasciitis requiring multiple debridements and a defunctioning ileostomy. He ultimately succumbed to respiratory failure from sepsis.

CLINICAL LESSONS

This case highlights the need for an assigned responsible consultant providing ongoing input to drive decision-making in difficult cases.

ANZASM CLINICAL DIRECTOR'S COMMENT

The patient with necrotising fasciitis needs early and aggressive debridement to prevent a fatal outcome. This case demonstrates the need for consultant-to-consultant communication where there is a difference of opinion regarding the specialty involved.

Case 7: Overwhelming septicaemia after routine haemorrhoidectomy

General Surgery

CASE SUMMARY

A 47-year-old man with a history of mild asthma underwent a routine haemorrhoidectomy at a metropolitan satellite hospital. The following day, he was not discharged as planned due to malaise, nausea, mild abdominal pain and urinary retention. There was some rectal bleeding with defaecation, but this was probably not more than usual after a Milligan-Morgan haemorrhoidectomy. Later that evening, a MET call was made because of hypotension. Arterial blood gas showed haemoglobin to be stable but significant lactic acidosis. He was given IV fluids and antibiotics and transferred to a tertiary hospital.

On arrival at the tertiary hospital, the patient was admitted to ICU, intubated and ventilated. A CT scan did not reveal the origin of sepsis. He was taken to theatre for laparotomy and examination under anaesthetic of the haemorrhoidectomy site. No abnormality was found; in particular, incision of the perineal region did not show any underlying necrotising soft tissue infection.

Around 90 minutes after the completion of surgery, the patient passed away from overwhelming septicaemia resistant to further resuscitation. Autopsy was consistent with fulminant septic shock with ARDS, with blood and tissue cultures growing *Streptococcus pyogenes* and *Staphylococcus aureus*.

DISCUSSION

This fit and healthy 47-year-old man appears to have succumbed to overwhelming septicaemia after routine haemorrhoidectomy. Although extremely rare, there have been case reports of this devastating complication after apparently straightforward haemorrhoid surgery.

There are a couple of areas of consideration, although these were unlikely to have altered the ultimate course. Firstly, when the patient was not discharged as planned the day following surgery, the operating surgeon was not informed of this and was unaware of the patient's malaise and urinary retention. He was not informed until the MET call later that evening.

Secondly, the patient was not reviewed by the consultant surgeon until after transfer to the tertiary hospital, when the patient had been admitted to ICU and intubated, and CT scan had been performed. One would have expected earlier personal review from the operating surgeon after routine haemorrhoidectomy on a healthy patient led to such a rapid and severe deterioration.

CLINICAL LESSONS

Although the noted areas of consideration may not have affected the ultimate outcome in this instance, such lapses in communication and review by the consultant surgeon are not ideal.

Case 8: Multiorgan failure from stercoral perforation in an elderly patient

General Surgery

CASE SUMMARY

An 87-year-old woman was admitted with right upper abdominal and thoracic pain under the medical team via the ED. She had a background of hypertension, hypercalcaemia due to primary hyperparathyroidism, osteoporosis, osteoarthritis, hypothyroidism, spinal surgery, previous right hemicolectomy for cancer and a large hiatus hernia.

The patient's initial assessment, including blood tests, was unremarkable apart from a raised urea level. CT chest and abdomen showed no acute pathology, but the report did not comment on the large bowel. A surgeon who had reviewed the patient regarding her hiatus hernia commented that she needed to be assessed for fitness for surgery. She was commenced on opiates for pain relief and laxatives were started four days post-admission. The pain service saw the patient and she had a thoracic epidural and radiofrequency rhizotomies.

Nine days after admission, the patient had severe abdominal pain and was reviewed by the resident. Observation charts list her as febrile and tachycardic. No further ward observation charts were available for review. She had an abdominal X-ray that showed faecal loading but no blood tests were done.

Over the next 24 hours, entries by nursing staff state the patient felt unwell and was still in severe pain. She deteriorated and had a MET call the next morning for hypotension. She had acute renal impairment, elevated CRP and hypoalbuminaemia. Abdominal CT showed acute perforated sigmoid diverticulitis. She was reviewed by the surgical team and transferred to ICU for resuscitation prior to surgery. The patient had a laparotomy for stercoral perforation with faecal peritonitis. In conjunction with a colorectal surgeon who was also scrubbed, a decision was made to perform an extended left hemicolectomy and transverse colostomy. It was noted during surgery that passing the nasogastric tube (NGT) was difficult and a gastropexy was done to facilitate the process. She was extubated on postoperative day four. The NGT was retracted after reviewing her chest X-ray. She vomited a few times and likely aspirated. A second NGT was inserted via the other nostril.

The patient made minimal progress in ICU with ongoing septic shock needing inotropes and high-flow oxygen. She had increasing respiratory failure, and on day 11 she was made palliative with comfort measures only. She passed away on day 14. An autopsy was not performed.

DISCUSSION

An elderly patient with stercoral perforation and faeculent peritonitis succumbed to sepsis and multiorgan failure. The decision to operate with the assistance of a colorectal surgeon indicates good judgement in appreciating a complex case.

One area for consideration is the initiation of laxatives in patients on opiates, especially elderly patients who are prone to constipation. This patient had been on buprenorphine for several days prior to starting Coloxyl and senna. The other area for consideration is the NGT. Given her large hiatus hernia and intraoperative issues with NGT insertion, the second NGT, although unusual, could have been inserted prior to withdrawing the first.

There were two areas of concern. Firstly, the lack of adequate assessment in the 24 hours prior to surgery. Benign constipation is unlikely to induce fever and tachycardia in a patient with severe abdominal pain. At least basic biochemistry and haematological assessments should have been done. If the elevated CRP had been identified 24 hours earlier, the CT and surgical consultation could have occurred sooner. Whether the patient had the perforation the day before surgery is difficult to say, but the outcome could have been very different with initiation of earlier antibiotic therapy and surgery.

Secondly, there were multiple entries by nursing staff documenting the patient's son complaining about poor communication from the medical team. There was no documentation from the medical or surgical team about any discussion with the family. The first such entry is by the ICU consultant.

CLINICAL LESSONS

Communication with a patient's family is vital both from a medico-legal perspective and to provide high-quality patient care.

Case 9: Delay to surgical intervention resulting from failure to escalate clinical decision-making to surgical Fellow

General Surgery

CASE SUMMARY

An 82-year-old man with few age-related comorbidities presented to the ED with abdominal pain, constipation and nausea. He had attended the ED five days earlier with similar pain. A CT scan at that time suggested constipation and the pain settled with a bowel motion.

The current presentation occurred at approximately 23:30. He was assessed in the ED. CT investigation was performed and the patient transferred to the surgical ward. The radiology registrar discussed the CT findings with the night registrar at 02:30. The typed report states: ‘concerning for mid-gut volvulus’. The night registrar assessed the patient on the ward sometime between 02:30 and 05:00. An IV cannula, NGT and indwelling urethral catheter were inserted and fluid resuscitation commenced. A MET call occurred at 06:00 for hypotension and tachycardia. At this stage, the on-call surgical Fellow was alerted, who assessed the patient promptly. A provisional diagnosis of bowel ischaemia was made, and an urgent laparotomy confirmed a small bowel volvulus with likely extensive ischaemia of the gut. It was decided to untwist the volvulus, close the abdomen and conduct a second-look laparotomy after a period of ICU support.

The patient deteriorated in ICU with acidosis and increasing inotrope requirements. After discussion with various family members the patient was returned to theatre, where extensive non-viable small bowel was confirmed. The abdomen was closed and the patient palliated prior to death.

DISCUSSION

The first-line assessment of an accurate timeline between patient presentation and the MET call at 06:00 was difficult due to the lack of detailed clinical notes from the key decision-makers. The first-line assessor queried the delay in providing information to the surgical Fellow and the lack of detail in the CT report in the surgical case form. Upon second-line review, it is evident in the clinical record that the CT report—while containing several qualifications and caveats—conveys a picture of an evolving intra-abdominal catastrophe. The available records are limited, consisting predominantly of discharge summaries from the hospital and ICU. The bulk of the notes are non-contemporaneous and there are no records made by the night surgical registrar, ED doctor or Fellow.

The key issue is the delay in escalating this patient's management. The night surgical registrar was apparently made aware of the CT findings and assessed the patient yet failed to inform the Fellow. Without clinical notes from the registrar, it is unclear whether the registrar simply failed to appreciate the severity of the problem or if the registrar did not want to disturb the Fellow overnight. Possibly, the registrar assumed that the patient would behave in a similar benign, self-resolving way as he had on his previous admission. Regardless, based on the information available, the care provided by the night registrar was not consistent with sound surgical practice.

CLINICAL LESSONS

The delay in recognising the need for urgent surgical intervention is an area of concern in this case. Despite clinical information indicating that this patient was developing progressive symptoms, there appears to have been an inappropriate delay in clinical escalation. This situation warranted an earlier, more senior clinical opinion on management. At the time of orientation to a new unit, the after-hours registrars should be encouraged to contact senior team members for clinical assistance, and feel comfortable doing so, regardless of the hour.

Case 10: Problem with a nasogastric tube

General Surgery

CASE SUMMARY

A man in his early-80s, with known cardiovascular comorbidities, had an appropriate preoperative assessment for elective surgery and underwent a Whipple procedure for a malignancy in the head of the pancreas. The patient was managed postoperatively in ICU.

On postoperative day one, a troponin leak was suspected in addition to electrocardiogram changes consistent with myocardial infarction. Coronary angiography and coronary artery stenting (SALAMI – stents as an alternative to lytic therapy in acute myocardial infarction) were undertaken with appropriate anticoagulation.

A pancreatic leak was confirmed the next day following CT investigation. The following day (day three post-op), the NGT was removed on the orders of the consultant and the patient was permitted to take oral fluids. The patient became confused and tachypnoeic over the days that followed. Despite the leak, the patient was tolerating free fluids orally.

On day six post-op, the patient was noted to have abdominal distension, increased work of breathing and desaturation. An NGT was inserted by a senior ICU staff member (after several unsuccessful attempts by junior staff), but there was no drainage from the stomach.

The decision was taken to intubate the patient. During this procedure he had a massive vomit and aspirated. The NGT was reinserted and 3 L of gastric contents drained. The patient was scheduled for CT but developed profound respiratory distress and died a few hours later after a second cardiac event.

DISCUSSION

The wisdom of removing the NGT and leaving the patient on oral fluids in the presence of a confirmed pancreatic leak is questioned. It is not unusual for junior staff to experience difficulty when attempting to insert an NGT, especially if the patient is very unwell. It would have been appropriate for ICU to communicate with the surgical team regarding the difficulties experienced with inserting the NGT (three failed attempts).

It is highly unusual for there to be no drainage following the insertion of an NGT. This suggests that the NGT is not in the correct position. The tube should either be advanced until there is some drainage or be removed and reinserted. Under the clinical circumstances outlined in this case (acute gastric dilatation with ileus), consideration must be given to ensure protection of the airway during intubation.

CLINICAL LESSONS

Junior staff must be appropriately supervised. Techniques and ‘tricks’ on how to successfully insert an NGT are always welcomed by junior staff.

Note: Protocols were amended following discussion of this case at an ICU meeting. A hospital review reiterated the need to follow hospital policy; that is, to X-ray all patients after NGT placement.

Case 11: Consultant responsibility

General Surgery

CASE SUMMARY

A man in his late-70s was diagnosed at colonoscopy with a carcinoma of the colon. The surgeon referred the patient to their rooms for review in three weeks but a week prior to that appointment, the patient was brought to the ED by ambulance complaining of wrist pain, nausea, poor oral intake for six weeks, and weight loss. Comorbidities included AF (not on anticoagulants), diabetes and COPD. The medical registrar noted that the patient was passing small amounts of loose stools. The abdomen was soft and not distended. The patient was admitted under the physician of the day and commenced on prednisone with a provisional diagnosis of gout.

Two days after admission, a MET call was initiated at 22:00 on Friday. The patient was assessed by the medical team and noted to have a distended abdomen. Abdominal X-ray showed air fluid levels. The night surgical registrar reviewed the X-ray but did not attend the patient. They advised an abdominal CT.

At ward round the following morning (Saturday – day four of admission), the medical registrar reviewed the patient and noted signs of peritonism. A surgical consult was requested. The surgical registrar reviewed the patient that evening and found a distended, soft, non-tender abdomen. The CT scan showed a large bowel obstruction with an incompetent ileocaecal valve. The caecum measured 9.5 cm in diameter. Discussion with the surgeon on call (not the original treating surgeon) advised continuing conservative management over the weekend. The surgeon on call did not review the patient but advised that they would notify the treating surgeon on Monday morning.

Following an episode of faeculent vomiting the next day (Sunday – day five of admission), a junior medical officer review was requested for possible aspiration. The junior medical officer discussed the situation with the surgical registrar, who advised continuation of conservative management. The patient required morphine for the abdominal pain over the weekend.

On Monday, five days after initial admission, the original treating surgeon reviewed the patient early in the morning and immediately recognised the need for urgent laparotomy. This had to be delayed because of a Category 1 caesarean section.

Laparotomy later that day found faecal peritonitis due to a perforated caecum, with synchronous carcinomas in the sigmoid and transverse colon. A total colectomy and ileostomy were undertaken. The patient was returned to ICU

postoperatively due to intra-abdominal sepsis and resultant shock, necessitating mechanical respiratory and inotrope support. An insulin infusion was commenced with the patient experiencing a few days of fluctuating blood sugar levels. He initially made steady improvement, progressing to extubation and transfer to the high dependency unit (HDU).

On day 10 post-op, a wound infection developed, and the skin staples were removed. The same day, a hypoglycaemic episode (related to insulin infusion) occurred resulting in aspiration and subsequent re-intubation. The patient was found unconscious with vomitus in his mask. He was treated with IV glucose, to which he responded, but his respiratory function deteriorated during the evening due to aspiration pneumonia. He developed multiorgan failure resulting in withdrawal of treatment.

DISCUSSION

The recognition of a deteriorating patient requires the provision of appropriate support and supervision by consultant staff. With a caecal diameter of 9.5 cm, the risk of perforation was high. There was no record in the charts to indicate whether there was any tenderness in the right iliac fossa, the presence of which, together with the diameter of the caecum, would have made an operation imperative.

Communication between the on-call surgeon and primary treating surgeon was also inadequate. There was a significant delay in the surgical registrar reviewing the patient. 'Get a CT' is a frequent response to a surgical request for an opinion. Trainees have a responsibility to attend the patient and perform an adequate review, especially when significant clinical findings have already been demonstrated.

The incidence of wound infection following laparotomy for faecal peritonitis (or similar intra-abdominal sepsis) is high. Options are to leave the skin wound open and undertake a delayed primary closure, or loosely close the wound and pack with an antiseptic gauze. Both strategies significantly reduce the incidence of wound infections.

While the delay to operating theatre probably did not impact on this patient's outcome, it nevertheless continues to be a source of frustration for surgeons when operations are time critical. These matters should be escalated to the local hospital quality councils/management.

The root cause analysis (RCA) team identified multiple environmental and human factors that compromised the care of this patient, including staffing ratios and level of demand on the ICU/HDU. Regular rounds, patient reviews and updates did not occur. The team found that ICU/HDU had a number of staff vacancies, equating

to a shortage of 28–30 shifts per fortnight, with a reliance on casual staff to fill those gaps. As a result of inadequate monitoring, the patient’s deterioration was not recognised.

Recommendations made by the RCA team include the appointment of a second ICU registrar, a review of the support and escalation processes to trigger additional resource provision at times of surging demand for ICU services, and the implementation of a model of care that provides adequate support and supervision of junior nursing staff.

CLINICAL LESSONS

It has been clearly demonstrated that clinical outcomes are improved when patients admitted as an emergency are reviewed by a consultant within 24 hours. In the United Kingdom, it is expected that emergency admissions will have a consultant review within 14 hours of admission.

Aspiration remains a common contributing factor to surgical morbidity and mortality. Medical practitioners must be alert to the potential for aspiration and take appropriate steps to mitigate its occurrence.

Abbreviations

AF	atrial fibrillation
AKA	above-knee amputation
ARDS	acute respiratory distress syndrome
AVM	arteriovenous malformation
COPD	chronic obstructive pulmonary disease
CRP	C-reactive protein
CSF	cerebrospinal fluid
CT	computed tomography
ED	emergency department
EVD	external ventricular drain
GCS	Glasgow coma scale
GP	general practitioner
HDU	high dependency unit
ICP	intracranial pressure
ICU	intensive care unit
IV	intravenous
MET	medical emergency team
NGT	nasogastric tube
PHO	principal house officer
RCA	root cause analysis
WCC	white cell count



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