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Introduction

In this fourth CHASM Casebook, we have selected 14 cases with learnings of interest to surgeons in general. Many identify a delay in diagnosis, the need to follow up investigations or failure to recognise a deteriorating patient. Most reflect the critical importance of clinical leadership which is the theme of the 2012 Casebook.

Professor Cliff Hughes has contributed a commentary on the place of leadership in a medical world which is undergoing rapid and continuous change. Clinical leadership is especially important now, in an environment of sub specialisation and management by delegation. Each patient needs someone to take overall responsibility to direct their management and coordinate their care. Cliff clearly identifies the necessary attributes of the clinical leader. As surgeons, we must all be leaders.

We hope you derive educational value from the cases which follow. As always, the CHASM Committee welcomes your comments.

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A patient in her 70s was admitted to hospital A with “dizziness”, although the nursing record noted central abdominal pain. She was admitted under a medical team with a diagnosis of “dehydration and occult bacteraemia”. On day 2, she looked unwell, with generalised abdominal tenderness and guarding. An abdominal x-ray was performed, but there was no record that it was followed-up. An abdominal CT scan was performed on day 3 and reported as showing “free gas”. Review of the x-ray confirmed the presence of free gas in the abdomen. A surgical team was consulted and the patient was promptly transferred to the operating theatre, where a laparotomy, peritoneal lavage and a patch repair of a perforated duodenal ulcer was performed. Post-operatively, she was transferred for ICU care in hospital B and it was planned to return her to the operating theatre for a further laparotomy. A cardiac arrest occurred before further surgery could be done and resuscitation was unsuccessful.

The second-line assessor commented that the abdominal x-ray was performed over 24 hours before the patient was taken to the operating theatre.

**SURGICAL LEARNINGS:**

- There was failure to follow-up the abdominal x-ray, which would have identified free gas in the abdomen. Definitive treatment was delayed
- Results of radiological investigations of acute conditions should be obtained promptly
- Mortality from perforated peptic ulcers increases sevenfold after a 24-hour delay in treatment
- Prompt surgical consultation is necessary for patients who present with abdominal pain. This should be reflected in emergency department protocols.

**REFERENCE:**

Kum CT al.

*Elderly patients with perforated peptic ulcers: factors affecting morbidity and mortality*

Talk and die: a head injury with coagulopathy

Case 2

A patient in her 50s was admitted to hospital A, following a fall while intoxicated. When admitted, she had a Glasgow Coma Scale (GCS) of 15, reported headache, but had no neurological deficit. Alcoholic liver disease with cirrhosis and a coagulopathy were diagnosed. The INR was 1.5, thrombocytopenia was present. A CT scan of the brain showed cerebral contusions in the left temporal lobe, traumatic subarachnoid haemorrhage and a shallow acute left subdural haematoma. She was transferred to hospital B.

She was admitted to a high-dependency unit and placed on hourly neurological observation. A repeat CT scan was ordered, after neurosurgical review noted dysphasia. On day 2, she was reported as being confused. A repeat CT scan was ordered. Her condition deteriorated on day 3, where both physiotherapy and nursing notes confirmed that she was more difficult to rouse, but there was very little medical documentation in the notes. Alcoholic withdrawal or decompensated cirrhosis were considered the likely causes. Early on day 4, she suffered a sudden deterioration and cardiac arrest and could not be resuscitated. The presumptive diagnosis was a pulmonary embolus, but an autopsy did not confirm the diagnosis.

The CT brain scan performed on day 2 in hospital B reported extensive intracerebral contusions and haemorrhage, with vasogenic oedema in both frontal lobes, as well as the left parietal and temporal lobes. Whereas in the first CT scan there had been no midline shift, there was now midline shift present and intraventricular blood. There was no documentation in the notes that the CT scan was reviewed by one of the more senior members of the neurosurgical team.

SURGICAL LEARNINGS:

- In the setting of traumatic intracerebral haematoma in a patient with coagulopathy, particular attention should be paid to serial imaging.
- It seems likely that the cause of death was expansion of the temporal lobe haematoma, causing acute tentorial herniation and brain stem compression. This complication can occur very quickly where an expanding temporal lobe lesion is present.
- Prompt reversal of coagulopathy with platelet transfusion, fresh frozen plasma and vitamin K, is desirable.
- Where the initial CT scan is abnormal in a patient with moderate or minor head injury, serial CT scans are indicated to identify delayed intracranial haematoma.
- Comorbidities should not be assumed as causing neurological deterioration in a patient with a head injury. A CT scan is desirable to exclude surgically treatable lesions.

REFERENCE:

Fearnside M, McDougall P

Moderate Head Injury: A System of Neurotrauma Care

Consider intra-abdominal complications early

Case 3

A patient was admitted to hospital A for an elective laparoscopic repair of a recurrent ventral hernia. Co-morbidities included hypertension and morbid obesity, with a BMI 43. Previous surgery had been complicated by necrotising fasciitis of the abdominal wall. The operation report documented adhesions being divided and a mesh repair being secured, with combination of sutures and fascial fixation devices.

The patient complained of refractory pain within a few hours following operation and continuing over the next two days, despite significant analgesia. There was protracted vomiting on day 1 post-operatively. The patient was reviewed by the consultant on each of the two days. No investigations were undertaken during this time. On the evening of the second post-operative day, the patient became tachycardic and hypotensive. A MET arrest call was made in the early hours of the following day. A CT scan demonstrated free intra-abdominal fluid. A laparotomy revealed a small bowel perforation, which was resected. There were changes of necrotising fasciitis, which were debrided.

The patient remained septic and was transferred to hospital B where further surgery was undertaken. Despite this, the patient developed multi-organ failure and died six days following the initial procedure.

SURGICAL LEARNING

• Severe abdominal pain following surgery, not relieved by adequate analgesia, should raise the possibility of an intra-abdominal complication. It is appropriate in this situation to consider investigations which might suggest an underlying cause for the persistent pain.
Further bleeding in multiple trauma

Case 4

An elderly patient was admitted to rural hospital A, following a motor vehicle accident in which he sustained multiple injuries. These included fractures of the pedicle of C2 and the spinous processes of L3 & L4, left rib fractures, with a small pneumothorax visible only on chest CT, a splenic laceration, a probable de-vascularised left kidney and free intra-peritoneal blood. Following resuscitation, including the administration of fresh frozen plasma and O-negative blood, the patient was transferred by air to hospital B (tertiary referral centre). A laparotomy was performed, a retroperitoneal haematoma noted, as was a stable splenic laceration. No major source of bleeding was identified. Post-operatively, a falling haemoglobin indicated ongoing bleeding. Prophylactic anticoagulation resulted in an elevated APTT and INR. The patient was mildly obtunded. Nasogastric feeding was instituted, despite persisting ileus. Aspiration pneumonitis occurred. The patient died on day 19.

SURGICAL LEARNINGS:

- Given that an O-negative blood transfusion was considered necessary in hospital A, with a CT scan diagnosis of free blood in the peritoneum, consideration should have been given for a laparotomy at hospital A where there was surgical capability
- Signs of ongoing bleeding following a laparotomy should trigger a repeat CT scan of the abdomen
- Aspiration pneumonitis needs to be constantly considered in a patient on nasogastric feeds with a depressed conscious state. This remains a significant and recurring clinical problem in CHASM audits.
Importance of the “Time Out” protocol

Case 5

An elderly patient was transferred from hospital A with a head injury following a fall. Initially the Glasgow Coma Scale (GCS) was 14-15. Mannitol was administered. Transfer to hospital B was arranged after a CT scan showed an acute subdural haematoma. Her GCS decreased and she was taken to the operating theatre for craniotomy.

The operating surgeon started to prepare the head by shaving but on the incorrect side.

The “Time Out” procedure was then undertaken by the operating surgeon and scrub nurse but the rest of the team continued to prepare the head and were not involved in the process as they were preparing for surgery in a deteriorating patient. An incision was made on the incorrect side. This was recognised and the patient re-positioned. The correct side was established and the craniotomy was then performed.

A large acute subdural haematoma was drained but the patient’s condition remained poor and she did not survive.

SURGICAL LEARNINGS:

• While this departure from protocol did not influence the outcome, the Time Out procedure must be completed by all team members, particularly the surgeon, scrub nurse and anaesthetist, after the patient is anesthetised and positioned

• Each member of the team must independently verify the patient procedure and site

• Where appropriate, imaging data should be used to confirm the site and side.

REFERENCE:

• Correct Patient, Correct Procedure and Correct Site


• Avoiding Wrong Side Burr Holes and Craniotomies

Rapid Response Alert/NPSA/2008/RRR009


Fractured bones: fractured system—lack of ICU/HDU beds

Case 6
An elderly patient was admitted to hospital following a fall, in which she fractured her left humerus and the neck of her left femur. There was a past history of carcinoma of the left breast with bony metastases, controlled by radiation. A decision was made to fix the fractures internally. Anaesthetic review indicated that the patient would require ICU/HDU post-operatively, however ICU/HDU beds were not available. The planned surgery was cancelled several times because of lack of beds. It was decided to transfer her to another hospital, but this did not occur. The patient underwent uncomplicated surgery on day 6 after admission. Post-operatively there were no ICU/HDU beds available. She deteriorated steadily and was shifted to palliative care. She died on day 11 following admission. Prior to the surgery, multiple locum and staff anaesthetists were involved each day in her care. The treating surgeon felt that this was undesirable.

SURGICAL LEARNINGS:

• Surgeons frequently struggle to provide optimal care in the context of inadequate support from the health system, in this case, the unavailability of ICU/HDU beds

• With the given co-morbidities, the final outcome may not have been different. Transfer to a hospital with adequate facilities, which had been assessed as required for the patient, however, was desirable and may have altered the outcome.
Importance of an orthogeriatric model of care for patients with fractured neck of femur

Case 7
An elderly patient, previously living independently at home and self-caring, was admitted to hospital with a fractured neck of femur. On admission, the patient was recorded as being dehydrated and having mild renal failure. Surgical treatment was performed some 48 hours after admission. Post-operatively, hypotension and drowsiness were noted. The patient died two days after surgery. No medical or orthogeriatric referral was made before or after operation.

Case 8
An elderly patient was admitted with a fractured neck of femur, having fallen at home. The patient underwent surgery with internal fixation in a timely manner, the following day. The patient had significant co-morbidities including ischaemic heart disease, congestive cardiac failure and chronic renal failure. Over the operative and immediate post-operative period, the haemoglobin fell to 85 g/dL, further compromising cardiac function. Increasing cardiac failure resulted in palliative measures and the patient died five days post-operatively. The second-line assessor commented that there would have been benefit from joint medical/orthopaedic admission.

SURGICAL LEARNINGS:
- Elderly patients with fractures, especially of the neck of femur, should be managed by an orthogeriatric team, with co-ordination of the responsibilities between clinicians. It is desirable that the geriatrician be the clinician responsible for medical decision-making, in close consultation with the orthopaedic team.

REFERENCE:
Fractured Hip Surgery in the Elderly Patient Safety Report
Evidence, leaders and practice innovation

Evidence Based Medicine or EBM, has become the catchcry of practice innovation in health care. Why then, have so many guidelines and models of care failed to reach the “tipping point”. Why is it that clinicians generally take so long to adopt “the obvious” or to accept the evidence? For surgeons to answer this question we must take another look at the role of opinion leaders, identify their key characteristics, find out who and where they are, evaluate their effectiveness, and position them where they can do most good. So important is the role of these leaders that “the new idea either finds a champion or dies”1.

Opinion Leadership is the degree to which an individual is able to influence other individuals attitudes or overt behaviour informally2. But leaders are much more than that. They are an entree for external change agents, enablers of communication, role models and conveyers of health messages. Importantly, they may be “the residual capital” when the change agent moves on2. Good leaders are not necessarily early adopters of innovation, but they do monitor the climate of opinion and exercise influence when the advantages of the new are apparent3. They can certainly remove barriers to change. It is important then, that we evaluate Leadership in any new model of care or system change.

There is a common view that leaders must be clinicians. In a Quality Systems Assessment Survey, NSW Health staff were asked about the implementation of the “Between the Flags” program for the recognition and management of the deteriorating patient4. Of the Nursing Unit Managers and/or Heads of Departments completing the survey, 70% agreed strongly that the program benefited patient safety. However, only 61% agreed that the clinical leaders had “an important part to play”, while 80% agreed or strongly agreed that strong executive support was an important part of success4. Clearly it is important to identify the appropriate team leaders for any change program.

There is a new and unique national opportunity with emerging Local Health Networks, Medicare Locals, Clinical Networks and Key Clinician Groups. We must adopt a more rigorous approach to the role of leaders throughout the system. There are many great opinion leaders in medicine, nursing and each of the allied health professions, but the rewards and recognition diminish with the pressures of complex care in all sectors. As surgeons we must foster emerging opportunities and provide an exciting environment to mentor and grow the next generation of leaders. So what is it that makes a good leader?

First, the skill base for a leader should be defined and agreed! Miller5 described a useful contextual model. He described four Leadership Capabilities: - (1) profound knowledge, (2) profound strategy, (3) purposeful direction and (4) purposeful behaviour. Leaders applying these capabilities will demonstrate Leadership Dimensions: (i) constancy of purpose or vision, based upon a (ii) compatibility of values. This will lead to a (iii) congruence of activity and ultimately (iv) competent outcomes5.
Leaders who use knowledge to inform purposeful behaviour will promote interdependence over independence, will model ethical standards and will review individual trainee performance. Are the team and individual values aligned and compatible? For this to happen, leaders must **BE THERE**.

Leaders who combine strategy and direction effectively will create meaning for the team, will expect clear outcomes and will manage the human resources entrusted to their care. In short – they will **BE AWARE**.

Leaders who model the vision so that deeds match the rhetoric will be true champions. They will need to constantly monitor the team and support change as soon as it becomes necessary, and not wait until it is inevitable. They must be **WILLING TO DARE**!

Leaders bring their knowledge and experience to bear on the direction agreed by the team. Their experience will assist their followers to understand how the system works. With their wisdom they will be able to build a team, communicate effectively with each member, grow the next generation and ensure competent outcomes for both patients and their staff. Leaders **MUST CARE**!

How can leaders have their most impact? Important though the politics and bureaucracies are, change must occur at the personal level. Leaders who are there, who are aware, who are willing to dare and, above all, to care can and will influence change – even in Health. Conversely, failure to develop leaders and create opportunities for better team work will only allow the established “silos” to continue. Good leaders will never do it alone. For it is in those old silos that we are most likely to encounter the most dangerous definition of EBM – “Everybody But Me”!

Professor C F Hughes AO
March 2011

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An acute abdomen demands early surgical consultation

Case 9

A patient in her 70s was admitted to hospital A under a medical team with abdominal pain and distension and vomiting dark fluid. A diagnosis of upper gastrointestinal haemorrhage was made and a gastroscopy planned for day 2. Abdominal and erect chest x-rays were taken on admission (day 1) but were not reviewed by the emergency department staff, medical registrar, or the consultant physician on day 2. The gastroscopy was deferred because of other emergency cases. Further vomiting and pain occurred (no blood in the vomitus). At 23:00 hours on day 2, the night resident made a diagnosis of small bowel obstruction. The surgical registrar was contacted, a gastric tube inserted (1.6L of faeculent fluid being aspirated) and an abdominal CT scan performed at 04:30 hours on day 3. This confirmed the presence of a small bowel obstruction. The general surgeon who was contacted saw the patient promptly and arranged for urgent laparotomy. The small bowel obstruction was caused by two adhesions compressing the ileum. These were divided. Forty hours had elapsed between admission and laparotomy. A second laparotomy was required, to decompress the bowel via an enterostomy. Despite vigorous resuscitation and ICU support, progressive metabolic deterioration occurred and the patient did not survive.

SURGICAL LEARNINGS:

- Patients with an acute abdomen, presenting to emergency department should be assessed by a surgeon
- All investigations performed - in this case abdominal and chest x-rays - must be reviewed promptly. Failure to review the x-rays delayed definitive surgery. Follow-up on investigations should be a routine part of handover at the end of each shift.
Inadvertent vascular catheter placement

Case 10
A patient aged in his 60s was admitted to hospital A with severe lower abdominal pain, gross abdominal distension and an elevated white cell count. An X-ray indicated a large bowel obstruction. The patient underwent a laparotomy and right hemi-colectomy for caecal volvulus. Surgery was uncomplicated. Post-operatively, there was an exacerbation of pre-existing respiratory disease. Re-intubation was required.

The patient was transferred to hospital B for intensive care support. Before transfer, a right internal jugular venous catheter was inserted. After arrival, he was noted to require reduced levels of sedation. Blood pressure readings fluctuated. The CVP was connected to a pressure transducer and his blood pressure and blood gas analysis confirmed the catheter to be in the carotid artery. A left hemiparesis was recorded and a cerebral CT scan revealed a right cerebral hemisphere infarction. The patient did not survive the cerebrovascular complication.

Case 11
A patient aged in his 60s was admitted for elective colonoscopy, which was performed by a gastroenterologist. Following removal of a polyp at the splenic flexure, significant bleeding was encountered, which could not be controlled endoscopically. The patient was intubated and resuscitated, then transferred to the operating theatre for an emergency laparotomy. A left hemicolecction was required for bleeding and a perforation of the splenic flexure. In the post-operative period, a central venous line was inadvertently placed in the carotid artery. Despite transfer to a tertiary hospital, hemiplegia developed, with cerebral oedema and raised intracranial pressure. The patient did not survive the cerebrovascular complication.

SURGICAL LEARNINGS:

- While primarily an anaesthetic or ICU complication, inadvertent arterial cannulation of the carotid artery is a cause of unexpected neurological deterioration in the peri-operative period. It is essential, that when a central venous catheter is inserted, its position is verified to avoid major arterial cannulation.
- A policy directive from NSW Health recommends: “Ultrasound should always be used if available and the operator trained in the use of the device for CVAD (Central Venous Access Device) insertions, particularly for internal jugular, femoral and PICCs when the peripheral veins are not visible or palpable”.

REFERENCE:
Central Venous Access Device Insertion and Post-insertion Care
Hernia and retroperitoneal haematoma

Case 12

A patient in his 90s was admitted for an elective repair of an inguinal hernia and removal of a facial basal cell carcinoma. There were various comorbidities, including emphysema and myeloproliferative disorder. Assessment in the pre-admission clinic revealed impaired renal function (serum creatinine 141 mmol/L, normal = 55-105 mmol/L) and a blood dyscrasia (WCC 34.5 x 10⁹/L, normal = 3.7-9.5 x 10⁹/L) with a leukoerythroblastic picture. There was no record that the surgeon was aware of these abnormalities at the time of surgery.

Surgery was uneventful. Post-operatively, Clexane 40mg daily was started and three doses (over the next three days) administered. Immediately, bleeding from the cheek wound was noted.

On days 2 and 3, extensive bruising on the left side of the abdomen and flank and scrotum were noted. The Clexane was stopped. Two units of blood were administered. On day 4, he was seen by the original surgeon (a weekend intervening) shortly after which time, an emergency response was called, because of hypotension. Further blood and fresh frozen plasma were given. It was noted that there was a large haematoma in the hernia wound. The patient refused further treatment and a decision was made between the family, the patient and medical staff not to continue. He died shortly thereafter. Although an autopsy was not performed, it was felt that the most likely cause of death was retroperitoneal bleeding.

SURGICAL LEARNINGS:

- The co-morbidities were not appreciated by the surgical team, something which emphasises the need for effective communication among all team members
- Post-operative venous thromboprophylaxis needs to be carefully considered, with regard to age and co-morbidities, as elderly patients may have renal impairment, for which a reduced dose is required. The coagulation status should also be assessed.
A cerebellar haematoma and coagulopathy

Case 13

A patient in his 60s was admitted with dizziness, nausea and a Glasgow Coma Scale (GCS) of 15. A CT scan confirmed the presence of a large cerebellar haemorrhage. There was a background history of alcoholic liver disease, hypersplenism and chronic pancytopenia and thrombocytopenia. His INR was 1.7 and platelets 51x10⁹/L on admission. Measures were taken to correct the coagulopathy.

On the initial CT scan, there was no evidence of hydrocephalus. On day 2 he was intermittently confused and on day 3 the GCS reduced to 13 then 11. A CT scan revealed obstructive hydrocephalus and a tight posterior fossa. He remained coagulopathic. A further CT scan was performed on day 4, which showed little change. Gastroenterology was consulted.

On day 5, there was a further deterioration in the GCS to 8. He was intubated and reviewed by neurosurgery. The intensivist expressed concern that, after five days, a definitive management plan had not been established. An external ventricular drain (EVD) was inserted. There was some improvement in the next 48 hours, but he remained coagulopathic.

On day 7, he underwent a posterior fossa craniotomy and evacuation of the haematoma. There was some improvement thereafter. The EVD was eventually removed and he was discharged from ICU on day 20. After transfer to the ward, his GCS varied, but two weeks later he was found unresponsive and a CT scan showed a large left frontal intracerebral haemorrhage, with subarachnoid and intraventricular bleeding. His GCS remained poor and the decision was taken to palliate.

The second-line assessor commented that the underlying medical condition may have ultimately resulted in death, despite best medical practice, but that there were a number of issues for consideration.

SURGICAL LEARNINGS:

- Poor documentation and a lack of communication among the treating teams contributed to delay in formulating a management plan
- Earlier consultation with gastroenterology and haematology would have been desirable
- There was a 48-hour delay in a deteriorating patient with evidence of hydrocephalus (despite coagulopathy), before an EVD was inserted. A similar delay occurred in the timing of the definitive procedure.
Not everything is as it seems—diverticular disease may not be the only diagnosis

Case 14

A patient presented with a pericolic abscess, presumed to be caused by diverticular disease. It was drained percutaneously. A faecal fistula ensued, which was managed conservatively. The patient was recorded as visiting the emergency department at two major hospitals and visiting different surgeons, post-operatively.

The patient was re-admitted five months after the initial operation with intra-abdominal sepsis, an established faecal fistula and malnutrition. A Hartmann’s operation was undertaken.

Histopathology revealed a poorly differentiated adenocarcinoma.

Post-operatively the patient developed respiratory failure from which he recovered and was making steady progress until found dead in the ward. An autopsy revealed aspiration pneumonitis.

SURGICAL LEARNING:

- Colonoscopy following percutaneous drainage of a pericolic abscess is important, to establish the diagnosis as diverticular disease and to exclude an alternative, or co-existing diagnosis, e.g., carcinoma
- Aspiration pneumonitis continues to be a frequently recorded comorbidity contributing to death in surgical patients.
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