Royal Australasian College of Surgeons

LESSONS from the AUDIT

QASM

Queensland Audit of Surgical Mortality

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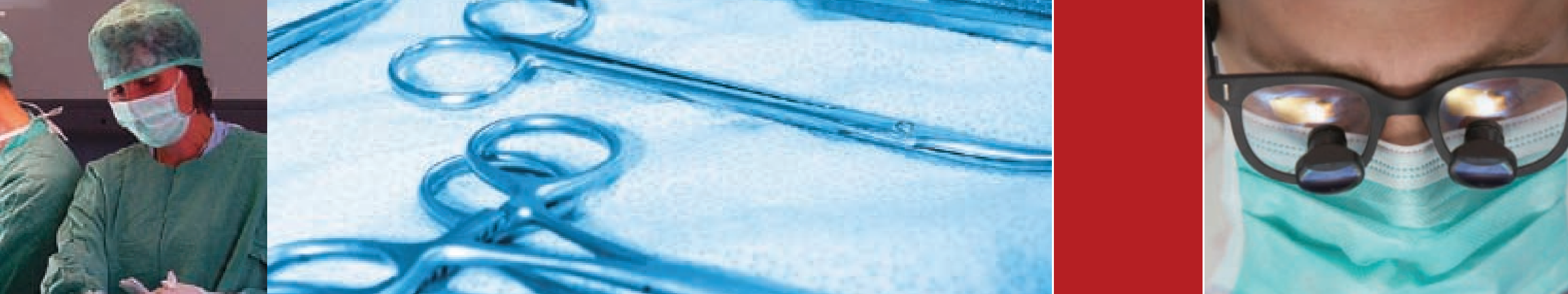
*"You must learn from the mistakes of others.
You can't possibly live long enough to make them
all yourself." - Sam Levenson (1911-1980)*



Perforated T-cell gastric lymphoma undergoing chemotherapy

A 67 year old female patient was undergoing chemotherapy for advanced T-cell gastric lymphoma. At endoscopy a contained perforation of the stomach was diagnosed by the gastroenterologist but the information was either not received or not acted on by the haematologist who continued with chemotherapy.

The patient was discharged from hospital but returned some time later with peritonitis necessitating immediate laparotomy. A distal gastrectomy with roux-en-y reconstruction and feeding jejunostomy was performed and the initial post-operative course was satisfactory.

Two weeks later a second laparotomy was necessary for a pinhole leak at the enteroenterostomy site and one week after that a third laparotomy for a pinhole leak at the gastroenterostomy site. General deterioration following this proceeded to the patient's demise.

Comment

Lack of communication between the endoscopist and the haematologist resulted in the continuation of chemotherapy at a time when this should have been ceased. The surgical team was not involved until obvious clinical perforation occurred.

Staphylococcal mediastinitis following CABG and aortic valve replacement

A 69 year old male patient underwent aortic valve replacement with a bioprosthetic valve and three vessel coronary artery grafting. The initial post-operative course was uneventful but five days later the patient developed a significant left pleural effusion requiring insertion of an intercostal drain.

48 hours later the patient fell in the bathroom and his clinical condition deteriorated dramatically. Sepsis was immediately considered and antibiotic therapy commenced. Later that day he was returned to theatre where the sternum was reopened and swabs taken at this time confirmed Staphylococcus aureus. Rapid deterioration progressing to multi-organ failure ensued and the patient died that day.

Comment

There were no adverse events in this case but this rare complication of staphylococcal infection was responsible for the sudden deterioration and the patient's demise.

Aspiration pneumonia – prolonged conservative management of ileus

A 71 year old male had a transvesical (extra peritoneal) prostatectomy for benign prostatic hyperplasia. He was diabetic with ischaemic heart disease and hypertension and had an in dwelling catheter for three months. He had been investigated as an outpatient for pseudo-obstruction.

The operation was uneventful but he was slow to mobilise and developed abdominal distention. On day five plain x-rays and CT abdomen and chest showed evidence of generalised atelectasis and gaseous distension but no mechanical obstruction. Conservative management was continued but over the next 24 hours sudden deterioration occurred with a cardiac arrest and death.

Comment

A post mortem examination revealed a distended bowel with ischaemic changes but no mechanical cause, significant ischaemic heart disease and bronchopneumonia secondary to aspiration.

Aspiration of vomitus

An 87 year old female had a revision total hip replacement performed and the early post-operative course was satisfactory. She was managed in the intensive care ward in the early post-operative period and on day three vomited and rapidly deteriorated. It was thought that aspiration was most likely and rapid demise ensued.

Biliary leak and sepsis following choledocholithiasis–delays in management

A 65 year old male was admitted with acute cholecystitis. A CT scan confirmed acute cholecystitis and choledocholithiasis.

Open cholecystectomy was performed five days later and a gangrenous gallbladder removed. The reason for the delay in cholecystectomy was not apparent but the patient did have significant co-morbidities (CABG, aortobifemoral graft, anterior resection for diverticular disease, alcoholic pancreatitis, adhesive small bowel obstruction, and portal vein thrombosis.
A traumatic bladder rupture was also recorded and as a result he had urethral strictures with recurrent urinary tract infections).

Twelve days after open cholecystectomy the patient was transferred to a private facility and an ERCP was performed and the common duct stone extracted. A cystic duct leak was identified and a stent inserted. Three days after this a CT scan identified a sub-hepatic collection and a percutaneous drain was inserted. Bile-stained purulent fluid was obtained. He was then transferred back to the original hospital and his condition deteriorated becoming hypotensive, coagulopathic, acidotic, hypothermic with a white cell count of 45, INR 2.7, lactate greater than 20.

A diagnosis of septic shock and ischaemic bowel was made and laparotomy performed. The right colon was ischaemic and was resected and in the process of mobilising the colon the sub-hepatic collection was entered and substantial bleeding occurred from the surface of the liver. A ten litre blood loss was recorded. The abdomen was left open and the patient's condition continued to deteriorate and he died the following day.

Comment

The main points made by the assessor in this difficult case with multiple co-morbidities was the delay in implementing

treatment initially of the cholecystectomy, the delay between cholecystectomy and ERCP, and the management of the sub-hepatic collection.

Pulmonary embolus on Heparin

A 78 year old male was admitted for a revision of a left total knee replacement. He had a history of cardiomyopathy and the anaesthetist warned him of significant risk with further surgery. Because of aseptic loosening and wear of his previous knee replacement he decided to proceed. His immediate post-operative recovery was slow as anticipated but on the second post-operative day he developed right heart failure with progressive dyspnoea and deteriorated rapidly and died.

Comment

The post mortem examination revealed significant pulmonary embolus and the surgeon, on reflection, thought he would not proceed to major surgery in future in someone with the cardiac restriction of this patient.

Multiple trauma – Pulmonary embolism at autopsy

A 42 year old female sustained fractures of the thoracic and lumbar spines, an unstable pelvic ring fracture and near complete traumatic below knee amputation of the right leg, parietal skull fracture, facio-maxillary fractures and significant chest trauma.

Initial management involved pelvic external fixature and open amputation of the right lower leg, suture of facial lacerations and then progressive debridement and change of dressing of a wound in the right leg. Her progress was satisfactory and she was awaiting rehabilitation when she suddenly deteriorated, became hypotensive and arrested some three months after admission.

The subsequent Coroner's report indicated a large pulmonary embolus despite the patient being protected with 5000 units of Heparin b.d.

Bleeding oesophageal varices, cirrhosis, perforated stomach

A 66 year old female was admitted with severe haematemasis and a history of liver disease. After resuscitation including blood transfusion, endoscopy was performed revealing a large amount of clot in the stomach but no bleeding point was seen. The gastro-oesophageal junction was covered in clot and could not be accurately viewed.

Following this the haemoglobin continued to drop and a Sengstaken tube was inserted. Increasing abdominal distension made ventilation in the intensive care ward difficult and a decision was made to perform laparotomy.

At operation there was free intraperitoneal blood, a large amount of blood clot in the stomach, and a tear in the anterior gastric wall near the gastro-oesophageal junction. The liver was grossly cirrhotic. The patient arrested intra-operatively and could not be resuscitated.

Infarction of the liver, transitional cell carcinoma of the kidney and ureter.

A 68 year old female was admitted with acute on chronic renal failure due to an obstructed right ureter (her only remaining kidney). Percutaneous nephrostomy was performed and renal function improved. Imaging suggested a urothelial cancer-causing obstruction and laparotomy was performed. Urothelial malignancy was confirmed without reconstructive option and a nephroureterectomy was performed, and dialysis planned post-operatively.

The initial post-operative course was uneventful but on the fourth post-operative day the patient suffered a catastrophic collapse with progressive hepatic failure and death.

A post-mortem examination revealed intra-abdominal and retroperitoneal haemorrhage, metastatic transitional cell carcinoma in para-aortic nodes, and hepatic infarction. It was said that the haemorrhage "most likely came from the renal pedicle".

Colectomy for slow transit constipation, inappropriate laparotomy for obstruction 11 days post-operatively.

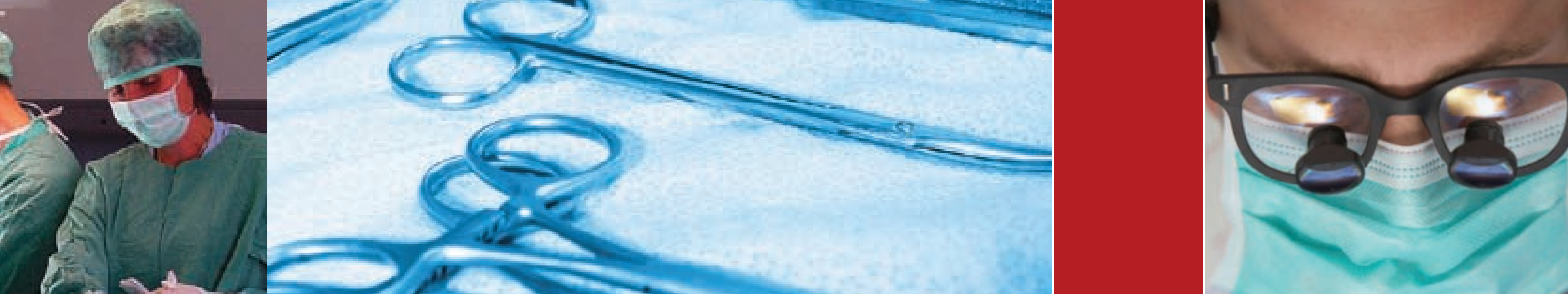
A 69 year old male had an elective subtotal colectomy, ileorectal anastomosis and covering ileostomy for slow transit constipation and mega-colon at hospital 1. Eleven days later an exploratory laparotomy was performed for small bowel obstruction. The surgeon describes "difficult dissection, enterotomies made, procedure abandoned and abdomen left open". The following day the patient was transferred to hospital 2 and the day after that exploratory laparotomy was performed with removal of four packs and a small enterotomy was noted and closed. The abdomen was closed.

Wound dehiscence and faeculent discharge developed several days later and over the next three months the patient was returned to the operating theatre on at least five occasions in an attempt to deal with high small bowel fistulae and vac wound dressing. TPN was given and he was managed with an open laparostomy and wound dressing for about six weeks. At the final laparotomy three months after the initial surgery the fistulas were dissected and excised and the small bowel anastomosed. The loop ileostomy was closed and the abdomen was closed without tension after release of the external oblique fascia on both sides.

The initial post-operative course following this was uneventful but four days post-operatively he had a septic episode with isolation of Staphylococcus and deteriorated rapidly over 24 hours and died.

Comment

The first-line assessor made the point that the initial surgery for slow transit constipation in a 69 year old male was inappropriate and to perform a laparotomy eleven days after this procedure was also inappropriate. The only indication for further abdominal surgery at that stage is life-threatening haemorrhage, undrained sepsis or dead bowel, none of which applied in this



case. The assessor felt that the management at hospital 2 had been satisfactory and there had been no adverse events at that hospital.

Bleeding chronic duodenal ulcer in a Warfarinised patient

An 81 year old male was admitted with significant PR bleeding and was hypotensive on admission. At a previous admission six weeks prior upper and lower endoscopy had been performed and no significant abnormality had been found in the upper endoscopy and the lower endoscopy showed diverticular disease and a small rectal polyp.

The patient was resuscitated but continued to drop his haemoglobin and the Warfarin was reversed using vitamin K and fresh frozen plasma. Over the next 48 hours his condition improved and oral feeding was commenced. He was found dead a few hours later.

Comment

A hospital post-mortem revealed a chronic duodenal ulcer. Failure to proceed with upper endoscopy on the second admission may have led to the failure to diagnose chronic duodenal ulcer. The patient had been admitted about six weeks previously for bleeding and upper endoscopy at that time was said to be normal.

Haemorrhage following laparoscopic cholecystectomy

A 69 year old male was admitted with an acute abdomen thought to be due to cholecystitis. He had severe rheumatoid arthritis and was treated with steroids, Methotrexate, aspirin and non-steroidal anti-inflammatory drugs. He also suffered cancer of the prostate for which he had received radiation therapy. He had recently been in inpatient requiring blood transfusion and at this time was known to be pancytopaenic secondary to Methotrexate.

On admission the patient presented features of systemic inflammatory response syndrome and generalised peritonitis. The patient was noted to have recent onset of atrial fibrillation and mitral regurgitation and investigation revealed features of pneumocystic cholecystitis. He was treated with Vitamin K, FFP, fluids, antibiotics, and taken to theatre for a laparoscopic cholecystectomy. At operation an injury to the free edge of the liver was noted and this was bleeding. Cholecystectomy was completed but the bleeding was not controlled and a large drain was placed in the abdomen. The patient returned to the intensive care ward but three hours later over 300mls of blood had been collected in the drain and the patient was observed to be distended.

The surgeon did not feel that the abdominal distension was due to blood loss but the patient progressed to an acute abdominal compartment syndrome and required 6 units of packed cells following circulatory collapse. Finally a decision was made to reoperate 24 hours after the surgery and a gross haemoperitoneum was discovered. Haemostasis was successfully achieved at laparotomy using packs but subsequent reoperation revealed ischaemic bowel which was incompatible with life. The patient died five days after the first operation.

Assessor's Comment

Although this man's chances of surviving with or without an operation were slim, his chances of surviving were reduced by the post-operative haemorrhage which was predictable, avoidable and worthy of detailed evaluation. The patient's pathway may have been turned around by an abbreviated operation with packing (damage-control). Surgeons who are well trained in laparoscopic surgery may lack the willingness to undertake open surgery and may lack the training to undertake open surgery with damage control.

Gangrenous ischaemic colitis following aorto birenal endarterectomy

A 75 year old male was admitted with end-stage renal disease on haemodialysis and was taken up for semi-elective renal revascularisation for recurrent episodes of "flash pulmonary oedema". This decision was taken at a multi-disciplinary meeting where various treatment options were considered and discussed with the patient. The surgery was uneventful and post-operatively the patient was transferred to ICU. Within a few hours he became acidotic, hypotensive and coagulopathic and laparotomy (in the ICU) revealed bleeding from the surgical site on the aorta and extensive necrosis of the large bowel from the splenic flexure to the sigmoid colon.

Comment

Having undergone major aortic surgery any significant hypotension should have raised the issue of intra-abdominal bleeding and lactic acidosis should have alerted the surgeon to the possibility of ischemic gut though it would be unusual to expect it to happen so early after surgery. Patients with ESRD do have reduced reserve and cannot be expected to behave like patients with normal renal function.

Mastectomy and colectomy at one sitting

An 81 year old lady was admitted for elective surgery for a carcinoma of the breast (total mastectomy and level 2 axillary dissection) and laparoscopic assisted anterior resection for carcinoma of a colon. The patient was on Warfarin for atrial fibrillation, had a history of ischaemic heart disease and was being treated for hypothyroidism (ASA grade 3). The operations proceeded satisfactorily and the early post-operative course was uneventful. On day three she had a sudden cardiac arrest and could not be resuscitated. The post-mortem report concluded the cause of death was due to ischaemic heart disease.

Comment

The assessor felt that two major procedures performed at the same time in an elderly patient with significant co-morbidities may have been unwise.

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Gram negative septicaemia following cystoscopy initiating a change in clinical path

An 88 year old male had a check cystoscopy after a previous transitional cell carcinoma of the bladder had been resected. The procedure was performed under local anaesthetic with a flexible cystoscope.

Within 48 hours he was admitted to hospital with gram negative septicaemia, progressive multi-organ failure and died rapidly.

Comment

The surgeon has outlined a change in clinical path for outpatient flexible cystoscopy to include routine micro urine, check of micro urine prior to the procedure, and if urosepsis is present, the procedure will be cancelled and antibiotics given. If there is a history of urosepsis but the micro urine is clear the procedure will be done under intravenous prophylactic antibiotic cover.

Acute subdural haematoma – delay in availability of operating theatre

A 64 year old female sustained a head injury after a fall and was admitted with GCS 12 and a dilated pupil. CT scan confirmed an acute subdural haematoma but there was delay of two and a half hours waiting for an operating theatre to become available before craniotomy could be performed.

Comment

This patient had a dilated pupil and a scan confirming a subdural haematoma. Urgent craniotomy was required and opening of another theatre should have been undertaken. This was an administrative and staffing problem.

Severe head injury – peritonitis from PEG

A young man sustained a severe head injury after a fall. The cerebral injury was severe and diffuse and he required a percutaneous tracheostomy and a nasogastric tube. A decision was made to insert a PEG and following this he developed peritonitis and succumbed in 48 hours. The prognosis of his head injury was considered to be very poor but the ultimate cause of death appeared to be peritonitis following insertion of the PEG.

Repair of right inguinal hernia – bronchopneumonia and end-stage COAD

A 78 year old male with acknowledged respiratory problems using home oxygen was admitted for an elective repair of a right inguinal hernia. The procedure was uneventful and involved intravenous sedation, a regional block and a laryngeal mask. Post-operatively the patient recorded significant pain in the wound. He was mobilised but developed significant shortness of breath and a chest x-ray demonstrated extensive right-sided pneumonia. The respiratory registrar was consulted and agreed there was multi-lobular consolidation of the right lung and considered the possibility of severe aspiration pneumonia. He was given antibiotics, physiotherapy and he was given a fluid load intravenously of one litre over one hours and then another litre over 10 hours. His condition deteriorated progressively and did not improve after a trial of bipap. He died on the fourth post-operative day.

Comment

The assessor was impressed with the constant pain at the site of the wound and the difficulty with coughing and clearing mucus because of this. It was thought that consideration might have been given for in-wound local anaesthetic infusion and that the fluid load of 1 litre in an hour in someone with a compromised cardio-respiratory state may have exacerbated the problems of congestive cardiac failure.

MRSA sepsis following bypass for popliteal aneurysm

A 70 year old male was admitted for a semi-elective bypass for a popliteal aneurysm. One week later, after a fall, the patient bled from the distal wound and this was re-explored. Evidence of sepsis was found and the distal graft anastomosis was revised and a portion of the vein graft was sent for culture. Following this the patient became confused and disorientated with a haemoserus discharge from the wound and the culture grew MRSA. The patient was treated with the appropriate antibiotic therapy and was offered a below knee amputation to eliminate the cause of sepsis and avoid further bleeding but refused. He died 48 hours later.

Perforated gangrenous cholecystitis

An 80 year old morbidly obese female with multiple co-morbidities (pacemaker, hypertension, haemacromatosis) was admitted initially with chest pain. Over the next 48 hours she developed pain in the right upper quadrant of the abdomen and developed a high fever and signs of sepsis. She was very tender in the right upper quadrant and was transferred to a major base hospital for further treatment.

The CT scan revealed an inflamed gallbladder with peri-hepatic fluid and a diagnosis of perforated acute cholecystitis was made. Her condition deteriorated rapidly before surgery could be undertaken and a decision was made to offer palliative treatment only.

Comment

Biliary pathology often presents with chest pain and is commonly misdiagnosed as cardiac in origin. The multiple co-morbidities in this case made diagnosis more difficult and in spite of transfer to the appropriate centre, rapid deterioration occurred before the operation could be carried out.

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