coress Feedback

Cases in this Summer 2017 JASGBI issue of Feedback come from across the spectrum of surgical specialties. No area is immune to risk. Various themes emerge: these illustrate the perils of undertaking surgical procedures without prior reference to important information: essential investigations; MDT reports and previous operative records. Technical and procedural problems are described. A major theme, to which we all need to pay attention, is maintenance of standards of communication and handover. This is vital as surgical teams become larger with centralisation of specialties; shift working becomes more common; and cross-cover persists. In these circumstances, handing on vital information, and ensuring that the responsible clinician is fully informed about aspects of patients' care will reduce the risk of near misses and adverse incidents.

We are grateful to those who have provided the material for these reports. The on-line reporting form is on our website www.coress.org.uk which also includes previous Feedback Reports. Contributors will be sent a "Certificate of Contribution", which may be included in the contributor's record of continuing professional development, ARCPs and appraisals.

Most experienced clinicians remember cases from their experience, the lessons from which might be helpful to peers and colleagues. Please send these case details to CORESS, who will ensure your contributions inform others.

Professor Frank CT Smith
Programme Director, on behalf of the CORESS Advisory Board

Inadequate preparation for emergency surgery

(Case Ref: 215)

As the Vascular Consultant on-call, I was asked by the Consultant covering the wards to undertake a femoral endarterectomy and femoro-popliteal bypass for a diabetic patient with critical ischaemia and a gangrenous toe. The patient had been on the ward for several days while his INR was corrected following excessive warfarinisation for atrial fibrillation. I saw the patient on the ward and consented him, having discussed him with the ward Consultant. Unfortunately the ward-based PACS system was down and I did not review the angiograms.

Whilst reviewing another patient in the Emergency Department I was called to the emergency theatre to undertake the femoro-popliteal bypass. When I got there the patient had already been anaesthetised by the on-call anaesthetist. Prior to scrubbing, I called up the patient's angiograms on the theatre computer to find that the patient did indeed require the intended procedure, but also had an extensive iliac stenosis. An earlier MDT report on the computer was not filed in the patient's notes but had commented on the fact that angioplasty and stenting of this lesion was indicated, possibly as part of a combined (hybrid) procedure. If the surgery alone was carried out it was likely that this would fail due to poor inflow.

With the patient already asleep, I went to the radiology department, where fortunately the interventional radiologist had finished a case and reviewed the films. Another lucky break occurred in that the hybrid theatre had just finished their case. The surgeon using that theatre agreed to defer his next case and the radiologist agreed to undertake the necessary iliac stenting as a combined procedure with the fem-pop. After a delay of some 40 minutes the patient was transferred from the emergency theatre to the hybrid theatre where the combined stenting and surgery took place uneventfully.

Reporters Comments:

This case was a serious untoward incident (SUI) in which the patient would have had to be awakened from anaesthesia because the correct procedure could not be undertaken. A series of events contributed to the adverse event: poor communication at handover; failure of ward-based imaging; absence of the

MDT report in the notes; lack of presence of the surgeon at sign-in checks; but the principal cause was my failure to review the necessary imaging before taking responsibility for the procedure. The time-out WHO check would not have prevented this because the imaging review check occurs after the patient has been anaesthetised.

A happy outcome only occurred because of the professionalism and team-work of the on-call anaesthetist, the radiologist and the hybrid theatre team, all of whom adapted to the situation without fuss or complaint. I have learned a significant lesson from this. The operating surgeon MUST undertake scrupulous review of all relevant investigations and management plans prior to operating on a pooled list or on a handed-over patient, to reduce risk to the patient (and liability to the operator).

CORESS Comments:

The Advisory Board agreed with these comments.

Too many guns…. **(Case Ref: 217)**

During a reversal of Hartmann's Procedure, the rectum and sigmoid colon were found to be very narrow. Intra-operatively, both 25mm and 29mm circular stapler guns were opened and checked to see where they would reach in the rectal stump. Further dissection allowed a 29mm gun (the preferred option) to reach near enough to the stump. A 29mm anvil was placed in the descending colon and an attempt to achieve an anastomosis was undertaken. The gun was placed rectally, the spike extended through the rectal stump and docked with the anvil. The gun tightened as expected, but didn't fire correctly. It then became apparent that the 25 mm gun had been used in the attempt to connect to the 29mm anvil. A further attempt with the correct gun was successful.

Reporter's Comments:

A size mismatch between staple gun and anvil occurred when the wrong gun was used in error. The design of the gun for this device allows a size mismatch to occur - beware! Ideally only one size of staple gun should be open and available at the operating table at any one time. A visual and verbal check should be undertaken to ensure matching components before the staple gun is fired to form an anastomosis.

CORESS Comments:

This report suggests a system error in which it was possible to unite two mismatched components. CORESS would like to learn if this situation has also happened to you? If a common occurrence, representation will be made through MHRA to alter the manufacturing process. Colour coding of device components for individual sizes is used for some devices, although even this may not prevent similar occurrences. As per the reporter's comments, only one gun and its specific components should be available in the operative field.

Retained wound protector **(Case Ref: 218)**

A self-retaining wound protector was used to hold a wound open during a colorectal operation. The surgeon made the incision slightly bigger and put his hand through the protector to perform a hand-assisted anastomosis. When the patient became unwell a few days later it was found that the wound protector had been retained in the abdomen. A second operation was required to remove it.

Reporter's Comments:

Wound protectors and other surgical items such as ports and gallbladder retrieval bags are often not included in the surgical count. When an incision is enlarged, the wound protector should be changed for a larger size. It is assumed that the protector slipped into the wound when the incision was enlarged, and was retained under the abdominal wall when the surgeon removed his hand.

All disposables should be included in the count. Just because it is assumed that it would not be possible for something to be retained does not mean it could not happen.

CORESS Comments:

All disposable items used in the operative field should be counted in, and out. Do you know what the policy is in your theatres… and is it enforced? Always check that the equipment being removed form the wound is intact, and that components have not been left in situ.

Eye Irritation Caused by Alcoholic Chlorhexidine Skin Preparation (Case Ref: 219)

I had trained my registrar to perform percutaneous glycerol injections for trigeminal neuralgia. After performing this successfully, he inadvertently cleaned the surface landmarks running to the lower eyelid, with alcoholic Chlorhexidine, which came into contact with the cornea. The eye was thoroughly washed but the patient awoke with an inflamed conjunctiva. She was referred to ophthalmology, who prescribed topical antibiotics, and eventually the patient made a complete recovery.

Reporters Comments:

There was poor attention to detail. Not enough emphasis during training is placed on the hazards of alcoholic preparations coming into contact with the cornea. After initial skin preparation around cheek, alcoholic preparations should be removed. Water or saline should be available to clean the skin post-operatively.

CORESS Comments:

Alcoholic Chlorhexidine may cause irreversible corneal damage when used for facial skin preparation, and has also caused sensorineural deafness, secondary to cochlea injury, when used in ear surgery. Cleansing with the preparation should be avoided in these regions. Where exposure has occurred, the preparation should be washed away with water.

Mini-tracheostomy complications (Case Ref: 221)

An elderly female patient had an uneventful right upper lobectomy for lung cancer. 5-days post operatively she began to develop respiratory failure, secondary to retained secretions which she was unable to expectorate. It was decided to insert a mini-tracheostomy tube under local anaesthetic to facilitate pulmonary toilet. The patient was in the intensive care unit (un-intubated) and an anaesthetist administered Midazolam sedation. During the insertion procedure the guidewire became misplaced outside the airway and on insertion of the mini-tracheotomy tube and dilator, a significant arterial injury occurred. When the dilator was withdrawn there was massive haemorrhage up the mini-tracheotomy tube, which could not be controlled. The patient lost in excess of 1700ml of blood extremely rapidly and although she was transferred immediately to an operating theatre where local control was achieved by emergency sternotomy, resuscitation was unsuccessful.

Reporter's Comments:

Poor technique was involved. The guide wire was not in the trachea before dilation began. The procedure was not undertaken in or near an operating theatre in case of haemorrhage, although this complication, thankfully, is rare.

National guidelines on indications for mini-tracheostomy usage and insertion are lacking. As a consequence of this incident it is now our practice to introduce mini-tracheotomy tubes only in an anaesthetic room or an operating theatre. The procedure is performed under general anaesthesia and commences with a rigid bronchoscopy for bronchial toilet. The rigid bronchoscope is then withdrawn to just below the level of the cords and the mini-tracheotomy tube is introduced into the airway with direct visualisation through the rigid bronchoscope to ensure correct placement of the tube.

CORESS Comments:

Mini-tracheostomy should be undertaken in a well-lit operating theatre or anaesthetic room, with facilities and available personnel with expertise to intubate at hand. In many cases general anaesthesia may not be initially feasible, (sedation is usually contraindicated), and the procedure can be carried out under local anaesthesia by experienced staff. A key step in the procedure is to ensure that the Tuohy needle is in the trachea, with free aspiration of air, PRIOR to insertion of the guidewire. The National Safety Standards for Invasive Procedures should be enforced for these procedures.

If the patient is severely hypoxic and non-cooperative it may be a wise alternative to intubate, ventilate and opt for early tracheostomy.

MDT Mishap (Case Ref: 222)

A 42 year-old man with multiple sebaceous adenomata was referred to a Medical Geneticist who diagnosed Muir-Torre syndrome (a variant of hereditary nonpolyposis colorectal cancer – HNPCC). An experienced surgeon set up a surveillance protocol for upper gastrointestinal, colonic and genito-urinary surveillance.

A right colon carcinoma was diagnosed ten years later on colonoscopy. CT staging revealed a 2.1cm coeliac lymph node. The colorectal MDT noted this report and arranged for a PET scan, which showed "focal intense uptake in the stomach and coeliac node. This could represent a separate gastric primary malignancy". Gastroscopy was performed but biopsies were negative.

The patient proceeded to laparoscopic right hemicolectomy. No mention was made on the consent form or operation note about excision biopsy of the coeliac lymph node.

Reported histology of the caecal carcinoma was pT3 pN0. None of the nine resected nodes showed any evidence of metastatic spread.

The post-operative colorectal MDT made no reference to the pre-operative PET scan and summarised: "no plans for chemotherapy, discharge from colorectal MDT". CT/PET scan 12 months later showed that the coeliac node had increased to 29mm in size. Gastroscopy at this time revealed an oesophago-gastric carcinoma primary, with histology confirming moderate differentiation. Laparoscopy pre-operatively showed dense adhesions but no evidence of intra-abdominal coelomic disease. The patient was treated with neoadjuvant chemotherapy for four months and gastrectomy was subsequently performed. Stomach histology showed a moderately differentiated yT4 N2 lesion with 4/17 positive lymph nodes. The patient subsequently developed disseminated intra-abdominal metastatic disease.

Reporter's Comments:

The case illustrates adverse potential consequences of subdivision of surgical responsibility for intra-abdominal malignant disease. The gastric carcinoma was clearly present when the caecal lesion was diagnosed. The PET scan demonstrated the coeliac node but no thought was given to excising this at the laparoscopic colonic procedure. The fact that the patient had Muir-Torre syndrome was overlooked. The absence of any positive loco-regional colonic nodes, but a PET positive coeliac node, was ignored by a teaching hospital MDT.

Notwithstanding the two-year delay in performing gastrectomy for nodal disease the patient survived a further two years. Gastrectomy performed at the earliest opportunity following his right hemicolectomy might have been curative.

CORESS Comments:

This case illustrates the importance of communication between MDTs. There is a real risk of MDTs concentrating solely on the specialty area of interest and failing to consider the patient as a whole. A clinician with knowledge of the patient should be present at all MDTs. There was no clear plan for surveillance or biopsy of the coeliac node, and the issue of lack of a clinician with overall responsibility for the patient is also raised.

Duodenal thermal injury during laparoscopic colectomy **(Case Ref: 223)**

I was undertaking mobilization of the hepatic flexure of the colon during laparoscopic right colectomy for a tumour, when I inadvertently caused an injury to the duodenum with the harmonic scalpel. Whilst focusing on the technical aspects of the mobilization, I may have become temporarily disorientated with respect to the proximity of the duodenum, resulting in a thermal injury.

Reporters Comments:

Be aware of the potential risk of thermal injury to nearby structures when using an harmonic device and ensure that the instrument tip remains in the laparoscopic field of view. Always try to keep in mind a bigger picture of the local anatomy and structures at risk and avoid tunnel vision when operating laparoscopically.

CORESS Comments:

There are a number of reports of iatrogenic thermal injuries during laparoscopic surgery using new generation vessel-sealing devices, as well as anecdotal reports of hand burn injuries during hand-assisted procedures. These have evoked questions about the temperature safety profile and cooling properties of these instruments. Kim et al 1 have reported studies using animal models. The harmonic scalpel may produce temperatures in excess of 200°C, produces peak temperatures after deactivation, (when adjacent tissues are prone to injury if the instrument is not handled carefully), and takes longer to cool than some other thermal devices.

Surgeons should be aware of the potential for tissue damage when the heating component of a tissue-

sealing device is out of view, or if the instrument is activated accidentally. In a rather oblique zoological allusion, a CORESS Board member commented: “in tiger country – keep your eyes open”.

1 Temperature safety profile of laparoscopic devices: Harmonic ACE (ACE), Ligasure V (LV), and plasma trisector (PT). F. J. Kim et al Surg Endosc (2008) 22:1464–1469

Failure to react to postoperative haemorrhage **(Case Ref: 224)**

An elderly frail patient with treated coagulopathy underwent parotidectomy, neck dissection and flap reconstruction for metastatic squamous cell carcinoma. Post-operatively, the patient haemorrhaged on the evening of surgery, initially bleeding in excess of 200 ml/hour into the suction drain. This was changed twice, but despite the on-call team seeing the patient, the patient was not listed for return to theatre until the following day, requiring evacuation of haematoma. Surgery was then delayed because of theatre occupancy problems. The patient underwent transfusion and successful drainage of the haematoma, but succumbed to progressive multi-organ failure, one week later.

Reporter’s Comments:

A pre-existing coagulopathy made the possibility of postoperative bleeding more likely and staff should have been alerted to this possibility. If a patient loses 200ml/hr for 2 hours into a drain, the wound should be explored as soon as possible. Junior staff should recognise when bleeding into a drain should trigger a call for senior input. Concise instructions should be written into the postoperative instructions section of the operation note, and discussed in the handover to recovery staff, and thence during handover to the ward. There was prevarication over a return to theatre by the on-call team, who had not been involved in the patient’s complex surgery. Delays caused by subsequent system problems (theatre access) may have exacerbated the adverse outcome of this untoward event.

CORESS Comments:

It is the responsibility of the operating surgeon to ensure that there are secure arrangements in place to deal with a patient who has a significant postoperative complication. The WHO sign-out has a specific section on concerns for post-operative care. The quality of postoperative instructions is important, and this patient may have benefited from early postoperative monitoring in a high dependency area. Appropriate reaction to on-going haemorrhage is a fundamental aspect of surgical training, and a major haemorrhage protocol exists in many hospitals, which staff should be familiar with.

Absent appendix? **(Case Ref: 226)**

A 20 year-old man was admitted with suspected appendicitis. Right iliac fossa pain was severe, but not associated with gastrointestinal symptoms. He had suffered a similar episode 2 years previously, when he had undergone a diagnostic laparoscopy, apparently without appendicectomy, in another hospital, (confirmed by his parents).

On examination he did not appear particularly unwell with the exception of right iliac fossa pain. Blood tests were within normal limits. It was a Friday afternoon, so he was kept in hospital for serial observations and further blood tests, after discussion with the on-call consultant. On Saturday morning he was still in severe pain, but vital signs remained normal and clinical and laboratory assessments were unchanged. An ultrasound failed to determine a cause for the pain but did not visualize the appendix. The patient remained in hospital until the Monday morning, with no clinical or laboratory test changes. He wasn't reviewed at any point by the on-call consultant.

On Monday morning the patient was re-discussed with the responsible consultant who, requested a diagnostic laparoscopy. The on-call registrar was unable to perform laparoscopic procedures independently and the on-call consultant was unwilling to support him. The responsible consultant therefore changed the intended procedure to open appendicectomy, a procedure which the on-call registrar was competent to perform autonomously. The open operation failed to identify an appendix and scarring suggested previous appendicectomy. No cause for the pain was found.

Reporter’s Comments:

Failure of a consultant to take responsibility delayed decisions on patient management and care. The on-call consultant’s lack of support for diagnostic laparoscopy necessitated open operation. Failure to access previous medical records, led to adoption of acute appendicitis as an incorrect primary diagnosis.

The main lesson learned was to try to obtain existing medical records or history documented elsewhere. A phone call to the hospital where the patient was previously operated, or requesting GP records before any interventional decision would have spared this gentleman from a fruitless open abdominal operation

CORESS Comments:

In current surgical practice it would now be unacceptable for the on-call consultant not to have reviewed the patient in these circumstances. This case highlights training issues. Was the on-call consultant trained in laparoscopy? Divergent attitudes of the on-call, and responsible consultants, suggests dysfunctional communication. A CT scan would probably have resolved the diagnostic issue.

Failure to respond to post-cardiac surgery transfusion **(Case Ref: 227)**

A frail elderly patient underwent successful elective cardiac surgery. A right internal jugular (IJ) central venous catheter was placed intra-operatively and sutured to the skin. The operation was uneventful and the patient was transferred to ICU where a portable CXR was undertaken to check the position of lines and ET tube. The right IJ line tip was seen, positioned overlying the right sternoclavicular joint, but was working normally. No comment was made in the notes, or on the radiology report regarding line tip position.

The patient made slow progress over the following 24 hrs, despite extubation. On day 2 post-op, she remained vasopressor-dependent and was noted to be anaemic (Hb 73). No obvious cause was found. A repeat CXR was ordered with the request : "Day 2 post-op MVR. anaemia cause." No mention was made about any lines or tubes on the request. The central line remained in situ. A portable CXR was reported as showing no obvious abnormality. The CXR was reviewed by the surgical team, but no comment was made about the central line or any other abnormality. Medical notes recorded that the patient was restless and was interfering with the central line. Two units of packed red cells were transfused into the central line and the patient was weaned off the vasopressors. Some oozing around the central line insertion site was noted. The surgical SHO reviewed the patient and a pressure dressing was applied.

The patient failed to improve and complained about visual hallucinations. An ophthalmology consult was requested - no intra-orbital abnormality seen. Repeat haemoglobin check confirmed persistent anaemia, (Hb 63), but there was still no obvious source for bleeding. A gastroenterology review was requested for assessment of possible occult GI bleeding (despite no past medical history or clinical evidence). The Gastro Team were not convinced about a GI cause and left. A further (third) unit of red cells was transfused.

Due to failure of expected improvement, the ITU Registrar was asked to review the patient in the late afternoon. He noticed that the central line was not seen on that day's CXR. He realised that the line tip had pulled back into an extra-vascular location, despite remaining secured in the patient's neck. He stopped the transfusion and removed the central line. When the pressure dressing was removed, a large and painful subcutaneous haematoma was noted over the right supraclavicular fossa. A peripheral IV cannula was inserted and the blood transfusion was completed with haemodynamic improvement and an increase in haemoglobin concentration. The patient made a good recovery with no further problems except for the appearance of a dramatic and uncomfortable haematoma over the whole of her anterior chest wall.

Reporter's Comments:

Several factors contributed to this incident:

- Incorrect positioning of the central line tip on CXR wasn't picked up by surgical or ICU staff, and wasn't highlighted by the reporting radiologist.
- HDU CXR request details were inadequate. If the radiologist had known that the right IJ line was still in situ, they would have commented that the line couldn't be seen on the CXR.
- The classic history of the patient playing with their central line and then bleeding around the insertion site should have raised alarm bells about line dislodgement - "twiddler's syndrome". It was unclear whether this had been communicated to surgical team.

CORESS Comments:

Failure to observe expected clinical and haemodynamic improvement should have prompted pause for thought, before initiating further blood transfusions. Similar well-recognised adverse incidents have occurred following incorrect NG tube insertion being missed on CXR and the patient being fed with disastrous results.

Retained Gallbladder at Laparoscopic Cholecystectomy (Case Ref: 228)

A 38 year-old patient underwent urgent laparoscopic cholecystectomy for cholecystitis, the third similar case on a busy theatre list. The procedure proceeded uneventfully. The gallbladder was placed in a bag and stowed above the liver prior to a final check of the abdomen before removing the gallbladder. At this point that I noticed some bleeding from the gallbladder fossa, necessitating application of pressure with a tonsil swab, inserted through one of the ports. The swab became soaked with blood, expanding, and it took some effort to extract it through the port. As the swab was delivered, the Consultant, who had helped to remove the swab, and I were both relieved to have extracted it. We immediately took the laparoscopic ports out, forgetting that we had not yet extracted the gallbladder, which was still in the bag above the liver.

The scrub nurse failing to realise that she hadn't handed the gallbladder out of the operative field compounded the situation. The laparoscopic bag had not been counted out of the abdomen. There was also a failure to check if the specimen was actually in the pot, despite labels being dutifully checked for WHO sign out. The patient was woken up and taken to recovery, and it was only when the Pathology Department rang to alert the theatre that an empty pot had been received that the mistake was uncovered. The patient was immediately informed, and was taken back to theatre from the recovery area, requiring a second anaesthetic to extract the gallbladder in the bag. The team had a full debrief at the end of the day and later participated in Root Cause Analysis.

CORESS & Reporter's Comments:

This "Never Event" demonstrated system errors involving the whole team. Distraction occurred at a critical point in the operation, and focus on the task in hand was lost. There were numerous stages at which the error could have been recognised, specifically: at the stage of retrieving and handing out the specimen; including the gallbladder bag in the scrub count; checking the specimen into the pot; and sending the empty specimen pot to pathology. This is a classic example illustrating Reason's Swiss Cheese Model 1, where the holes line up to allow a hazard to be converted to an accident. These stages have been scrutinised and theatre staff have had training in new protocols to try and prevent a similar event from happening again. The patient was discharged that night, and, despite having had two anaesthetics, made a good recovery. Laparoscopic retrieval bags must be included in the surgical count.

The National Safety Standards for Invasive Procedures (NatSSIPS)2 outline mandatory protocols to prevent retained foreign objects.

1. Reason J. (1990) Human Error. Cambridge: University Press, Cambridge
2. https://www.england.nhs.uk/patientsafety/never-events/natssips/

Transanal Troubles (Case Ref: 229)

Transanal minimally invasive surgery (TAMIS) is a new technique to treat early rectal cancer and benign polyps in the rectum. A 75 year-old male with past history of DVT, treated with warfarin, was found to have a high-grade dysplastic rectal polyp on colonoscopy, although histology was equivocal. CT and MRI were inconclusive, suggesting that this might be a T1 tumour. The patient underwent TAMIS at which an R1 (positive margin leaving residual cancer) resection was performed, histology subsequently suggesting a more advanced tumour. An anterior resection was therefore undertaken which was made complicated by scarring from previous surgery. The patient developed a leak and recurrence, with tumour seeding, requiring extralevator abdominoperineal excision (ELAPE).

Reporter's Comments:

The first biopsy suggested high-grade dysplasia but provided an inadequate sample. CT and MRI were not conclusive for T4 staging on full-thickness TAMIS excision. In retrospect, it appeared that the stage was at least T2. Proceeding to anterior resection as an initial definitive treatment might have been more appropriate under these circumstances.

CORESS Comments:

This is a technical case in the specialty sphere of transanal surgery. The key to success in these procedures lies in accurate patient selection and staging. Preoperative staging is of paramount importance in decision-making. Tumour biopsies have low accuracy and histological discrepancies are well recognised. ERUS and MRI also have acknowledged inter-observer variability. Digital examination may often provide the most helpful and reliable information.