

coress feedback

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We are grateful to those who have provided the material for these reports. The online reporting form is available on the website (www.coress.org.uk), which also includes previous Feedback reports. Published cases will be acknowledged by a Certificate of Contribution, which may be included in the contributor's record of continuing professional development, or which may form part of appraisal or annual review of competence progression (ARCP) portfolio documentation. Trainee contributions are particularly welcome.

Atypical thromboses Cases 268, 269, 270

Case 1

A 42-year-old woman presented to her general practitioner (GP) with rapid onset pain and pallor of her right leg. The GP was unable to feel pulses and referred her to the emergency department of the local hospital. She was transferred to the care of the vascular team, who requested duplex imaging and computed tomography (CT) angiography, confirming occlusion of the superficial femoral artery with the appearance of embolism causing acute leg ischaemia. A femoral embolectomy was undertaken that night, at which the vascular registrar removed a quantity of recent clot. The patient was placed on intravenous heparin.

The leg survived overnight but remained dusky and a further thrombectomy was necessary the following morning. Owing to the odd appearance of the clot, some was sent for histological examination. The histology report commented on the appearances of myxomatous material. The patient underwent transthoracic echocardiography and chest CT, confirming the presence of a left atrial myxoma. She was subsequently referred to the cardiac surgeons, who undertook surgical resection of the tumour, and the patient made a full recovery.

Case 2

Following a hysterectomy for bleeding, a 46-year-old woman presented with a warm, swollen left leg. Duplex imaging suggested iliofemoral thrombosis and the patient was treated for a postoperative deep vein thrombosis. She was anticoagulated but three-month follow-up duplex imaging suggested propagation of the clot with abnormal appearances, and she underwent abdominal and pelvic CT. This revealed fleshy tissue, or

clot invasion of the left pelvic and iliac veins, propagating into the inferior vena cava. The vascular surgery team became involved and eventually undertook open venous exploration, removing a large quantity of abnormal thrombus from the inferior vena cava and iliac vein. Postoperatively, the patient remained anticoagulated.

Histological examination of the clot revealed cellular features of intravenous leiomyomatosis, a rare benign smooth muscle tumour (of uterine origin) that may grow into pelvic veins. On continued anticoagulation, the patient remained well at six-month follow-up with no significant recurrence.

Case 3

A 54-year-old non-smoking man with minimal risk factors for vascular disease presented with a dusky, painfully swollen left calf of 48 hours' onset. Duplex imaging suggested the probability of a calf deep vein thrombosis with an associated haematoma in the calf muscles adjoining the veins. The haematoma was explored and drained of dusky clot, and the patient was anticoagulated. However, the swelling persisted over the next two weeks and there was further bloody discharge from the calf incision. Magnetic resonance imaging showed an irregular oedematous appearance of the calf muscles and the wound was re-explored with biopsy of the indurated muscle. Histological examination of the excised muscle demonstrated the presence of an invasive rhabdomyosarcoma. The patient required amputation of the affected leg shortly afterwards.

CORESS comments

These atypical presentations of arterial and venous thromboses do not represent surgical mishap or adverse incidents. Nevertheless, the CORESS Advisory Committee noted that if there is no obvious source of embolus, then it is reasonable to ask for histological examination of thrombus to rule out an atypical pathology. Arterial or venous thrombosis with no obvious cause may be the first manifestation of occult neoplasia.

Missed pulmonary embolism

Case 272

A 45-year-old woman presented to her general practitioner (GP) with a tender swollen calf following her return from a skiing holiday, during which she had had a nasty fall. She had also developed a cough and was referred to the emergency department of the local hospital for a chest x-ray.

When she attended hospital, the x-ray demonstrated some shadowing. The attending doctor failed to pick up on

the reason the patient had initially attended her GP (her calf injury) but noted a family history of lung carcinoma and arranged outpatient computed tomography (CT), which was booked for the following week.

In the interim, the patient developed shortness of breath and haemoptysis two days after being seen in the emergency department and reattended, at which time the CT was undertaken urgently. This confirmed the presence of a large pulmonary embolus and D-dimers were positive.

The patient underwent thrombolysis and was anticoagulated. The hospital trust settled out of court for the missed deep vein thrombosis and pulmonary embolism.

CORESS comments

The main lesson in this case is the need to take a full history. In the presence of a swollen calf and cough, the diagnosis of deep vein thrombosis (possibly in association with a pulmonary embolism) should have been considered. Early lower limb venous duplex imaging and measurement of D-dimers would have been helpful, and would probably have directed clinicians to request urgent CT pulmonary angiography.

Gastrectomy kit miscommunication Case 273

This was the first day on which elective surgery was resumed following the Christmas break. A total gastrectomy was scheduled. The theatre list was prepared and checked on the morning of surgery. The surgeon intended to use a powered stapling device for the anastomosis. This had been a recent change to the surgeon's practice, which was assumed to be common knowledge among theatre staff.

The team brief was completed. Equipment was identified but there was no specific mention of using a powered circular stapler rather than a standard stapler. A new member of staff scrubbed in for the case and was

not able to review the surgeon preference book (which was later retrieved from another theatre). The surgical clinical practitioner confirmed that all stapling devices were available but did not specifically mention powered stapling devices. Once the resection was performed, the circular stapler anvil was requested and the gun size (25mm) was checked with the consultant. Unknowingly, the anvil for the non-powered gun was secured in place with a purse string suture. No mention was made of the powered stapler so a non-powered version of the staple gun was handed over. When this was given to the surgeon, it was realised that this was in fact the non-powered gun and that the non-powered anvil was now sutured in situ.

With this deviation from plan, the consultant considered the available options. The only way of switching from a non-powered to a powered device would have been to remove the already secured anvil of the conventional stapler, replace this with the anvil of the powered gun and resuture. This was a process that (in a high risk case) was not advisable unless absolutely necessary. The clinical practitioner de-scrubbed to locate a powered staple device and to contact the company representative for the device for troubleshooting advice. (He was non-contactable.) The surgeon decided to proceed with the non-powered stapler. The anastomosis was completed safely without further incident, and the staple line was checked and confirmed to be intact.

A thorough team debrief was completed. This identified that no one person was responsible for the error and that this was caused by communication failures at multiple points during the case.

CORESS and reporter's comments

A variety of factors contributed to the operative confusion. This was the first day back at work after a prolonged holiday break for theatre staff, who may not have been fully up to speed with what was required for the case. At the team brief, no one (including the consultant) specified the need for the powered staple gun. The theatre team members were not used to using the powered stapling device as standard practice. Previous cases had been overseen by a company representative, who was not present and who could not be contacted on this occasion.

This was a classic case of the 'Swiss cheese' effect resulting in an adverse incident, compounded by poor communication. The consultant should have checked that the theatre team were aware of the required kit and had this available, and the consultant should have checked this prior to commencing surgery.

Changes that were made subsequently to reduce the risks of reoccurrence included:

- listing the staple device required on the operating list;
- placing an information poster in theatre listing stapler preferences for procedures as well as by consultant;

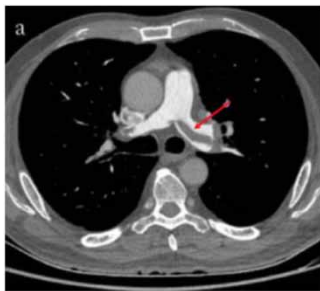


Figure 1 Computed tomography pulmonary angiogram with left pulmonary artery embolism illustrated

- establishment of a group email (including theatre, anaesthetic and surgical teams) to communicate information to all team members concerning operating lists;
- ensuring surgical kit needs are clearly communicated at the preoperative brief;
- ensuring that the surgeon checks the requisite kit preoperatively;
- appropriate staff training in use of new equipment.

Leaking gastrostomy

Case 274

A 58-year-old woman, with a right pyriform fossa squamous cell carcinoma treated with radiotherapy, was listed for a laparoscopic gastrostomy owing to weight loss and difficulty in swallowing.

At surgery, 2l of ascitic fluid was drained. A small gastrostomy was created on the anterior gastric wall using a diathermy hook via an incision in the epigastric area. The percutaneous endoscopic gastrostomy (PEG) tube was passed via the abdominal incision through the gastrostomy into the stomach, having checked balloon function. The tube was assessed to ensure it was in the gastric lumen. The balloon was then inflated using 5ml sterile water and pulled back gently to the abdominal wall. 20ml normal saline was infused through the tube to ensure no leakage. The peritoneal cavity was deflated and the gastrostomy tube secured to the abdominal wall using a 2/0 silk suture. The laparoscopic umbilical defect was closed with Prolene® (Ethicon, Somerville, NJ, US). Owing to inexperience in laparoscopic suturing, the surgeon did not perform a purse string around the gastrostomy incision or suture the stomach to the abdominal wall.

Feeding was started 48 hours following PEG tube insertion and the dietitian recorded: 'Feed now running with no problems. Patient feels a little bloated but otherwise comfortable.' She was discharged on the same day with arrangements for home nutrition.

The patient was readmitted after four days with generalised abdominal pain, raised C-reactive protein and normal white cell count. Urgent computed tomography was recorded as: 'New large gas/air-fluid level in the abdomen. Majority of PEG tube located within the subcutaneous tissue, with the tip outside the stomach lumen.' Computed tomography pulmonary angiography showed a left-sided pulmonary artery segmental branch acute embolism.

The patient underwent an emergency laparotomy, at which the findings were of enteral feeding fluid in the abdomen. The PEG tube had migrated out of the stomach with the balloon inflated. The abdomen was washed out, a nasogastric tube placed in situ and the gastrostomy revised, this time with a purse string suture. The stomach was secured to the abdominal wall with four 2/0 PDS® (Ethicon) sutures.

The patient was admitted to the intensive care unit but developed multiorgan failure and died 21 days after the salvage laparotomy.

CORESS and reporter's comments

Since description of the open Stamm gastrostomy, variations of the procedure using a balloon catheter involve securing the catheter by purse string suture and/or fixation of the stomach to the abdominal wall to prevent dislodgement of the PEG tube from the stomach. With abdominal wall distension in the presence of ascites, there may be increased tension on the gastrostomy tube, with higher risk of dislodgement. Laparoscopic surgery involves more than small incisions and delivery of safe surgery includes the need for safe laparoscopic suturing skills. In some centres, combined laparoscopic and endoscopic teamwork is employed for PEG tube placement.

Fatal pulmonary embolus after renal cancer surgery

Case 275

A 65-year-old woman had surgery for a large left renal tumour. The tumour was more advanced than anticipated and the decision was taken intraoperatively to undertake a multivisceral resection: *en bloc* nephrectomy, distal pancreatectomy, splenectomy and left hemicolectomy (with end colostomy). She recovered well from the surgery and the renal cancer was completely resected.

Eighteen months later, the patient underwent uneventful elective reversal of the colostomy and was discharged seven days postoperatively. Seven days after discharge, she suddenly developed acute breathlessness and circulatory collapse, consistent with pulmonary embolism. Resuscitation and acute thrombolysis were unfortunately unsuccessful.

CORESS and reporter's comments

For the reversal of the colostomy, thromboembolic prophylaxis had been provided as routine, with calf compression intraoperatively, venous thromboembolism (VTE) stockings and chemoprophylaxis while in hospital. Extended chemoprophylaxis was not provided. Extended prophylaxis is offered at our institution in line with the 2018 National Institute for Health and Care Excellence guideline for patients undergoing surgery for cancer (www.nice.org.uk/guidance/ng89/chapter/Recommendations). The guideline recommends:

- Provide antiembolism stockings until the person no longer has significantly reduced mobility relative to their normal or anticipated mobility.
- Add pharmacological VTE prophylaxis for a minimum of seven days for people undergoing abdominal surgery whose risk of VTE outweighs their risk of bleeding, taking into account individual patient factors and according to clinical judgement.

- Consider extending pharmacological VTE prophylaxis to 28 days postoperatively for people who have had major cancer surgery in the abdomen

It may be that extended prophylaxis would have reduced this patient's likelihood of experiencing a fatal pulmonary embolism. We wish to flag this to the profession so that surgeons undertaking major abdominopelvic surgery for 'benign' disease or malignancy consider providing extended chemoprophylaxis.

Formulary changes contributing to Case 276 near over-dosage

A neurosurgical patient in her fifties with a history of multiple sclerosis was referred for a trial of intrathecal baclofen therapy. This involves placement of a lumbar spinal intrathecal catheter and injection of a small test amount of baclofen followed by physiotherapy assessments.

The dosage of baclofen used is usually 50µg, given as an intrathecal bolus. This dosage is dispensed by the pharmacy in a 1ml ampoule. Units that offer intrathecal baclofen pump placement and maintenance also regularly refill the implanted baclofen pumps of their treated patient cohort. In this case, pharmacies dispense 20ml of baclofen solution at a strength of 500µg/ml to 3,000µg concentration, as required by the dosage.

In the case described here, the pharmacy dispensed a 10ml vial of baclofen at a concentration of 500µg/ml instead of the conventional test dosage of a 1ml solution of 50µg used for trial purposes. Over-dosage and potential baclofen toxicity were narrowly averted when this dose (10 times the required concentration of baclofen) was identified at the final cross-check before the trial injection was administered.

Reporter's comments

The learning point from this near miss is the importance of cross-checks. Additionally, pharmacies should warn

clinicians of any changes in the dispensing formulary, particularly if these changes relate to long established practice.

CORESS comments

CORESS has previously described other medication errors. These can occur in:

- choosing a medicine – irrational, inappropriate and ineffective prescribing, under-prescribing and over-prescribing;
- writing the prescription – prescription errors (including illegibility);
- manufacturing the formulation to be used – wrong strength, contaminants or adulterants, wrong or misleading packaging;
- dispensing the formulation – wrong drug, wrong formulation, wrong label;
- administering or taking the drug – wrong dose, wrong route, wrong frequency, wrong duration;
- monitoring therapy – failing to alter therapy when required, erroneous alteration.

Aronson has classified medication errors according to four broad categories:¹

1. Knowledge-based errors (through lack of knowledge)
2. Rule-based errors (using a bad rule or misapplying a good rule)
3. Action-based errors (called slips)
4. Memory-based errors (called lapses)

This case involved a change in stock formulary and dispensing. It remains the individual clinician's responsibility to check each drug, ampoule and date prior to injection.

Reference

1. Aronson JK. Medication errors: what they are, how they happen, and how to avoid them. *QJM* 2009; **102**: 513–521.