SURGICAL SAFETY UPDATE

Cases from the Confidential Reporting System for Surgery (CORESS)

Gastrectomy kit miscommunication

A total gastrectomy was scheduled for the first day on which elective surgery was resumed following the Christmas break. 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 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 didn't mention powered stapling devices specifically. Once the resection was done, the circular stapler anvil was requested and gun size (25mm) checked with the consultant. Unknowingly, the anvil for the non-powered gun was secured in place with a purse string. No mention was made of the powered stapler, so a non-powered version of the staple gun was handed over. It was realised that this was in fact the non-powered gun, and the non-powered anvil was now sutured *in situ*.

With this deviation from plan the consultant considered the available options. The only way to switch from the non-powered to powered device would have been to remove the already secured anvil of the conventional stapler, replace it with the anvil of the powered gun and resuture – 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 stapling device. The anastomosis was completed safely without further incident, the staple line checked and confirmed to be intact.

A thorough team debrief was completed, which 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 brief no one (including the consultant) specified the need for the powered staple gun. The theatre team 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 was aware of the required kit and had this available, and he/she should have checked this prior to commencing surgery.

Changes subsequently made to reduce the risks of re-occurrence included:

- Listing the staple device required on the operating list
- Placing an information poster in theatre listing stapler preferences for procedures, and by consultant
- 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.

Missed pulmonary embolism

A 45-year-old female presented to her GP with a tender, swollen calf on her return from a skiing holiday, during which she had suffered a nasty fall. She had also developed

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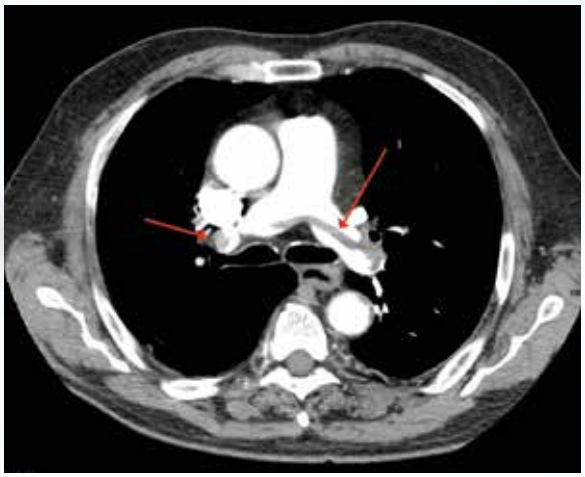

A large pulmonary embolism at the bifurcation of the pulmonary artery (saddle embolism)

a cough and was referred to the emergency department (ED) of the local hospital for a chest X-ray. The X-ray showed some shadowing. The attending doctor failed to pick up on the reason the patient had initially been to see her GP – her calf injury – but noted a family history of lung carcinoma and arranged an outpatient CT scan, which was booked for the next week.

In the interim the patient developed shortness of breath and haemoptysis two days after being seen in the ED and reattended, at which time the CT scan was done urgently. This confirmed the presence of a large pulmonary embolus (PE) and D-dimers were positive. The patient underwent thrombolysis and was anticoagulated. The Trust settled out of court for the missed deep-vein thrombosis and PE.

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 DVT, possibly in association with a PE, should have been considered. Early lower-limb venous duplex and measurement of D-dimers would have been helpful and would probably have directed clinicians to request an urgent CT pulmonary angiogram.

Leaking gastrostomy

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

At surgery two litres 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 gastrostomy tube was passed via the abdominal incision through the gastrotomy 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. Then 20ml of 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 2/0 silk. The laparoscopic umbilical defect was closed with Prolene®. Because of inexperience in laparoscopic suturing the surgeon did not perform a purse string around the gastrotomy incision or suture the stomach to the abdominal wall.

Feeding was started 48 hours post 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 CRP and normal WCC. An urgent CT scan recorded "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." A CTPA showed left-sided pulmonary artery segmental branch acute embolism.

The patient underwent emergency laparotomy at which the findings were of enteral feeding fluid in the abdomen. The gastrostomy 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 sutures.

The patient was admitted to the ITU, 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 tube from the stomach.

With abdominal wall distention 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 the skills required for delivery of safe surgery include the need for safe laparoscopic suturing skills. In some centres combined laparoscopic and endoscopic teamwork is employed for PEG tube placement.

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coress.org.uk

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The online reporting form is on our website, 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.

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