Royal College of Surgeons
ADVANCING SURGICAL CARE

CORESS is a confidential reporting system for surgery. The purpose of CORESS is to promote safety in surgical practice, both within the NHS and in the independent sector.

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coress feedback

Postoperative bleeding remains one of the most serious fundamental complications of surgery. Two cases reported in this issue of CORESS Feedback highlight system failures, which resulted in delayed recognition and appropriate responses to the problem. Attention is also drawn to potential risks of inadvertent thermal injury in laparoscopic surgery.

We are grateful to those who have provided the material for these reports. The online reporting form is on our website (www.coress.org.uk), which also includes all 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.

Duodenal thermal injury during laparoscopic colectomy (Ref 223)

I was undertaking mobilisation of the hepatic flexure of the colon during a laparoscopic right colectomy for a tumour when I inadvertently caused an injury to the duodenum with the Harmonic® scalpel (Ethicon, Somerville, NJ, US). While focusing on the technical aspects of the mobilisation, I may have become temporarily disorientated with respect to the proximity of the duodenum, resulting in a thermal injury.

Reporter's comments

Be aware of the potential risk of thermal injury to nearby structures when using a 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* have reported studies using animal models.[1] The Harmonic® scalpel may reach 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 member of the CORESS Advisory Committee commented: 'In tiger country, keep your eyes open!'

References

1. Kim FJ, Chammas MF, Gewehr E *et al*. Temperature safety profile of laparoscopic devices: Harmonic ACE (ACE), Ligasure V (LV), and plasma trisector (PT). S*urg Endosc* 2008; **22**: 1,464–1,469.

Failure to react to postoperative haemorrhage (Ref 224)

An elderly frail patient with treated coagulopathy underwent parotidectomy, neck dissection and flap reconstruction for metastatic squamous cell carcinoma. Postoperatively, the patient haemorrhaged on the evening of surgery, initially bleeding in excess of 200ml/hr 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 a haematoma. Surgery was then delayed because of theatre occupancy problems. The patient underwent transfusion and successful drainage of the haematoma but succumbed one week later to progressive multiorgan failure.

Reporter's comments

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 information should be written into the postoperative instructions section of the operation note and discussed in the handover to recovery staff as well as 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 World Health Organization surgical safety 'sign-out' check has a specific section on concerns for postoperative 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 ongoing 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? (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 two years previously, when he had undergone a diagnostic laparoscopy, apparently without appendicectomy, in another hospital (confirmed by his parents).

On examination, the patient did not appear particularly unwell with the exception of right iliac fossa pain. Blood test results 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. Ultrasonography failed to determine a cause for the pain but did not visualise the appendix. The patient remained in hospital until the Monday morning, with no clinical or laboratory test changes. He was not reviewed at any point by the on-call consultant.

On Monday morning, the patient was discussed again 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 that the on-call registrar was competent to perform autonomously. The open operation failed to identify an appendix and scarring suggested a 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 a diagnostic laparoscopy necessitated open operation. Failure to access previous medical records led to the adoption of acute appendicitis as an incorrect primary diagnosis.

The main lesson learnt was to try to obtain existing medical records or history documented elsewhere. A telephone call to the hospital where the patient had previously undergone surgery or requesting GP records before any interventional decision would have spared this patient a fruitless open abdominal operation.

CORESS comments

In current surgical practice, it would 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? The divergent attitudes of the on-call and responsible consultants suggest dysfunctional communication. Computed tomography would probably have resolved the diagnostic issue.

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

A frail elderly patient underwent successful elective cardiac surgery. A right internal jugular central venous catheter was placed intraoperatively and sutured to the skin. The operation was uneventful and the patient was transferred to the intensive acre unit (ICU), where a portable chest x-ray (CXR) was undertaken to check the position of the central line and endotracheal tube. The right internal jugular line tip was seen to be 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 hours despite extubation. On day 2, she remained vasopressor dependent and was noted to be anaemic (haemoglobin [Hb] 73g/l). 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 blood cells were transfused into the central line and the patient was weaned off the vasopressors. Some oozing around the catheter 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; however, no intraorbital abnormality was seen. A repeat Hb check confirmed persistent anaemia (63g/l) but there was still no obvious source for bleeding. A gastroenterology review was requested for assessment of possible occult gastrointestinal bleeding (despite no past medical history or clinical evidence). The gastroenterology team was not convinced about a gastrointestinal cause and left. A further (third) unit of red blood cells was transfused.

Owing to failure of expected improvement, the ICU 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 extravascular 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 intravenous cannula was inserted and the blood transfusion was completed with haemodynamic improvement and an increase in Hb 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 was not picked up on CXR by surgical or ICU staff and was not highlighted by the reporting radiologist.
- CXR request details were inadequate. If the radiologist had known that the right internal jugular line was still in situ, they would have commented that the line could not be seen on the CXR.
- The classic history of the patient playing with the 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 the 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 nasogastric tube insertion being missed on CXR and the patient being fed with disastrous results.