

The central theme of this edition illustrates the importance of checks. Checks to ensure an alternative diagnosis is not missed; checks to confirm correct prescriptions; checks related to the operating environment and checks to ensure appropriate investigations are available.

We are grateful to the clinicians who have provided the material for these reports. The on-line reporting form is on our website www.coress.org.uk which also includes all previous Feedback Reports. Published contributions will be acknowledged by a "Certificate of Contribution" which may be included in the contributor's record of continuing professional development.

PERIOPERATIVE HYPOTENSION OF CARDIAC ORIGIN (Ref: 88)

An elderly man, with a history of TIAs and claudication, underwent routine elective repair of a symptomatic left inguinal hernia under general anaesthesia. During the procedure, the patient had two hypotensive episodes, treated by the anaesthetist with boluses of ephedrine. Surgery was uneventful but, 4 hours after the operation, the patient had a further hypotensive episode on the ward, (BP 70/40; Pulse 75 /min). This was treated by the F1 doctor with 500ml of colloid. An ECG was normal. A further 4l of crystalloid and colloid were given overnight for subsequent hypotensive episodes.

The following morning, haemoglobin was measured at Hb 6.4 g/dl, (albumin 23; PCV 0.18), although there was no evidence of bleeding or haematoma in the wound. The patient was transfused with 4 units of blood but remained hypotensive. The F1 doctor noted that oxygen saturation levels were diminished and requested a chest x-ray which demonstrated bilateral pleural effusions. A Troponin I test was elevated at 23.86 ng/ml (normal < 0.1 ng/ml), confirming diagnosis of myocardial infarction. Fluids were stopped and furosemide administered. The patient was transferred to the Coronary Care Unit and eventually made a satisfactory recovery.

Reporter's Comments:

In a patient with peripheral and cerebro-vascular disease, co-existing coronary disease is highly likely, and myocardial infarction should be considered as a potential cause of peri-operative hypotension. FBC, ECG and Troponin I or T should be checked before administering over-zealous fluid resuscitation. Absence of chest pain and a normal ECG can occur in patients with myocardial infarction. Haemodilution can contribute to an apparently low haemoglobin concentration and may exacerbate myocardial ischaemia. Fluid overload (reflected by chest x-ray findings, low albumin, PCV and haematocrit) and inappropriate transfusion, in the absence of an obvious cause of bleeding, may have compounded the situation in this case.

CORESS Comments:

The Royal College of Anaesthetists' representative on the CORESS Advisory Board had the following comments: In an elderly patient with significant co-morbidities it would have been advisable for the patient to have been pre-assessed in an anaesthetic pre-assessment clinic; appropriate investigations performed and an anaesthetic plan discussed – including the advisability, or not, of a general anaesthetic.

The patient is most likely to have had an NSTEMI - non ST elevated myocardial infarction - in the perioperative period, as evidenced by the raised Troponin I. Whether this resulted from a period of hypotension, or whether the hypotension was a manifestation of the MI is unclear.

The ward staff and F1 doctor responded appropriately to the initial hypotensive episode by administering 500ml of colloid. Subsequent administration of 4 litres of fluid and 4 units of blood in response to further hypotensive episodes, without consideration of diagnoses other than hypovolaemia secondary to haemorrhage, was an error. The failure of the patient to respond should have alerted the FI to seek senior help and this should have been reinforced by the ward staff.

Such eventualities can be reduced by the use of risk assessment scores such as the **Patient At Risk Score (PARS)** or the **Modified Early Warning Score (MEWS)**. These scoring systems assess deviation from the normal, for a basket of vital signs: systolic BP, heart rate, respiratory rate, temperature and level of consciousness. Summation of the scores for each variable results in a total, from which the need for the patient to be transferred to an HDU/ICU environment can be judged [1].

Reference:

- [1] Ridley, S. The recognition and early management of critical illness.
Ann R Coll Surg Engl 2005; 87: 315–322

DOUBLE DOSES (Ref: 92)

A patient, who had been written up on the ward drug chart for Tramadol prn to be given postoperatively, was inadvertently given consecutive double doses when he returned from theatre with two drug charts. It transpired that the anaesthetist had written up a second chart when the original could not be found (it had dropped onto the floor in the anaesthetic room). The original chart was eventually located and returned to the ward with the patient, leaving both charts in circulation.

Reporter's Comments:

Always check all the drug charts of the patient before and after theatre to ensure no duplication of medication has taken place. Electronic drug chart prescribing facilities exist in some trusts, where duplication of

medications is automatically prevented. Confirmation of appropriate prescription should form part of pre and post-operative check lists.

CORESS Comments:

Duplication of drug administration is a problem. Electronic prescribing is not necessarily a panacea, and vigilance still has to be preserved. Similarly, some theatre check lists already include an assessment concerning drug administration records. As a corollary, the NPSA Clinical Board of Surgical Safety has recently emphasised the need for scrupulous recording of drugs given intra-operatively, both on the operation note and in formal drug administration records.

F2 APPENDICULAR MISHAP RESOLVED

(Ref: 93)

As an F2 doctor, I have been keen to build my logbook of surgical procedures in the lead up to interviews for Core Surgical Training. After observing and assisting in a number of open appendectomies, I was keen to perform this procedure unassisted for the first time. With the supervision of my registrar, I performed the procedure, talking through it as I proceeded. On opening the peritoneum it was evident that I had cut through a loop of small bowel which was adherent to the peritoneum following previous surgery. My registrar helped me to repair the defect in two layers, using a 3.0 absorbable monofilament suture. This setback did not delay the operation for long and the patient was discharged the following day.

Reporter's Comments:

This was a technical error during an otherwise straightforward operation. Unfortunately, these things do occasionally happen. The important factor is to

recognise injury when this does occur, to ask for appropriate assistance when necessary, and to learn from the experience. I will always palpate the peritoneum for adherent bowel in future and probably won't forget this case in a hurry.

CORESS Comments:

Experienced surgeons may not find much to enhance their operative performance in this account. However CORESS encourages trainees to submit cases. The trainee here submitted a comprehensive account which has been edited a little for brevity. Reporting of cases such as this aids reflective practice, forms a useful basis for case-based discussions and encourages awareness of generic aspects of safety in surgery. Mortality and morbidity meetings provide fertile grounds for reports. Encouraging trainees to contribute to the reporting process should help to promote awareness of safety issues early on in clinical practice.

INADVERTENT DIATHERMY INJURY TO LIVER

(Ref: 94)

I undertook a laparoscopic cholecystectomy as part of a waiting list initiative in a neighbouring hospital. After port placement, I lifted up the left lobe of the liver with the hook diathermy to perform some of the dissection. On elevating the liver, significant burn damage to the lobe resulted. The diathermy was active, yet there was no audible alarm or other indication to suggest this.

This was obviously a worrying situation, and I promptly removed the diathermy hook from the abdomen. Investigation revealed why this inadvertent injury had occurred. A series of three events led to the problem. First, the surgeon who normally worked in that theatre preferred to work in silence and routinely switched the diathermy alarms off (I hadn't realised that each diathermy machine has a volume control with which it is possible to turn the sound off completely). Secondly, the yellow cutting pedal, which I don't routinely use, had been placed underneath the lip of the table. When the operating table was placed in reverse Trendelenburg position and tilted to the right (the third confounding factor), the table pressed on the cutting pedal, activating the electrode. As the alarm was off, there was no way to be aware of this.

Reporter's Comments:

A series of learning points arise out of this incident. The main point is that an alarm must never be completely switched off. It is surprising, having switched an alarm off, that when the machine is switched back on again, on the next occasion; the alarm is not reactivated at a default level.

My own theatre staff confirmed that they would never completely switch an alarm off and that checking alarm levels every morning was part of the theatre setup routine. When pedals are not being used they should remain within the view of the surgeon. Possibly, if one pedal is not to be used, then this diathermy component should be set to zero using the current controls.

I think there is a case to be made for all diathermy machines to be modified so that it is impossible to completely switch off a sound alarm and that any sound alarm should automatically reset to a default level when the machine is switched on.

CORESS Comments:

The basic lesson here is that surgeons should be thoroughly familiar with the equipment on which they rely whilst operating. Injury caused by faulty diathermy equipment and inappropriate use is well recognised. Make sure that you know what the controls on your diathermy machine do, and confirm that the settings are those that you require before using diathermy. Ensuring that the diathermy is properly set up should form part of the preoperative checklist.

MHRA has produced a series of educational modules to address the issues associated with use of devices, which may be of value to surgeons. Relevant modules covering electrosurgery (diathermy) and operating tables are available on their website:

www.mhra.gov.uk/conferenceslearningcentre/index.htm

FINALLY...

Following reported cases of problems with vascular closure devices in the last issue of *CORESS Feedback*, readers may be interested to know that MRHA have issued a useful poster providing guidance on the use of these devices, which covers:

- pre-deployment imaging
- angle of insertion
- wound healing
- existing haematomas
- instructions for use

The poster can be found at: <http://www.mhra.gov.uk/Publications/Postersandleaflets/CON076415>

Scope for improvement?

MHRA are aware of an issue where a laryngoscope failed to light during an emergency procedure and no replacements were available.

Where laryngoscope blades and handles are to be used (especially where this use is not routine) a spare handle, blade and batteries should be readily available.

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