

SURGICAL SAFETY UPDATE

Cases from the Confidential Reporting System for Surgery (CORESS)

TAVI troubles

A 65-year-old man underwent transcatheter aortic valve implantation (TAVI) in a cardiovascular hybrid theatre. At the end of the procedure the patient was noted to be hypotensive and tachycardic. Angiography confirmed bleeding from defects in the common and right external iliac artery. Two covered stents were implanted to seal the areas, with apparent cessation of bleeding. The patient remained ventilated and sedated on the cardiac ITU.

The procedure was performed by the hospital's team of interventional cardiologists with support from cardiac surgeons. No information was recorded in the notes concerning vascular examination.

Around 24 hours after the procedure the vascular surgery team was called because the patient had cyanosis and absent pulses in the right lower limb. The right foot was severely ischaemic with fixed mottling. Femoral exploration confirmed thrombosis of the right common femoral artery. Femoral thrombo-embolectomy and patch angioplasty was performed, with recovery of the femoral and popliteal pulses. Despite the technical success of the latter intervention, the lower limb remained ischaemic and unsalvageable. The patient required trans-articular amputation at the knee level 24 hours later.

Reporter's comments

The clinicians undertaking the procedure were focused on the technical aspects of the operation and failed to undertake routine examination of the peripheral circulation. Overnight, development of ischaemia was unnoticed so there was a delay in calling the vascular team and a resultant delay in intervention, by which time the lower limb was unsalvageable. Physical examination before and after any surgical intervention remains essential for a good clinical outcome.

CORESS comments

A Board member remarked on a recent local audit in which, in a significant number of patients admitted under medicine or cardiology with an initial cardiac complaint, few had vascular examination beneath the diaphragm. For patients where intervention has involved instrumentation

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of lower-limb vessels, the post-interventional surveillance protocols must involve regular assessment of the limb circulation for at least the first 24 hours.

Straying from a safe plane

An oral and maxillofacial surgical trainer was supervising a novice trainee undertaking an operation that required a mucosal flap to be raised from the lower lip to gain access to the mandible bone. The trainee was inexperienced and quite nervous, and found it difficult to get into the correct plane. The trainer, looking from the opposite side, felt the trainee was in a safe plane and encouraged the trainee to make the deeper cuts to expose the mandible.

Only after taking over and continuing to cut did the trainer realise that the lip had been folded beneath the retractor. After removing the retractors, it was noticed that the skin had been damaged in three places. Fortunately, this damage was relatively minor. The skin wounds were closed and the rest of the operation completed without issue.

Reporter's comments

- The trainer was not able to appreciate that the trainee had strayed from a safe plane because he was not viewing the operation from his normal operating position.
- In an attempt to reassure and encourage the trainee, the trainer pushed the trainee further and faster than was really necessary.
- Although a technically simple procedure, there is little margin for error in the lower lip.
- A pause and reset would have allowed the experienced surgeon/trainer to identify that the operation had strayed outside the normal plane and prevented the complication.

CORESS comments

A lack of situational awareness was compounded by an unusual vantage point for the trainer. Often touch sensation is as important as vision in surgical dissection. CORESS agrees with the reporter's comments about the

value of a 'pause and reset', which allows time for consideration of potential anatomical risks of dissection.

Inadvertent removal of ureteric stent

A 46-year-old woman was diagnosed with recurrent ovarian cancer in the vaginal vault five months after primary cytoreductive surgery and completion of six cycles of adjuvant chemotherapy. Total pelvic exenteration was recommended by the MDT. An appropriate date for surgery had to be planned with foresight, taking into consideration her recovery from chemotherapy-induced anaemia, radiological investigations to rule out metastatic disease elsewhere, physical and emotional preparedness for major life-changing surgery, and involvement of a multidisciplinary team (gynaecology, colorectal and urology). In addition, due to the second wave of COVID-19 in the UK and a mini-outbreak in the surgical ward, surgery was postponed further.

The patient underwent total pelvic clearance with formation of a permanent colostomy and urinary diversion, with ileal conduit. A delayed start due to a pending preoperative COVID-19 test resulted in the procedure being completed in the evening. By this time, the scrub nurse who had assisted from the start of the surgery had handed over to a colleague once the final count was completed. After the wound was dressed, the scrub nurse inadvertently removed the right ureteric stent from the urostomy. Ureteric stents had been placed prophylactically to avoid a stricture during healing of the anastomosis.

The anaesthetist was immediately requested to continue the administration of general anaesthetic while the consultant urologist was urgently contacted. A flexible cystoscope was passed down the urostomy. The ureteric orifice was visible but cannulation proved to be a challenge. Therefore, a decision to re-open the abdomen was made. The uretero-ileal anastomosis was opened and a guide wire passed to the right kidney then a fresh ureteric stent inserted into position. The abdomen was then closed for the second time. The patient was debriefed about the entire course of events on the first postoperative day and understood the need to re-open the abdomen. She made an excellent postoperative recovery.

We are grateful to those who have provided the material for these reports.

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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FOR A SAFER SURGICAL FUTURE

Reporter's comments

Haste to clear up at the end of a long procedure led to unintentional removal of important patient attachments. The late finish of the procedure resulted in change of staff and disruption in continuity of care. A complete handover is imperative to maintain continuity of care irrespective of the length of the procedure.

It is preferable to ensure an early start for major surgeries so that the same team can continue until the procedure is completed. The entire multidisciplinary team should be represented to the end of every procedure.

The importance of the placement of ureteric stents should be highlighted and it is preferable for every individual on the team to be mindful of their location. These stents can be up to 30cm in length and can obstruct the surgical field.

CORESS comments

This was a complex procedure in which a number of factors conspired to contribute to this adverse incident. A failure to communicate the importance and relative insecurity of the stents to scrub staff was the principal causative factor. It was noted that stents are routinely placed to reduce the effects of oedema/stricture and potential early leakage at the uretero-ileal anastomosis. The Advisory Board felt that a member of the urological surgical team should have been present on completion of the procedure to ensure that an appropriate urostomy bag was placed over the ileal conduit spout and stents, preventing their dislodgement. Stents would usually be left *in situ* for seven to 10 days, but are not secured with sutures because of the ileal conduit spout. A precautionary comment was made about the potential for inadvertent removal of drains when removing modern adhesive drapes, which may stick to drains.

It was also noted in terms of human factors that an intraoperative pause and mini-brief, highlighting key aspects of the procedure, might have helped to focus staff on potential errors. Description of such a system is found in Hardie *et al.* Patient, Procedure, People (PPP): recognising and responding to intraoperative critical events. *Ann R Coll Surg Engl* 2021; 000: 1-5.