



# coress feedback

CORESS is an independent charity, supported by the Federation of Surgical Specialty Associations. The online reporting form can be found at [coress.org.uk](http://coress.org.uk), which also includes previous Feedback reports. Published cases will be acknowledged by a Certificate of Contribution, which can be included in the contributor's record of continuing professional development.

## Bowel perforation in colonic screening patient (Ref 250)

A patient on the national bowel cancer screening programme with positive faecal occult bloods was admitted for colonoscopy. A 40mm pedunculated low rectal polyp was identified and removed endoscopically by piecemeal excision after elevation of the submucosa with Gelofusine<sup>®</sup>, adrenaline and indigo carmine. Owing to the size and appearance of the polyp, magnetic resonance imaging (MRI) of the pelvis and computed tomography (CT) of the chest, abdomen and pelvis were booked, to stage disease locally and to exclude distant metastases respectively.

CT performed three days later showed locules of free gas in the rectal wall, suggestive of local low rectal perforation, but with no frank pneumoperitoneum and no free fluid in the pelvis. Some rectal thickening was noted at the excision site. MRI of the pelvis on day 6 failed to demonstrate air in the rectal wall. The patient was discussed by the colorectal multidisciplinary team (MDT), with histology results confirming adenocarcinoma with probable lymphatic invasion, with the tumour extending to the diathermy margin. The patient was contacted the day after the procedure by the specialist bowel cancer screening practitioner, who did not report any concerns as per the standard protocol.

Following discussion by the MDT, the patient was treated with chemoradiotherapy for six weeks, and was noted to have a complete clinical and radiological response. The patient will remain on a complete responder follow-up protocol for two years with three-monthly flexible sigmoidoscopies and MRI of the pelvis, and six-monthly CT of the chest, abdomen and pelvis.

### Reporter's comments

The local piecemeal excision was undertaken to obtain larger biopsies for adequate histological diagnosis and to avoid the need for repeated endoscopy. The polyp initially looked like a benign villous lesion of the rectum. It was not felt that transanal minimally invasive surgery was feasible given the low position of the polyp. The staging imaging, however, confirmed a localised subclinical

perforation as a result of the piecemeal excision, classified as a significant complication in patients undergoing bowel cancer screening.

A dictionary definition of 'piecemeal' is: 'characterised by unsystematic partial measures taken over a period of time'. In future, large rectal polyps will be dealt with by taking small samples and macroscopic images so that cases can be discussed at the complex polyp MDT meeting. Transanal endoscopic microsurgery or transanal minimally invasive surgery will be considered for larger polyps.

### CORESS comments

The colorectal expert on the CORESS Advisory Committee made the following comments: Endoanal ultrasonography might have been useful here. The size of the polyp suggested malignancy and piecemeal excision made complete resection less likely. Early MDT discussion might have provided consensus for an alternative resection strategy.

The IPG580 guidance from the National Institute for Health and Care Excellence raises safety concerns about the quality and quantity of evidence for efficacy of endoscopic full thickness removal of non-lifting colonic polyps. This guidance can be found at: <https://www.nice.org.uk/guidance/ipg580/>

## Laparoscopic bag disruption and colonic perforation during organ morcellation at laparoscopic nephrectomy (Ref 251)

A 54-year-old man underwent laparoscopic simple nephrectomy for benign disease. The resected kidney was broken up (morcellated) in a laparoscopic retrieval bag using sponge holding forceps to allow removal through the port site. During the morcellation, a tear was identified in the bag. Clinically, it was felt likely that the morcellation specimen removal was complete and the case was closed.

Over the following 36 hours, the patient became unwell with a fever, leucocytosis and abdominal tenderness. Computed tomography suggested a bowel injury. At subsequent laparotomy, a perforating caecal injury with leakage of bowel contents was noted, necessitating bowel resection and stoma formation.

### Reporter's comments

The patient had undergone previous abdominal surgery, causing adhesions. Whenever undertaking morcellation of a specimen (whether manually or with a mechanical morcellating device), this should be done with care to avoid damage to the specimen bag with potential spillage

of contents. Morcellation should always be undertaken with maintenance of pneumoperitoneum (via an AirSeal® port device) and under endoscopic visualisation.

### CORESS comments

Most laparoscopic nephrectomies are performed retroperitoneally, when there is also risk to the aorta, vena cava and duodenum. Risk of tumour seeding was not a concern for benign disease but it would have been had this procedure been carried out for malignancy. It is recognised in laparoscopic nephrectomy for cancer that tumour staging is severely limited by morcellation. Knowledge of the radiological features (pathology and lesion size, capsule and vessel involvement) is important in sampling and staging morcellated kidneys removed laparoscopically.

### Inadvertent distal anastomosis of femoropopliteal arterial bypass graft to popliteal vein (Ref 252)

A 75-year-old man with debilitating intermittent claudication of the calf underwent right below-knee femoropopliteal bypass using reversed great saphenous vein harvested from the same leg. The distal anastomosis was undertaken by an experienced trainee but was checked visually by the consultant, who had carried out the proximal anastomosis.

On completion, there was good flow in the graft and the incisions were closed. The patient returned to the ward the same evening. The next morning, the calf was swollen and early surveillance duplex imaging noted that the arterial bypass graft had been anastomosed to the below-knee popliteal vein instead of the artery. There was excellent flow in what was now an iatrogenic arteriovenous fistula. The situation was explained to the patient, who was taken back to theatre. At the second operation, the distal graft anastomosis was taken down, the femoral vein repaired with a small patch of superficial vein and the graft reanastomosed to the tibioperoneal trunk, which was sitting immediately behind and adherent to the popliteal vein.

### Reporter's comments

The popliteal vessels were exposed via a standard medial infrageniculate incision. The popliteal vein is often the first major vascular structure to be encountered behind the knee when using this approach. It may be difficult to distinguish between the artery and vein, which may often be adherent or co-located with venae comitantes around the artery. Difficulty in differentiating between the vessels is compounded by lack of arterial pulsation in a vessel with a proximal occlusion. Nevertheless, the vein is relatively thin walled and the artery is muscular. Awareness of this potential confusion might have alerted the operator to the scope for misplacing the graft anastomosis.

### CORESS comments

This case illustrates a lesson in supervision. Did the consultant check the dissection of the popliteal vessels prior to formation of the anastomosis? Similar confusion may arise in distal anastomoses to calf vessels. Pre and postanastomotic use of on-table Doppler ultrasonography might have helped to differentiate between artery and vein.

### Wrong rib resection for neurogenic thoracic outlet syndrome (Ref 253)

A 32-year-old woman with clinical features of neurogenic thoracic outlet syndrome, including paraesthesia in the C8/T1 nerve root distribution and intrinsic muscle wasting in the hand, underwent transaxillary resection of the first rib. Routine exposure of the first rib was undertaken via an axillary incision by dissecting the axillary vein to the lateral border of the rib. However, the patient was mildly obese and access in the axilla was difficult with the view impaired by some bleeding from a collateral branch of the axillary vein. The rib was cleared of intercostal muscles with a rongeur and periosteal elevator, and was eventually resected to a position posterior to the brachial plexus. Surgery was completed with a Redivac drain left in situ for 24 hours and the wound was closed.

A routine chest x-ray undertaken the next day revealed that inadvertently, a portion of the second rib had been excised instead of that of the planned first rib, leaving the offending first rib in situ.

### Reporter's comments

Transaxillary resection of the first rib can be an operation providing a poor view and difficult access. Access is often impaired if the axillary space cannot be opened up adequately by traction on the abducted arm. (The operation is performed with the patient in the lateral position.) In this case, dissection of the rib was facilitated by palpation as much as by visualisation, which was poor, and difficulty obtaining adequate access was compounded by the patient's habitus.

### CORESS comments

Transaxillary resection of the first rib can be a difficult procedure, usually performed to resect the anterior portion of the rib, allowing decompression of the subclavian vein in Paget-Schroetter disease. It should be performed by someone with appropriate training in the procedure, who carries out the procedure regularly. In blind dissection, there is risk to the axillary vessels and brachial plexus in addition to the intercostobrachial nerve. Sibson's fascia lies medial to and rises above the rib. Damage to this may result in pneumothorax.

Careful deployment of a focused second assistant to retract the arm or use of a specialised crossbar retractor helps to open up the axillary space. Other techniques facilitating visualisation of important structures include the

use of mammary retractors and suckers with integrated lights, a head torch or a laparoscope, which has the added advantage of allowing assistants to see what is going on. The operator may choose to check with assistants before removing or ligating structures. Key anatomical differences between first and second ribs include the flat broad nature of the former as well as the presence of the scalene tubercle medially, to which the scalenus anterior muscle is attached.

### Inadvertent superior mesenteric vein ligation at extended lymphadenectomy right hemicolectomy (Ref 254)

A 52-year-old man was diagnosed with carcinoma of the proximal transverse colon. A lymph node mass was identified on computed tomography (CT) close to the origin of the superior mesenteric artery; however, full body CT and positron emission tomography suggested that the disease was potentially curable through radical surgery.

The hospital's colorectal cancer multidisciplinary team recognised that surgery would be technically challenging and two consultant colorectal surgeons were identified to undertake a 'complete mesocolic excision with central vessel ligation' (extended lymphadenectomy right hemicolectomy) operation. At laparotomy, feasibility of resection was confirmed, and the resection and primary ileocolic anastomosis were completed to the apparent satisfaction of the two consultants.

In recovery, the patient was in pain, vomited and became hypotensive. He had received an epidural, and had undergone a difficult and relatively long operation. For this reason, alarm bells did not ring at this point. He was given analgesia and intravenous fluids. His blood pressure responded transiently to fluid. Nevertheless, it became apparent that the hypotension was refractory to fluid and turning off the epidural. Arterial blood gas lactate was  $>5\text{mg/l}$  approximately three hours after his arrival in recovery. Intravenous metaraminol improved the vital signs but the lactate further deteriorated and approximately 4.5 hours after the patient's arrival in recovery, a decision was made to return him to the operating room.

A relook laparotomy was undertaken approximately six hours after his first arrival in recovery. When the abdomen was explored, it was identified that the superior mesenteric vein had been ligated. A direct reconstruction of the vein was achieved with a polytetrafluoroethylene graft and flow was re-established. The small bowel was clearly compromised; however, a healthy colour change was seen and it was felt that recovery was likely. The abdomen was

temporarily closed with a laparostomy and vacuum dressing, and the patient was managed on the intensive care unit. Prophylactic heparin was given. Unfortunately, the patient deteriorated further and at subsequent emergency re-exploration of the abdomen, the graft was found to have clotted and the small bowel had infarcted. Despite all efforts, the patient died.

### Reporter's comments

Investigation of this event identified that:

- > injury to the superior mesenteric vein is a recognised complication of right hemicolectomy. This complication has been recorded as occurring in approximately 0.2% (1 in 500) of routine right hemicolectomies and 1.7% (1 in 59) of extended lymphadenectomy right hemicolectomies.
- > preoperative mapping of major abdominal blood vessels by CT angiography has been shown to significantly reduce: a) operating time; b) difficulty in identification of mesenteric vessels; and c) volume of intraoperative bleeding.

The colorectal cancer multidisciplinary team wished to alert fellow surgeons to the tragic circumstances of this death so that colorectal surgeons can:

- > recognise the relatively high risk to the superior mesenteric vein with extended lymphadenectomy colectomy (1 in 59 procedures); this has implications for *Montgomery* compliant consent;
- > recognise the utility of CT angiography in preoperative mapping of major abdominal blood vessels in high risk colonic tumours;
- > recognise the potential for involving specialist surgeons (hepatopancreatobiliary/upper gastrointestinal) in difficult colectomy operations in both the planning and intraoperative phases.

Finally, if a patient isn't 'right' after major abdominal surgery in the recovery room, the surgical team should have a low threshold for re-exploration to identify any technical problem arising from the surgery.

### CORESS comments

The Advisory Committee was grateful to this reporter for his thoughtful analysis. The potential complications of this surgery are recognised. Prosthetic grafts in the venous circulation, with low flow, compounded by local pressure and bowel oedema are prone to thrombosis, and there was significant risk of this outcome with associated small bowel engorgement and death.