RCS ADVANCING SURGICAL STANDARDS

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

This edition focuses on mishaps that have arisen because of lack of appreciation of potential risks of a specific procedure or use of surgical equipment. In each case awareness of the risks might have averted the adverse event and early clinical evaluation might have improved the outcome.

We are grateful to the clinicians 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 contributions will be acknowledged by a 'Certificate of Contribution', which may be included in the contributor's record of continuing professional development.

'Minor' procedure (Ref 101)

A general surgeon was referred a young woman with a view to biopsy/removal of a suspected malignant lymph gland. The 2cm swelling was situated below the angle of the jaw on the left side of the neck. The consultant booked her on to the day-case list. Clinical records written prior to surgery noted the patient's attendance at the list for removal of the swelling and a diagram showing the node formed part of the entry, together with a tick against 'consent'. 'Bleeding, haematoma and infection' were handwritten as the potential risks of the procedure on the consent form. The operation note recorded a straightforward excision of several interconnected lymph nodes by the trainee in the capacity of operating surgeon, with the consultant scrubbed in.

Postoperative recovery was uneventful and the patient was discharged during the afternoon. She was reviewed in the haematology outpatient clinic two weeks later. Histology demonstrated benign changes only. A record of this follow-up consultation indicated that the patient was experiencing some stiffness of the ipsilateral shoulder, which was improving. There was no record of any examination of the area other than a tick placed against 'wound'.

The patient consulted her general practitioner on three occasions during the following four months, complaining of stiffness, increasing discomfort and weakness in the right shoulder. She was then referred to the local NHS orthopaedic service with a presumptive diagnosis of a frozen shoulder but in view of the waiting times elected to be seen privately. A palsy of the left trapezius muscle was diagnosed and the clinical note attributed this to probable injury of the left spinal accessory nerve. Electromyography (EMG) confirmed the diagnosis and a course of physiotherapy was prescribed. This did not result in any improvement. Exploration later by another specialist following further referral showed that the nerve had been transected and an attempt at nerve grafting was unsuccessful. After several attempts to return to work, the patient, who was left handed, was obliged to give up her career as a highly qualified and promising chef.

Proceedings against the trust were instituted. After some correspondence, liability and causation were admitted and the case was settled for a six-figure sum, which took into account the lifetime incapacity of a young skilled worker.

Reporter's comments

> View all surgical incisions in the head and neck as a risk for producing nerve damage.
> Requests to 'biopsy' lumps in the neck are frequently directed to general or head and neck surgeons. Any surgeon carrying out such procedures should have detailed knowledge of the clinical presentations of common pathologies and anatomy of the head and neck.
> It is perfectly reasonable to delegate this type of surgery to a trainee at an appropriate stage of training but adequate supervision by the responsible consultant trainer must be provided.
> Preoperative briefing of a trainee should include mention of the potential for nerve damage and the necessary precautions needed.

CORESS comments

CORESS has reports of several similar cases of claims for accessory nerve injury during recent years, most of which resulted in substantial damages being awarded to the claimant. The reporter's comments are all valid. Several other points may be made in connection with this scenario:

> Adequate exposure for node excision is essential. Nerve damage is more likely with an impaired view.
> Use of bipolar diathermy may reduce the risk of inadvertent thermal injury to the nerve.
> Most units have a formal protocol for the management of neck lumps that would usually include an attempt to obtain histological diagnosis by fine needle aspiration.

What action should be taken if accessory nerve injury is suspected?

If transection is discovered perioperatively, immediate repair greatly increases the chances of functional recovery. Postoperatively, the key is to have a high index of suspicion for unexplained pain and signs of weakness of the trapezius. The cause of damage may be indirect such as through thermal injury from the diathermy or through stretching.

EMG will often differentiate between a complete or neuropraxic injury. If complete transection is suspected, it does little good to follow an expectant line of treatment (eg with physiotherapy), hoping for improvement. Delay in repair affects the chances of recovery and prompt referral to an appropriate specialist is recommended.

PEG in a hole? (Ref 102)

An elderly patient with a cerebrovascular accident causing immobility, dysarthria and difficulty in feeding was admitted with aspiration pneumonia. He already had a percutaneous gastrostomy tube (PEG) in situ and a suprapubic catheter. Because the aspiration pneumonia was thought to be associated with regurgitation of the PEG feed stomach contents, a jejunostomy feeding tube was recommended. The patient was unfit for general anaesthesia and therefore underwent endoscopic percutaneous jejunostomy (PEJ) insertion. The PEG was retained to decompress the stomach, resulting in two very similar tubes coming out of his abdomen close together. There was inadequate handover from the endoscopy unit to the ward and no marking to distinguish the tubes. This resulted in higher volume PEJ feed being put into the PEG tube, with recurrence of feed aspiration.

Reporter's comments

PEJ tubes are not inserted as commonly as PEG tubes so handover instructions must be very clear and disseminated to all staff likely to be involved. If there are two similar tubes close together they must be clearly marked to distinguish them so that staff will know which one to use for feeding.

CORESS comments

Where there is more than one tube emerging from a body cavity, the tubes should be clearly marked, if necessary with labels. This applies to drains as well as feeding tubes since premature removal of the incorrect drain or administration of substances into the inappropriate catheter may severely compromise the patient. A clear and accessible diagram of tube and stoma sites in the medical records facilitates correct management.

Tourniquet trouble (Ref 103)

A 75-year-old man underwent elective right total knee replacement. He was hypertensive but had no history of peripheral vascular disease, smoking or diabetes. Pedal pulses were palpable preoperatively. The procedure was prolonged and undertaken with a high thigh tourniquet inflated to 300mmHg for 150 minutes. In recovery the patient was noted to have decreased sensation and movement and a 'weak' dorsalis pedis pulse in the right foot. He was presumed to have a tibial nerve injury and the foot was subsequently splinted.

The arterial circulation was not commented on in the notes for a further six days until nursing staff raised concerns over the appearance of mottling affecting the foot. Dorsalis pedis and posterior tibial pulses were impalpable but capillary refill was thought to be normal and an ultrasound of the right leg was requested by the orthopaedic team. A venous duplex Doppler scan was performed on day 9 postoperatively and this was normal. However, a subsequent arterial duplex scan of the right leg, performed on day 14, showed no flow in the popliteal artery with damped monophasic flow in the distal vessels. At this point the foot was blistered with fixed staining of the skin and an above knee amputation was required.

Reporter's comments

Several factors contributed to this injury. Prolonged surgery resulted in a long tourniquet time. Postoperative care was not consultant led and there was a failure to recognise that paraesthesia can be ischaemic in origin. Moreover, staff failed to be alert to the early possibility of ischaemia arising as a complication of a long tourniquet time. The request for duplex ultrasound failed to specify whether a venous or arterial scan was required. The inappropriate venous investigation provided false reassurance and delayed the eventual, by then irreversible, diagnosis.

CORESS comments

As in all other areas of surgery, when employing tourniquets, those involved should be fully familiar with the equipment and potential risks. Risks of injury with tourniquet use are widely recognised. The subject has been reviewed in: Noordin S, McEwen JA, Kragh JF Jr *et al*. Surgical tourniquets in orthopaedics. *J Bone Joint Surg Am* 2009; **91:** 2,958–2,967. Comprehensive and useful recommendations are set out in: *Recommended Practices for the Use of the Pneumatic Tourniquet in the Perioperative Practice Setting* (Denver, Colorado: Association of periOperative Registered Nurses; 2009; www.tourniquets.org/pdf/AORN 2007 TQ guideline.pdf).

Armless? (Ref 109)

I undertook a difficult open low anterior resection in 54-year-old male. The left arm was placed on an arm board for access to the radial artery line. The right arm was placed by the side. Towards the end of surgery the anaesthetist noted that the left arm was more abducted than usual and this was rectified. On attaching the arm board clamp to the table, it was found to be loose. For how long the arm had been excessively abducted was unknown. That evening the patient complained of paraesthesia in the left arm and the following morning it was noted that he had little movement with patchy neurological deficit suggestive of a brachial plexus neuropraxia. There were obvious signs of improvement at 24 hours but at one week there was still a residual deficit.

Reporter's comments

Normally for this procedure, I either place both arms by the patient's side or, if the anaesthetist insists, have the right arm out to facilitate access on the left for most of the pelvic dissection. Arterial lines are usually placed in a non-dominant arm. If this is by the side, the anaesthetist may have impeded access if there are pressure transducer problems or arterial sampling is needed. I did not personally check the security of the arm board but will do in future.

CORESS comments

Where possible, it is probably safest to avoid the use of arm boards. The CORESS advisory board was aware of incidents where an arm board had been forcibly moved to accommodate equipment such as retractor clamp attachments to the operating table rails. When several scrubbed personnel are clustered around the operating table, the arm board can be moved inadvertently as the focus of attention is on the operation site. Further risk of injury is incurred when the table is tilted and the patient slides imperceptibly while the arms remain secured to an arm board. Non-slip gel cushions reduce this latter risk. The security of clamp fixation should be part of the 'time out' check prior to commencing surgery.

The Medical and Healthcare products Regulatory Agency has produced a short educational video module to address issues of safety associated with operating tables, which is of value to surgeons. This is available at: http://mhra.gov.uk/learningcentre/TheOperatingTable/player.html

Finally

A holed vessel?[a]

The MHRA continues to receive reports of deaths associated with the use of dilators during central venous catheter insertions. These fatalities occurred as a result of cardiac tamponade or haemothorax following puncturing of the vessel walls by the dilator tip.

> Users should ensure that the dilator is inserted only far enough to create a pathway through the subcutaneous tissues to facilitate entry into the vein. The vein lumen does not require dilatation and the dilator should not be fully inserted into the subclavian or jugular veins.

Shocking stockings[b]

The extended use of anti-embolism stockings in a patient with peripheral vascular disease resulted in leg ulceration ultimately requiring amputation.

> Patients must be carefully assessed for contra-indications including peripheral vascular disease before anti-embolism stockings are fitted.

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