Open Book
Learning from close calls and adverse events

Incorrect assembly of surgical equipment

This report alerts providers to key findings and actions following review of two incidents in different organisations where surgical equipment was assembled incorrectly resulting in patient harm in the operating theatre. The aim is to learn from the findings and recommendations made after the events to prevent future similar events.

We advise providers to consider this report, and whether the changes and recommendations might apply to their own systems.

This report is relevant to:

- operating theatre staff
- procurement staff
- medical device manufacture and sales industry staff
- quality improvement, clinical risk and patient safety managers.

Incident 1

A dermatome device used to harvest skin for grafting was assembled incorrectly, resulting in a full thickness graft being harvested instead of the partial thickness graft required.

Chronology

- The patient was in the operating theatre having a basal cell carcinoma removed, which required a skin graft.
- The scrub nurse assembled the dermatome device incorrectly, with one part upside down.
- The registrar performing the operation used the device, resulting in a full thickness graft being harvested instead of a partial thickness graft.
- The skin was immediately sutured back into position.
- A new donor site had to be found, resulting in an additional wound for the patient.

Review

- The scrub nurse was providing training while assembling the dermatome device and was distracted from the task.
- The registrar was relatively inexperienced at taking split skin grafts.
- Nursing staff usually assemble the dermatome device, in discussion with the surgeon.
- A visual check was not performed before the dermatome device was used. A check would have shown the size setting was too thick. The operator would then have been unable to adjust the thickness as the blade was inserted upside down.
- The assisting senior medical officer (SMO) was on the opposite side of the operating bed to the registrar. From this position the SMO could not see if the device was set to the correct thickness, and did not move to check the device directly.

Cont over

Local actions subsequently taken

- Teaching no longer takes place while equipment is being assembled.
- The surgeon and scrub nurse are jointly responsible for checking the assembly of the dermatome device before use.
- Nurses have been re-educated on the assembly of the dermatome device.
- The surgeon is responsible for directing the graft thickness required and visually checking the thickness before the device is used.
- The organisation made the device manufacturer aware of the problem.

Incident 2

A dermatome device was assembled incorrectly, resulting in a full thickness graft being harvested instead of the partial thickness graft required.

Chronology

- A staff member not experienced with assembling the dermatome device set it up incorrectly, with one part upside down.
- A full thickness graft was taken instead of a partial thickness graft.
- A new donor site had to be found, resulting in an additional wound for the patient.

Review

- The inexperience of both the person assembling the device and the operating surgeon was overlooked.
- There were no adequate visual and verbal checks made before the device was used.

Local actions subsequently taken

- The organisation made the device manufacturer aware of the blade loading problems.
- The theatre manager was made responsible for following up with the manufacturer about the safety of dermatome devices available and for updating the surgical team on any changes.
- Relevant theatre staff were given training and assessed in assembling the dermatome device.
- The dermatome device now has to be checked before use by a registered nurse and the operating surgeon.
- The use of the ‘start of list briefing’ has been reinforced; it includes all staff introducing themselves and stating their experience.

Health Quality & Safety Commission comment

- If staff perform specific checks, incorrect skin cutting by dermatome devices can be prevented.
- Common elements in both these cases are: a high-risk tool; and the expertise needed to handle a dermatome device safely and correctly.
- There is substantially less risk of adverse events occurring if:
    - dermatome devices are well designed and have forcing functions to prevent incorrect assembly or adjustment
    - there is a reliable system of competence-based staff training for the safe use of dermatome devices
    - the start of list briefing before surgery identifies personnel who have current dermatome device safety competence.
- Highly trained people still have performance lapses. A vigorous ‘safety culture’, where questioning and checking in the workplace are encouraged, further reduces risk.

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Other relevant points to note

- The Health Quality & Safety Commission's Safe Surgery NZ programme aims to improve surgical care by encouraging teams to:
  - consistently apply evidence-based practices and safety checks to all patients
  - improve teamwork and communication.

  Team briefing is a key component. It is a standardised communication tool that aims to create an environment in which individuals can speak up and express concerns, and alert team members to unsafe situations in a timely manner. For more information on the Safe Surgery NZ programme, see: http://www.hqsc.govt.nz/our-programmes/safe-surgery-nz/.

- Adverse events occurring in New Zealand that cause injury and that are associated with medical devices should be reported to Medsafe. By reporting, seemingly isolated incidents related to medical devices may be collated and responded to.