Intra-operative Injury and Military Surgeons

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Recently much attention has been devoted to discussion about risks to doctors and nurses from needlestick injury. This is mainly with reference to the HIV virus but interest has also been rekindled in Hepatitis B infection. Studies have shown that needlestick injury is fairly common, occurring in at least 5% of operations in civilian practice (1). Although the principal surgeon is most often at risk, assistants and scrub nurses are also exposed to injury. Some studies have considered the long term risk of a surgeon seroconverting to HIV over his career, given a certain prevalence of HIV. Although only theoretical estimates, the figures are worrying. One study has threatened an eventual seroconversion rate of 6% of surgeons during their operating career (2). The true prevalence of HIV is unknown, but may be significant in the local population. Although no surgeon has so far been shown to have been infected from a patient, if the earlier cases of Hepatitis B are considered it is only a matter of time before this occurs.

Various specialities have looked at their own particular risks. Orthopaedic Surgery seems to have more risk due to the variety of sharp instruments and force used (3). For several reasons Military Surgeons may be at higher risk than their civilian colleagues.

The Military Surgeon is expected to have a knowledge of techniques used in other specialities, the Military General Surgeon may have to treat bony injuries. The Orthopaedic Surgeon open an abdomen. Since surgical trainees have more needlestick injuries (1), a surgeon not fully experienced with an operation may be at more risk. This would be especially the case in battlefield conditions.

Military surgeons may operate in less than ideal conditions. Often the surgeon has to make do with borrowed buildings or hastily erected tentage. This has been apparent in recent campaigns. The Falkland War involved the deployment of four Field Surgical Teams (4). One was deployed in a disused refrigeration plant, and the others in suboptimal buildings. The surgeons ashore often had no gloves and other materials were scarce. Even though surgeons aboard hospital ships were in relative comfort, they were in different surroundings to those they had been used to in established hospitals. In the Gulf War treating cases became more difficult because of the need for collective protection to counter the NBC threat. There were potential problems with lighting, with temperature control and with restricted movement, in addition to the stresses that the surgeons

operated under at times of heavy casualties and the worry of bombardment. It is therefore easy to envisage needlestick injuries occurring.

Haste may be a major risk factor. It is impossible to think of self protection when there are numerous casualties to be dealt with. There will often be trouble with resupply. It will not be easy to obtain an apron or eye protection on every occasion.

British soldiers, being mainly young adults, are in the age range most likely to be affected by HIV. Often single and away from home they are in greatest need of information about safe sexual practices. According to Genito-urinary Physicians these are often ignored and there has been no decrease in attendance at genito-urinary medicine clinics.

In civilian practice much is made of high risk cases with more time and care being taken over a procedure. The risk is considered to be relatively low in the heterosexual population. However most cases of HIV have occurred in the young adult population and the number of cases of AIDS in heterosexuals is increasing at a rate higher than in any other category (5).

In the circumstances of war, time is not available to take a full sexual history and there will not be a relative available to give a full history of previous illnesses. Certain facets of medical and social history will not be disclosed if it is thought that punishment may result. If operating on the enemy's injured troops, language may present a problem. They may also come from an area of high prevalence of HIV and Hepatitis B. It is of significance that Hepatitis B carriage could be as high as 20% in some Asian and African countries.

Also of importance is the overseas prevalence of HIV. Although few soldiers are stationed in Hong Kong, Belize and Kenya, the prevalence of HIV in these countries is higher than the British mainland. Army doctors operating on a foreign population may be at increased risk of seroconversion to HIV and Hepatitis B if they receive injuries during surgery. It is hoped that certain measures may decrease the risk of self injury, seroconversion to HIV and also to Hepatitis B.

The risk of seroconverting after an injury is about 1 in 300 for HIV and 1 in 5 in Hepatitis B (if the patient is a carrier) (6). Also of importance is the amount of blood or foreign material inoculated. It is believed that with HIV that the risk of seroconversion is higher with a larger volume of inoculate (5).

Of importance in self injury is an appraisal of surgical technique. The no touch technique was very popular

before antibiotic prophylaxis, to prevent wound infections. This has often been sacrificed for the sake of speed, thus putting surgeons at more risk of injury (7). (Another important reason to recommend this technique is the persistence of nitrogen mustard in wounds which may remain active for many hours). For example the technique of grasping a needle with the fingers is dangerous. It is better if sutures are handled with instruments and the point of the needle avoided. Wearing double gloves offers some degree of protection (8). Why do we not see a simple thimble on more theatre sets? Again most injuries occur to the left index finger which is involved in about 50% of injuries described (1-2). This usually occurs because the finger is being used to steady tissue as sutures are placed. Instruments used to hold tissues would help to decrease the incidence of this injury. Gowns on the whole are very absorbent and allow penetration of body fluids and blood from the patient. Non-absorbent gowns are available but are more costly. Some surgeons avoid the new gowns as they feel them too warm, not allowing their skin to breathe and causing discomfort whilst operating. If an absorbent gown is used an apron should be worn underneath. It is suggested that this should be long enough to reach the footwear and that fenestrated footwear should be avoided. Wellington boots are recommended (9).

Eye protection is worthwhile to prevent mucosal spread. This is a possibility with the production of aerosols from power instruments and drills, although droplet spread is common without power tools, as evidenced by splashes of blood seen on glasses (10).

It is recommended that if a surgeon sustains an injury he should take time from the procedure to attend to his wound (9). The wound should be encouraged to bleed; it should be washed and then dressed to prevent contamination of the inside of a new glove with the surgeon's blood and also to protect the surgeon if a further breach occurs.

Hepatitis B vaccination is worthwhile as it is protective if inoculation of virus occurs. If the surgeon is not vaccinated and the patient is in the high risk category, immunoglobulin should be given. Vaccination should then hastily be sought.

The use of AZT, given to the surgeon if he sustains injury, is still under debate. It is suggested that treatment should be commenced within six hours of injury and a course given for six weeks. It is, however, of note that there have been two failures to prevent seroconversion to HIV when the drug was given very early after injury (6, 11).

Of promise are new devices to lessen the risk of self injury, separating the surgeon from sharp or dangerous objects. Skin staples, although not new, are being used more. Skin glues are under further development. The laser scalpel and ultrasound dissection remove the risk of sharp injury but will not be carried onto the battlefield. It is important that this research carries on and is given

full recognition.

Recently debate has been held about the risks to patients from surgeons. The tragic cases of five dental patients being infected by HIV when their practitioner failed to take adequate precautions, adds weight to this inquiry. The College of Surgeons and Anaesthetists of Australia and New Zealand recommend six monthly HIV tests for their Fellows. The Royal College of England has not gone this far, but has recommended that if a surgeon knows himself to be HIV positive he should not operate. It has been suggested by some surgeons that if they are tested it is fair to have their patients tested to protect the surgeon and his family (12).

In conclusion, the problem is not going to improve in the near future. Surgeons need to review their practices. Precautions need to be adopted to decrease self injury. This is necessary to protect both the surgeon and the patient. Military Surgeons need to be aware that they may be at heightened risk.

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