MAIL360

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Orthopaedic surgery in modern warfare

Dear Sir,

I read with great interest the feature article on orthopaedic surgery in modern warfare by Belmont, Hetz and Potter.[1] Undoubtedly, recent warfare experience is driving major changes in trauma surgery that will have a positive impact on the treatment of civilian patients.

It falls to the current cadre of military trauma surgeons to ensure that our collective knowledge base is promulgated widely. All too often, the lessons of previous conflicts are forgotten or ignored by a new generation. The article gives a thorough summary of the challenges faced by military surgeons in the modern era.

The Role 3 Field Hospital at Camp Bastion in Afghanistan is UK-led but staffed by teams of medical personnel from the UK, USA, Denmark and others. A recent CQC report described the provision of trauma care at Bastion as 'exemplary'.[2]

Currently, the UK has 9500 deployed troops, compared with 75 000 from the USA.[3] UK military casualty numbers are thus lower in comparison. Since October 2001, 385 UK soldiers have died of combat wounds and 2005 have been wounded in action.[4] A majority of non-battle injury is noted with 6162 casualty evacuations in total. All injured personnel requiring further hospitalisation are evacuated to the Royal Centre for Defence Medicine in Birmingham for continued care at Role 4. (The UK has four echelons of care in comparison with the five in the US system, as stated in the article).

Recognising that exsanguination is the most common preventable cause of death on the battlefield means that tourniquets, novel haemostatics and excellent pre-deployment training in battlefield first aid (one in four UK soldiers is trained as a 'team medic') have improved immediate care and survivability. Helicopter evacuation by MERT with an on-board medical team and the ability to manage airway and administer blood in flight means that resuscitation can begin during transport.

The receiving team at Role 3 is well versed in major trauma resuscitation. UK and US surgeons train together during pre-deployment exercises at HOSPEX. This facility – 'Bastion in Yorkshire' – provides realistic, real-time training in a simulated environment with convincing simulated casualties. It is this opportunity to meet, train and work together that has led one observer to say, 'at Bastion you see the best teamwork you will ever see'.[5]

The use of external fixation for long bone fractures is not without complications. Clasper and Philips showed that 13 of 15 external fixators required early removal for reasons of instability, infection and pin loosening.[6] Plaster of Paris, splinting with negative pressure dressings and traction devices should be high on the list of options for temporarily stabilising such injuries during evacuation.

The use of the word 'amputation' in the setting of initial debridement has been the subject of some debate amongst UK military surgeons.[7] Meticulous debridement of a highly contaminated, wounded limb may ultimately lead to the loss of the whole of the distal parts without the surgeon having set out to perform an amputation. We have found that this subtle linguistic emphasis is useful when training surgeons to deal with these injuries. The concept of 'spare parts' is also important. If viable, all tissue in an injured limb should be retained at Role 3. Skin, tendons, nerves and bone may be of great value to the reconstructive process at Role 4, even if ultimately used as autograft for other sites.

Although relatively rare, fungal infections are devastating and we have devised a protocol for the prophylactic treatment of high-risk patients based on initial observations of infected cases. Dismounted blast victims with highly contaminated wounds, requiring massive blood transfusions from the Green Zone of Helmand province are routinely started on anti-fungal treatment on arrival at Role 4. Surgical debridement is the mainstay of treatment in such cases[8], although there are wounds involving difficult areas (e.g. pre/post sacrum or prevertebral) that remain difficult to treat, and a combination of TNP, surgery and anti-fungal medications is required.

Our management of open fractures may not always adhere to the current BAPRAS/BOA guidelines on such injuries.[9] Just as Belmont et al[1] state, the early coverage and fixation of this subset of fractures can lead to failure if performed too quickly; waiting until the wound evolution and patient are ready for reconstruction is a better strategy. The use of negative pressure dressings is very convenient in this setting and allows for safe, delayed closure as the general physiological state of the

patient improves. We prefer to use Kerlix AMD gauze as the TNP filler as it conforms better to irregular wounds and is impregnated with an antimicrobial agent.[10]

The use of sloops as a Jacob's ladder to aid fasciotomy closure is one reserved for subsequent surgeries and should not be utilised at the time of the initial release as it can undo the unbridling effect of the fasciotomy.[11]

While a common language may separate us, it is heartening to note the mutual co-operation between US and UK military surgeons when deployed and in joint research and development. The increasing numbers of unexpected survivors on both sides of the pond are a proud testament to the efforts of all involved in this complex field.

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The views expressed in this letter are the personal opinion of the author, and do not represent the views of the British Army.

Editor-in-Chief's comment:

Warfare has traditionally driven experience in medicine at a faster pace than in times of peace, from the development of Kuntschner nailing and penicillin to the modern resuscitation methods developed in Iraq and Afghanistan. At 360 we have immense admiration for the contribution made by the military servicemen and doctors, and particularly for the work they do not only to treat injured soldiers, but also to share the knowledge gained through warfare to improve the care of civilians.

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