INFECTION

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Battlefield wounds are by their very nature grossly contami - nated and the treatment and prevention of infection is one of the basic functions of war surgery . Wounds sustained during warfare are high-energy wounds with large areas of devitalised tissue. This is particularly the case for dismounted b last injuries - where there is massive disruption of tissue planes with soil and debris forced into the zones of injury (Figure 34.6). Wounding agents are all non-sterile and highly likely to be contaminated by bacteria. Both large-calibre ballistic wounds and blast wounds may contain dirty clothing or contaminated fragments. Multiple steps in casualty ev acuation and substan - tial delays before treatment may allow progression of contam - ination to clinically significant infection. Specific organism patterns will depend on endemic flora, but commonly seen bacteria include: /uni25CF Gram-positive cocci, including staphylococci, streptococci and enterococci; /uni25CF Gram-negative rods, including Escherichia coli , Proteus and Klebsiella ; - /uni25CF Pseudomonas , Enterobacter , Acinetobacter and Serratia are common nosocomial pathogens that are usually expected among casualties following long periods of hospitalisation; - /uni25CF Salmonella , Shigella and Vibrio should be suspected in cases of bacterial dysentery . 28 Fungal infection, including Candida , should be considered - in casualties hospitalised for prolonged periods, those who are malnourished or immunosuppressed or those who have received broad-spectrum antibiotics, adrenocortical steroids or parenteral nutrition. Techniques to reduce the infectious burden are part of - every aspect of war surgery . At the point of wounding, sterile dressings should be applied. Antibiotics, if available, should be 30,31 administered if evacuation and further treatment are likely to be delayed. Empirical antibiotic therapy should be commenced or con - tinued following movement to a medical facility . The mainstay of treatment is prompt surgical control of the infectious cause with adequate debridement of non-viable tissue and drainage The of infective material. Extensive irrigation should be employ ed to remove dead tissue and foreign bodies. High-pressure wound lavage has been shown to increase bacterial propagation into soft tissue and is not indicated. With few exceptions (such as facial wounds), closure of con - taminated war wounds should not be performed at the time of first operation. The open wound should be left with clean, moist dressings. Negative pressure wound therapy should be considered for larger wounds. Antibiotic therapy should be tailored to specific wounds with the empirical antibiotic choice dependent on the injured body region or cavity . Microbial culture will aid the guidance wounds should be considered tetanus prone and appropriate tetanus prophylaxis administered. Clinical experience and judgement are essential in the assessment of war wounds. Adequate exposure, often with extension of the wound, is mandated to ensure debridement of all devitalised tissue. Serial operations may be r equired. Early consideration should be given to soft-tissue coverage. The skin is often remarkably resilient to injury and conservative debride - ment of it may facilitate more successful reconstruction.

(b) (c) Figure 34.6 Blast injuries including bilateral lower limb amputation (a) , buttock and thigh soft tissue injury (b) and complex hind foot injury (c) . The need for extensive debridement is

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