Authors' conclusions
Thick layers of fibrous connective tissue called fascia envelop groups of muscles in the arms and legs and separate the muscle groups from each other. Inside each layer of fascia is a confined space, a compartment, which houses the muscle tissue, nerves, and blood vessels in that space. Because fascia does not expand, any swelling in a compartment results in increased pressure on the muscles, vessels, and nerves in that compartment. Compartment syndrome is a condition in which the pressure in a compartment is high enough to block blood flow and compromise the function of muscles and nerves in that compartment, potentially leading to permanent injury and loss of function of tissue structures in that compartment. This condition may be caused by any type of trauma or injury, including the tissue insults of surgery, ischemia, or reperfusion. Fasciotomy is a surgical procedure that involves cutting through the fascia to relieve the pressure of compartment syndrome or to prevent compartment syndrome. Immediate closure of fasciotomy wounds usually is not feasible due to the likelihood of creating compartment syndrome by tight skin closure. Therefore, fasciotomy wound closure is delayed but, when appropriate, may be achieved by delayed primary closure, in which wound edges are brought together by sutures or staples; split-thickness skin graft (STSG), in which a piece of epidermis (thin uppermost layer of skin) along with a partial-thickness layer of its underlying dermis (thick innermost layer of skin) is harvested from one part of the body and transplanted to the wound site; or flap coverage, in which a piece of skin near the wound is partially detached and stretched over the wound site. Wounds also may close and heal naturally. Delayed primary closure is preferred mainly because it achieves more cosmetically appealing results than all of the other methods and is technically easier than the other surgical techniques. Management of open fasciotomy wounds traditionally has involved frequent (2 to 3 times daily) application of saline-soaked gauze bandages. While the cost for gauze dressings is low, this method is labor intensive and may involve patient discomfort and need for sedation during dressing changes. A few recent studies have examined the use of negative pressure wound therapy (NPWT) for managing fasciotomy wounds.