

OPEN FRACTURES - EFFECT OF INFECTION ON FRACTURE FIXATION

The body is protected from infections by intact skin and by immune system which unfortunately get disrupted by trauma and surgery, more so for open fractures. The prevention of infection should be first and foremost in the mind of the caretakers because infected bone is an enigma. History has taught us to be extra careful starting with hand washing by medical personnel as advocated and propagated by Ignaz Semmelweis 1947 (1).

The presence of open fractures should be taken seriously and the management be tailored to achieve stability, soft tissue cover, union of the fracture and above all prevent infection. Therefore various methods have been tried such as open reduction with plate and screws with high rate infection 13% (2), debridement of open fractures 12.1% (2,3). Other recent data of closed fractures of the tibia show infection rates from 17.6% to 23.6% (3, 4) while the rate of open fractures was 43.8% (4).

Other methods to reduce infections that have been tried involve minimal incisions for fracture, fixation avoid periosteal stripping, and avoid soft tissue and neurovascular damage during surgery in open reduction and internal fixation. Also external fixators and intramedullary rods have been utilized for open fractures. All open fractures should be graded by Gustillo-Anderson grading systems (5) and must undergo copious washout, using 3 litre per grade and thorough surgical debridement.

The timing of prophylactic antibiotics in open fractures is crucial and should be given on patient arrival at the hospital. Lack *et al* (6) examined 137 patients who had Gustillo-Anderson grade 111 open fractures and found that giving intravenous antibiotics less than 66 minutes post trauma resulted to lower rates of sepsis. Also soft tissue cover should be done as soon as possible following the fix and flap-protocol (7) for open fractures of the tibia. The timing of the debridement and fixation is debatable with large systematic reviews having not demonstrated increased rates of deep infection in patients who had delayed surgery (8). The type of antibiotic to be given will depend on clinical judgment and the prevailing local conditions and there has been no obvious benefit to continue antibiotics for more than 24 hours after definitive closure of the wound (9).

If there is confirmed infection after fixation of the fracture then all effort is made to eliminate the sepsis, heal the fracture and have a functioning limb. This is done by surgical toileting, irrigation, cultures to guide appropriate antibiotic use (10).

The introduction of negative pressure continuous suction is an added tool and more so the continuous negative pressure irrigation tools have led to revolution

whereby we can retain the fixation and terminate the infection, leading to union (11).

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