

Open Fractures – AAOS/OTA Fracture Course
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1. **What are the time recommendations for the treatment of open fractures ?**

- 6 hour rule based on old science, ? vailidity
- multiple prospective and retrospective studies do NOT support 6 hours
- severity of fracture, soft tissue injury, OR availability, patient condition should determine timing for OR
- does time to treatment have an adverse effect on outcome ?

2. **Can we grade open fractures ?**

- Average agreement with Gustilo classification was 60%
- All the way up to 66% among experts
- “ this classification system may not be an adequate basis for the treatment decisions “ (1)

3. **Are we able to assess tissue viability and bacterial contamination ?**

- “although standardized protocols were followed in these cases, it is accepted that the adequacy of debridement in the open fracture group is difficult to determine” (2)
- Incidence of deep infection was 20% after primary wound closure compared with 3% after delayed closure (3)
- High pressure pulse lavage causes soft tissue damage (4) and propagates bacteria into soft tissues (5)

“adequate debridement” remains a difficult technical problem (6)

“ our 27 civilian patients who developed gas gangrene had incomplete debridement and the wounds were closed primarily” (7)

68% of patients with gas gangrene had open fractures with primary wound closure....“ in gas gangrene patients antibiotics appeared to have little influence on either the development or the progression of the disease” (7)

4. Can we determine the amount of tension under which a wound is closed and the zone of injury ?

“proper tissue closure tension and optimal wound closure techniques are difficult to define “ (6)

Bottom Line – Risks of primary closure are high, benefits NOT proven

Primary closure versus repeat debridements with delayed closure shows NO benefit to primary closure (8,9)

Theoretical benefits of decreasing secondary soft tissue procedures, minimizing surgical morbidity, shortening hospital stays, and reducing costs are all purely theoretical and have NOT been proven (8,9)

The risks of inadequate debridement, deep infection, closure of wound under tension, and gas gangrene after primary closure are REAL (3,5,7)

Open fractures can still get compartment syndromes !!!

Somewhere around 9% of patients can develop compartment syndrome and proportional to the degree of bony and soft tissue injury (16)

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