

Diep debridement

Spieren

'when in doubt take it out'.

Complete spiercompartimenten

4 C's = Color

Capacity to bleed,

Contractility and

Consistency

(last 2 more reliable).

Diep debridement

Pezen behouden

Neigen tot dessicatie, bedekking noodzakelijk

Losliggend bot verwijderen

Tug-test

Kraakbeen houdend

Irrigatie

“Solution to Pollution is Dilution”

Table 50-6 -- Irrigation Variables

Variable	Effect	Recommendation
Volume	In animal studies, increasing volume removes more particulate matter and bacteria, but the effect plateaus at a level dependent on the system	Grade 1 fractures, 3 L
		Grade 2 fractures, 6 L
		Grade 3 fractures, 9 L
Pressure	Increased pressure removes more debris and bacteria; however, the highest pressure settings damage bone, delay fracture healing, and may increase risk of infection by damaging soft tissues	Use a power irrigation system that provides a variety of settings; select a low- or middle-range setting
Pulsation	In theory, improves removal of surface debris by means of tissue elasticity; limited studies have not confirmed the effect or have suggested decreased efficacy	Not established

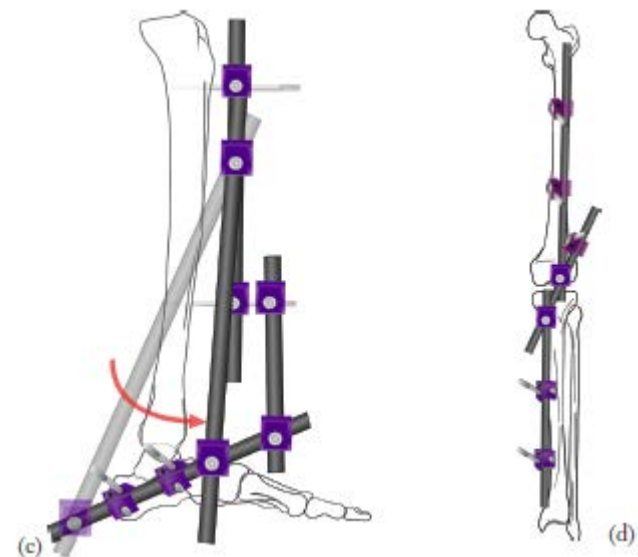
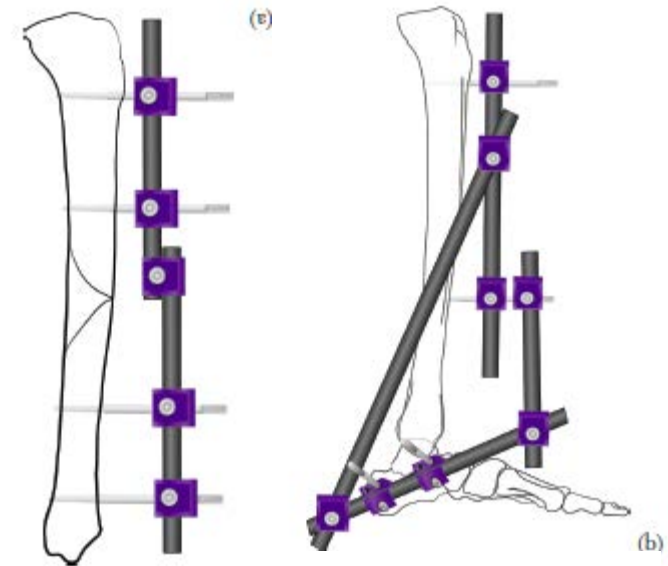
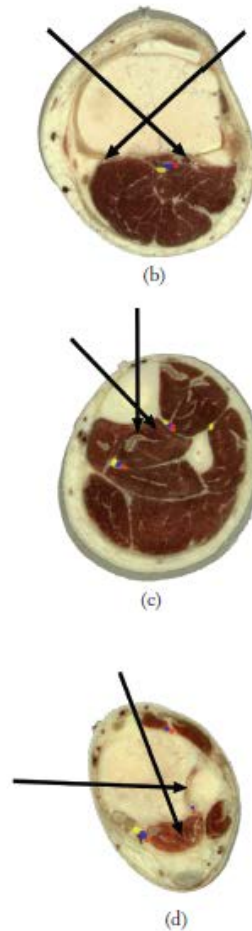
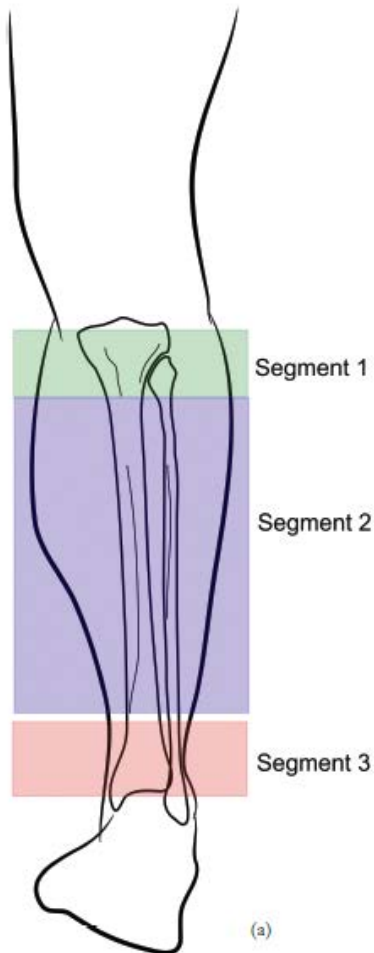
From Anglen JO: Wound irrigation in musculoskeletal injury, J Am Acad Orthop Surg 9:219, 2001.



Erasmus MC

Erasmus

Fixateur Externe



Tijdelijke Wondbedekking



Antibiotic bead pouch



mus MC

2afms

Definitieve reconstructie

Timing of flap placement	Infection rate
< 72 hours	6%
> 72 hours	30%

Definitieve reconstructie

Herstel van lengte as en rotatie

Anatomisch herstel van gewrichten

Reductie verlicht druk op NV bundels en weke delen

Rigide fixatie reduceert osteolyse

Stabiliteit

Fixateur externe

Plaat

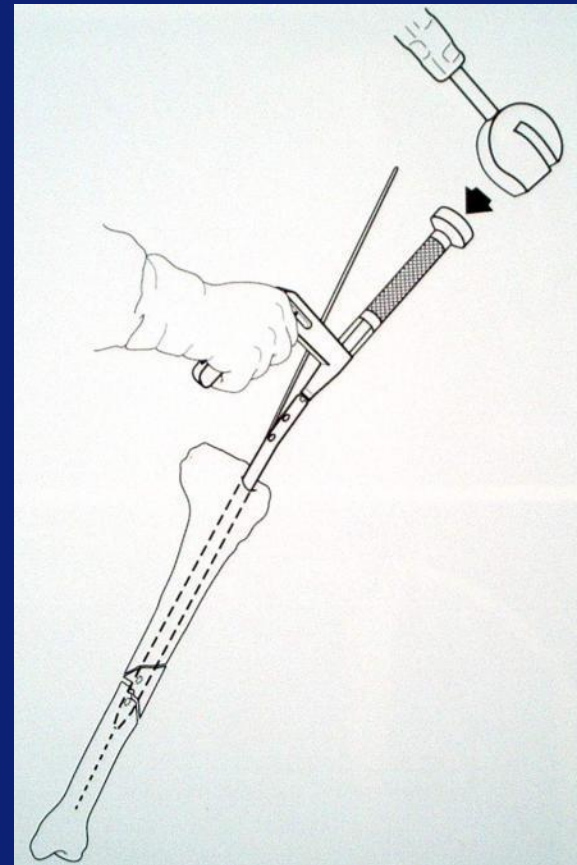
IM Pen



IM Pen

IM pen- 1ste keus
voor bijna alle
open fractures.

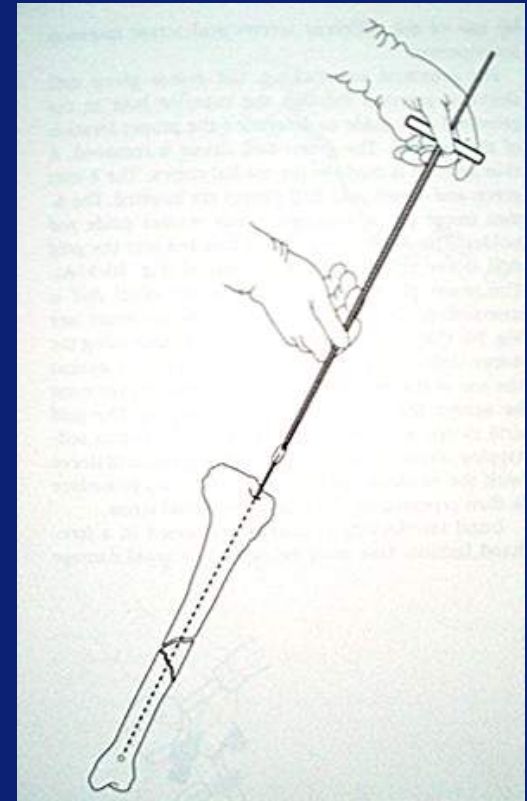
Zeker in type 1
open fractures.



Ongeboorde IM Pen

Lange consolidatie (1/2 in een half jaar)

11% heeft 2e operatie nodig.



Geboorde IM Pen

Tijd tot consolidatie 24-27
weken; diepe infectie 3.5%.
(type 2 en 3a)

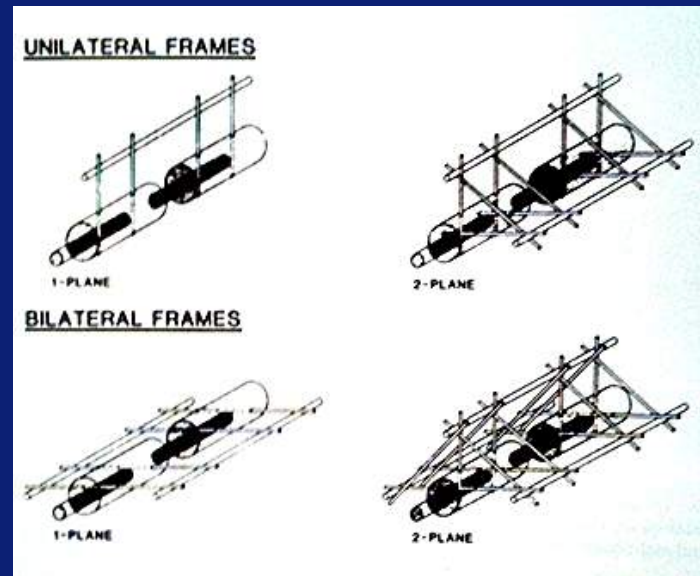
type 3b fracturen tijd tot
consolidatie 50 weken en
infectie ratio 23%.



Externe Fixateur

Verhoogd malunion risico
en noodzaak tot
reoperaties.

Pin trac infectie!



Conversie van Ex-Fix naar IM Pen

9% infectie 90%union.

Hoe korter ex fix des te
lager infectie risico.



Plaat Fixatie

niet de voorkeur bij open
fracturen

Toegenomen infectierisico tov
pen en ex fix.

13% patients osteomyelitis in
vergelijking met ex fix 3%



Percutane Plaat Fixatie / MIPO

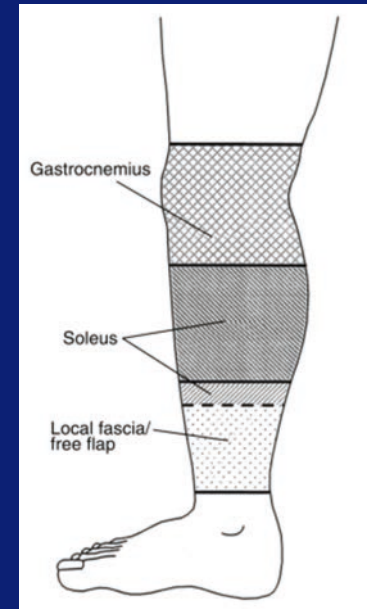


Weke delen

gastrocnemius

Soleus

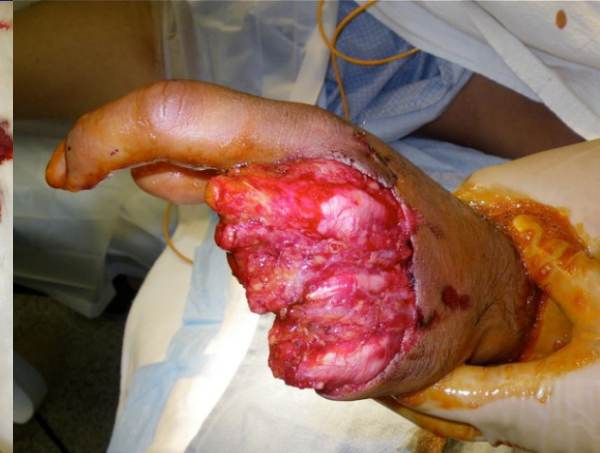
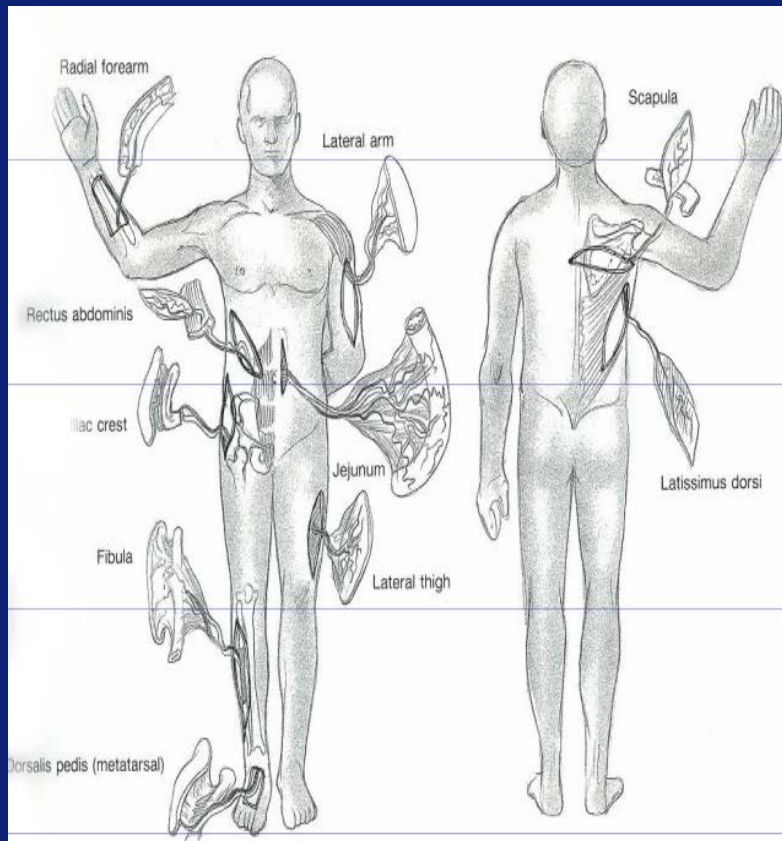
Vrije lappen



Erasmus MC

Erasmus

Vrije Lappen type 3b



Benige defecten

Masquelet technique

PMMA –aminoglycoside +/- vancomycine
spacer

Pseudomembraan

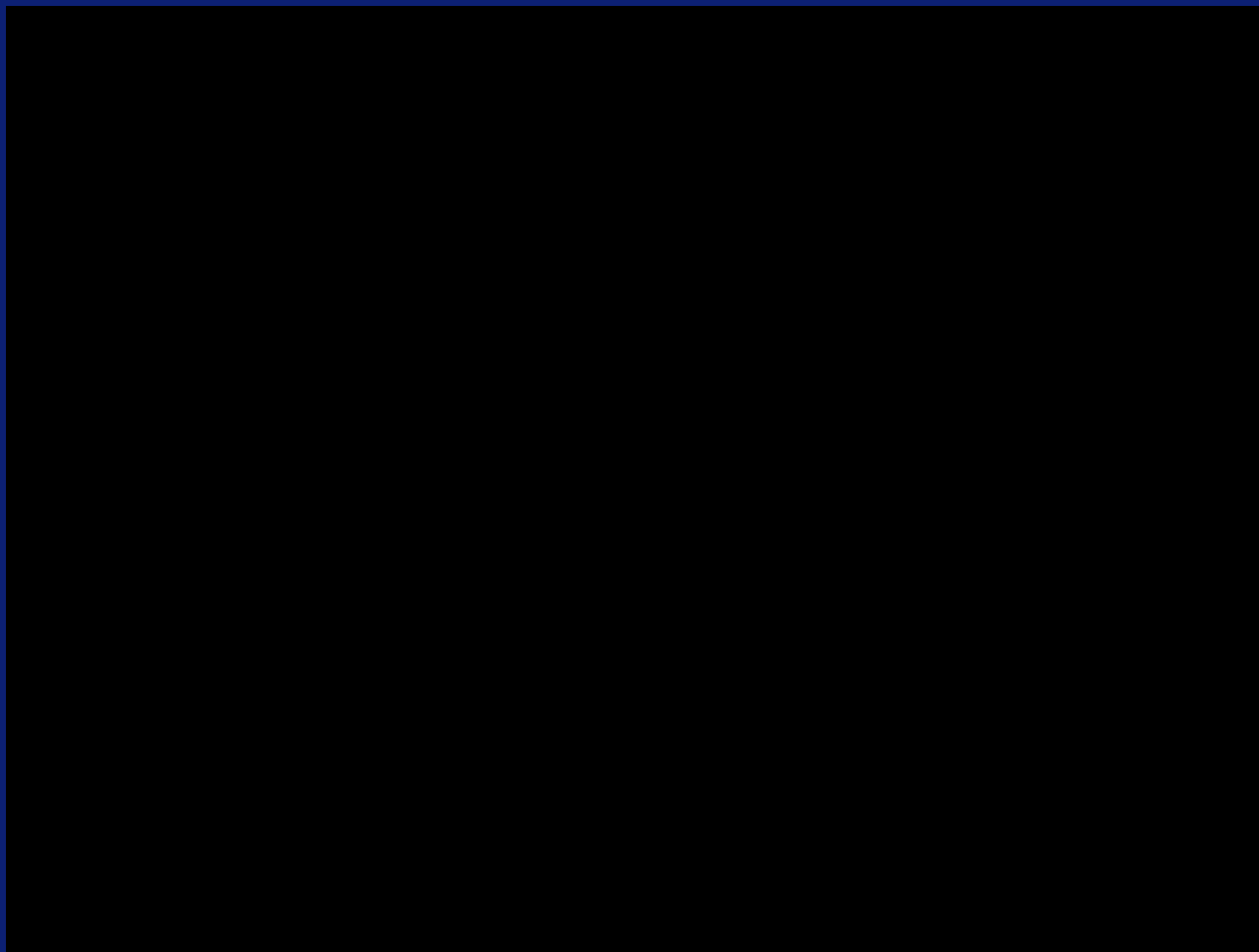
Wisselen voor mergaspiraats (RIA)











Complicaties

Nonunion.

Malunion.

Infecties- diep en oppervlakkig

Compartiment syndrome.

Refracturen

Falen osteosynthese.

Chronische Osteomyelitis.

Nonunion

Geïnfecteerde non-union

Debrideren

Uithuilen

Opnieuw beginnen

Amputeren?



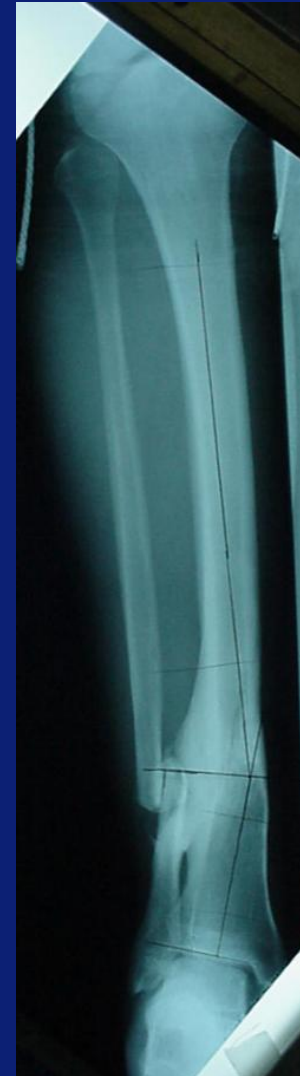
Malunion

Hoera!!

Osteotomie

Taylor Spatial Frame

Correctie



Erasmus MC

Erasmus

Diepe Infectie / Chronische osteomyelitis

Ramp scenario

Herhaaldelijk debrideren

Uitkomst slecht

amputatie

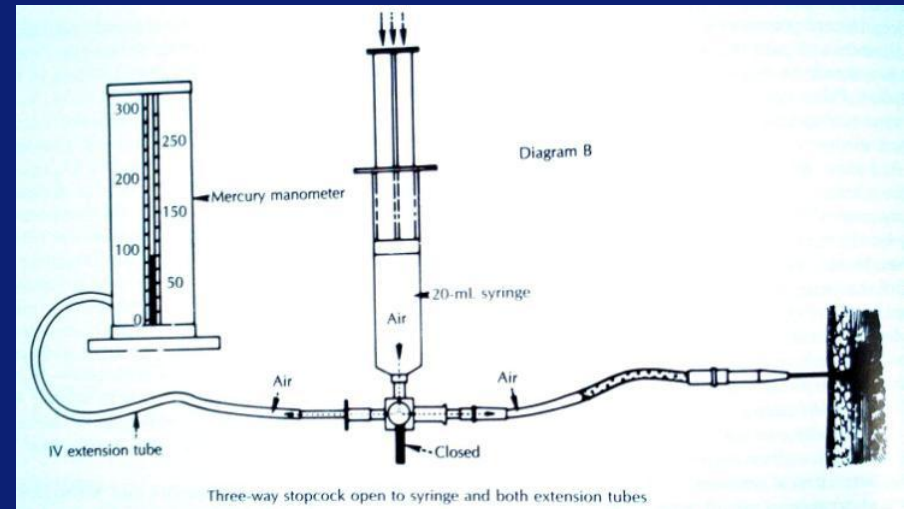


Compartment Syndroom

PIJN!!!

Comminutieve
tibia fracturen

Release ALLE
compartimenten



Hardware Failure

Tgv delayed, non- of
malunion

Infectie?!

Plaat of penbreuk

grendelschroefbreuk



Uitkomst

Gustilo Anderson, uitgebreidheid schade

Knikpunt tussen 3a en hoger

Diepe infecties is 3.5% for type 2 and 3a fractures,
but 23% for type 3b fractures*

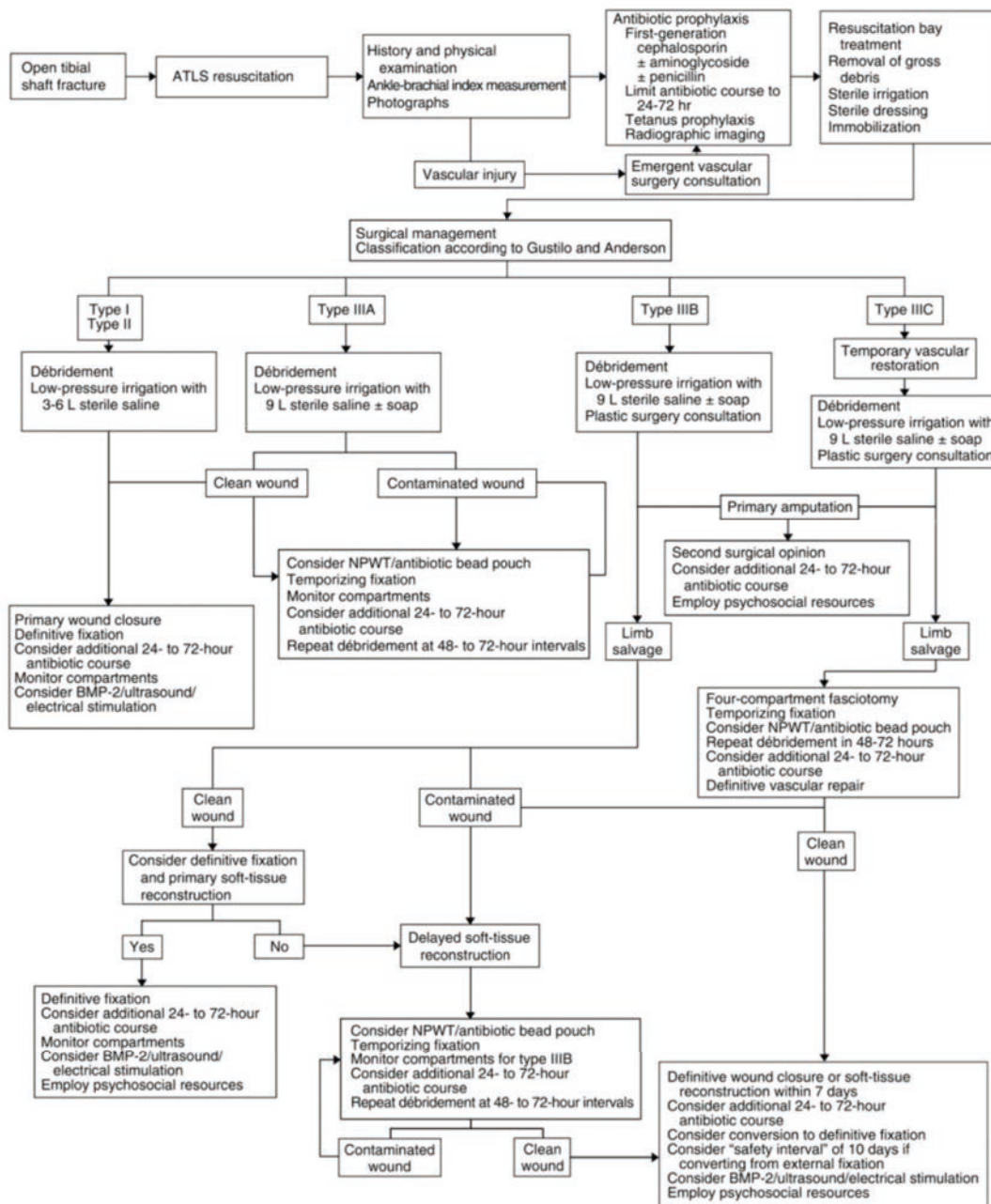
*Court-Brown JBJS 1991

Uitkomst

Voor type 3b and 3c fractures vroege bedekking geeft beste uitkomst

diepe infectie 3% vs. 19%* <72hr / > 72hr

*Gopal et al. JBJS[Br] 2000



Melvin JS, Open Tibial Shaft Fractures: I and II, JAAOS, Jan-Feb 2010

The time you won your town the race
We chaired you through the market-place;
Man and boy stood cheering by,
And home we brought you shoulder-high.

To-day, the road all runners come,
Shoulder-high we bring you home,
And set you at your threshold down,
Townsmen of a stiller town.

— A.E. Housman, "To an Athlete Dying Young" (1895)