

Periarticular Fractures in Osteoporotic Patients: Weightbearing Recommendations

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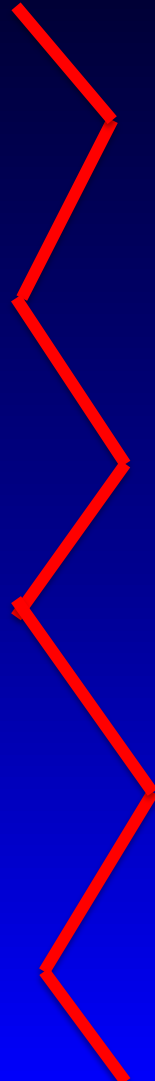


Fracture Characteristics

- Amount of comminution
- Peri-articular vs. shaft
- Open vs. closed – soft tissues
- Type of fixation – IM nail vs. plate fixation



Patient Characteristics



Early weight bearing

- Decrease morbidity and mortality
- Decrease rates of:
 - Pneumonia
 - DVT
 - Pressure ulcers
- Improve rehabilitation

Types of weight bearing

- None weight-bearing (NWB) – **BAD!!**
- Toe touch weight-bearing (TTWB)
- Partial weight-bearing (PWB)
- Weight-bearing as tolerated (WBAT)

Pubic rami fractures



- Immediate WBAT



Hip - Elderly

- WBAT – Immediately
 - Garden, 1961
 - Graham, 1968
 - Koval et al, 1996 - DHS
 - Conn et al, 2004 - Cancellous screws
 - Herrera et al, 2008 - CMN



Hip – Young patient/High energy

- Protected WB 6-12 weeks
- Young patients different than elderly!!



Periprosthetic fractures

- Protected WB?
- WBAT immediate or 6 wks



Femoral shaft



- Locked IM nail - **WBAT immediately**
 - Even in case of comminuted fractures
 - Brumback et al, 1991
 - Arazi et al, 2001
- Plate fixation - Protected WB x 6 weeks



Tibial shaft

- SPRINT study
 - 1226 tibial shaft fractures, reamed vs. unreamed IMN
 - >90% surgeons limited post-op WB, only 10% WBAT
 - Early WB associated with increase adverse events OR=1.6
- Gross et al 2013 OTA meeting – RCT
 - Locked IM nail → WBAT immediately
- Plate fixation → Protected WB?





Patella

- Non-op or ORIF – Immediate WBAT, ROM



Tibial plateau

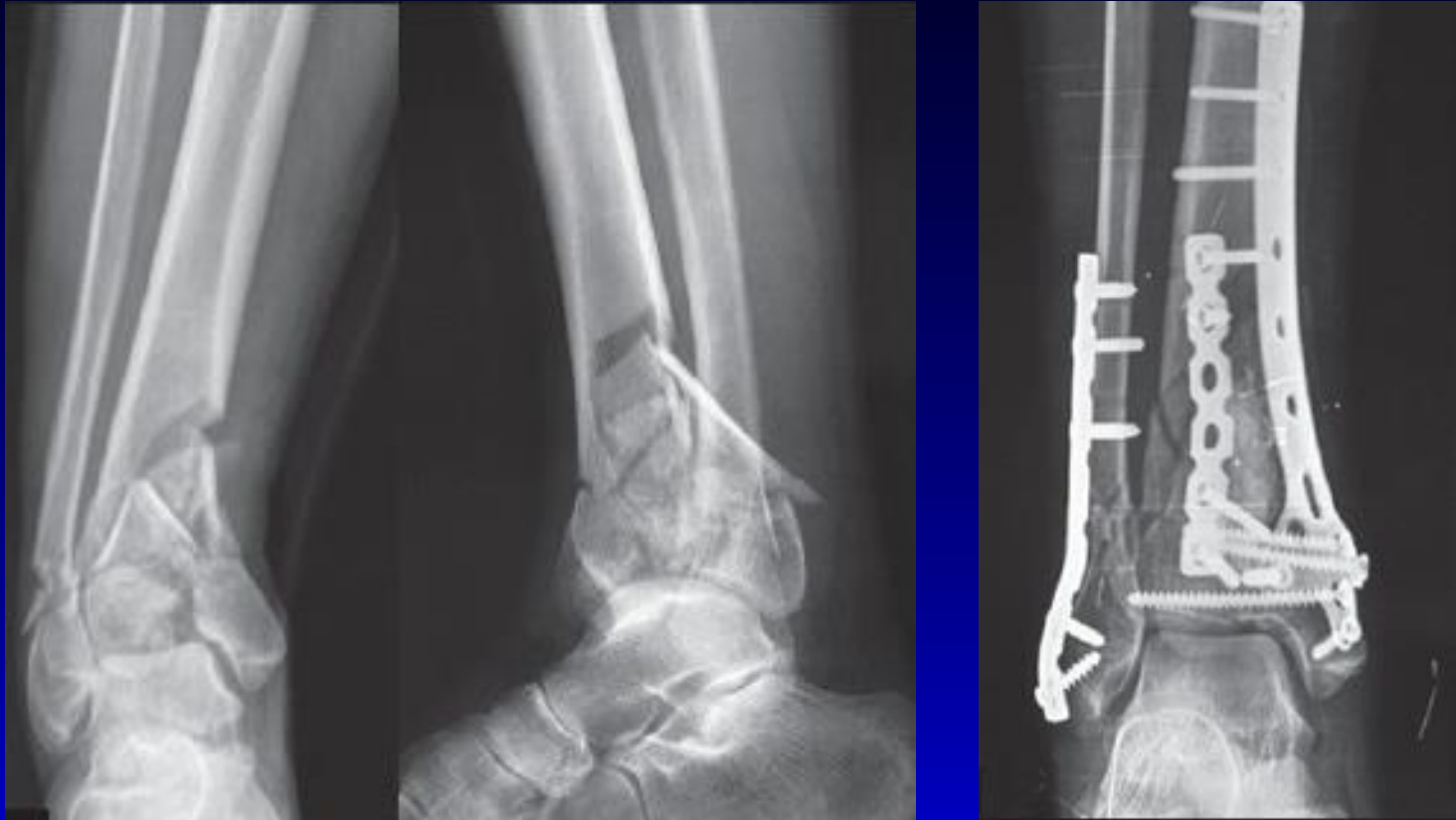
WBAT at 6 weeks



WBAT Immediately



Tibial Plafond/Pilon



- Protected WB x 6-12 weeks

Ankle



- Dehghan et al, RCT
 - Uni/bimalleolar fractures
 - WBAT at 2 weeks in boot orthosis

THE 2013 BOVILL AWARD PAPER

Early Weightbearing and Range of Motion Versus Non-Weightbearing and Immobilization After Open Reduction and Internal Fixation of Unstable Ankle Fractures: A Randomized Controlled Trial

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Meta Analysis: 10 studies, 633 patients

Materials and Methods:

A systematic review of the literature was performed to identify studies comparing outcomes of EWB (within 2 weeks post-operatively) and LWB (4-6 weeks post-operatively) after surgical fixation of ankle fractures. Randomized controlled trials, as well as non-randomized prospective cohort studies with a control group, were included. The primary outcome was ankle functional outcome as measured by the Olerud Molander Ankle score (OMA). Secondary outcomes included time off work, and complications such as nonunion, malunion, wound complications, and re-operations. Data was pooled for meta-analysis and a random effects model was used to calculate mean differences for continuous variables, as well as odds ratios for dichotomous variables.

Figure 1 - Flow Chart describing the process of study selection and exclusion

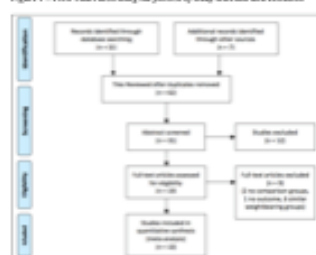
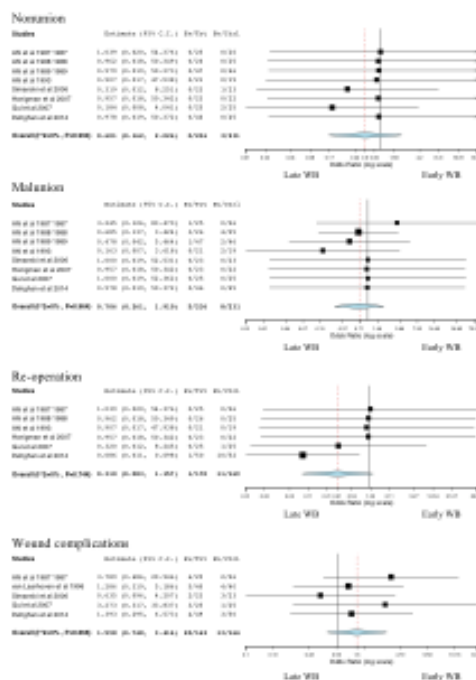


Figure 3 - Complications: nonunion, malunion, wound complications, re-operations



patients in the EWB group compared to the LWB group ($p=0.02$), but no difference in the long term at one year (Figure 2). With regards to time off work there was a trend towards reduction of 15 days in the EWB group ($p=0.08$). There was no difference with respect to nonunion, malunion or wound complications between the two groups. Patients in the LWB had a trend towards higher rate of revision surgery (11/169 vs. 1/170, $p=0.08$), primarily for hardware removal (Figure 3).

Conclusion:

This meta-analysis suggests improved early functional outcomes in patients treated with EWB compared to LWB, with a trend towards lower time off work and lower need for revision surgery. The results show no difference in rates of nonunion, malunion, or wound complications between the two groups, indicating that early weightbearing is safe. Given the potential for improved outcome and lack of increased risk, early post-operative weightbearing after surgical fixation of ankle fracture is recommended. High volume trials in this area are required to confirm the potential benefits with regards to return to work and revision surgery.

Foot fractures

- Isolated metatarsals
 - WBAT immediately
- Lisfranc, talus, calcaneous
 - Protected WB x 6 weeks



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