Distal Femur Fractures in The Elderly – The Ideal Construct
Geriatric Distal Femoral Fracture

- Low energy trauma
- Osteoporotic bone
  >>> Difficulty in fixation
- Open reduction, extensive dissection
  >>> may delay the speed of union

Property of Singapore Trauma
Chairbound patients
Conservative treatment???
2 weeks later in a slab...
3 months later if no open wound...
Choice of Implant

• Supracondylar (A1-A3)
  – Locking plate
  – IM Nail
• Intercondylar (C1-C2)
  – Locking plate + lag screws
  – IM Nail + lag screws
• Bi-condylar with comminution in articular surface (C3)
  – Locking plate + lag screws (3.5mm for small fragments)
Choice of Implant

• Supracondylar (A1-3)
  – Locking plate
  – IM Nail

• Intercondylar (C1-2)
  – Locking plate + lag screws
  – IM Nail + lag screws

• Bi-condylar with comminution in articular surface (C3)
  – Locking plate + lag screws (3.5mm for small fragments)
Surgical procedure of locking plate fixation of distal femur fracture

• Decide the approach
• Prepare implant of adequate length
• Reconstruction of articular fracture
• Application of the plate first at distal part
Positioning

- Supine with foam support > C-arm control
- Good for intra-articular fracture
Pathoanatomy of distal femur

Deforming ligament pulls

Deforming muscle vectors
Reduction technique

- Articular reduction first
  (Direct reduction)
- Bridge articular block to shaft
  (Indirect reduction)
How to reduce?
Lateral parapatellar approach

For Type C fractures
74 yr old lady

C2 distal femur fracture
Single intercondylar fracture line
Comminuted metaphyseal area

Reduction:
• Anterolateral approach
• Lag screw first
• Then MIPO

Property of Singapore Trauma
Lower border of plate must be parallel to posterior femoral cortex
Distal fixation, check X-ray
Cable technique

Coronal plane alignment

Planning

Approach

Reduction

Maintain

Fixation
87y, distal femur A3
87y, distal femur A3
87y, distal femur A3

Post-op

comminuted fracture bridged

3 months

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Post op early exercise
COMMON PROBLEMS AND PITFALLS...
SIMPLE A1 FRACTURE: EASIER TO TREAT???
A good reduction is important in A1 fractures. It may not tolerate any gap!
MONOCORTICAL OR BICORTICAL
Mode of Failure

No angular stability
Individual screw loosened

Angular stability
Whole fixation pull out
Problem of short monocortical screws in 2 patients

Wong, Leung, Chow
Intern Orthop 2005
ANATOMICALLY PRE-SHAPED PLATE?
Sagittal plane mismatch
Coronal plane mismatch
Increase the working length = stronger fixation
SPECIAL CONSIDERATIONS
F/89

- Walk with stick
- Hemiarthroplasty done 5 years ago
- Total knee replacement done 10 years ago
- Slipped and fell
- C/O knee pain and unable to walk

Property of Singapore Trauma
CT scan
Lateral DF-LCP with medial LCP
2 months after operation
2 years after operation

- Walk with stick
F/98, Chairbound patients
Summary

• **Goals of treatment**
  – Anatomical reduction of joint surface
  – Good reduction of metaphysis and diaphysis
  – Stable internal fixation
  – Early mobilization

• Locking plate fixation for all type A and type C fractures

• Medial augmentation plating in severe osteoporotic fractures or in special case, e.g. periprosthetic fracture