Complex intraarticular distal femur fracture

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Background

► Complex intra-articular fracture of the distal femur is a rare fracture.

► Remains a surgical challenge even for experienced trauma surgeons.

► Re-operation rates are high (up to 60%)

► One year mortality is 25% (in people above 60 years)
21,082 operated fxx.
1.1% of all fractures
Implants, change over time

Compression plate.  Blade plate  Dynamic compression screw

Monoaxial locking plate  Polyaxial locking plate
Problems stay the same

High re-operation-rates

- NON – Unions
- Infections
- Mal – Unions
- Hardware problems
- Secondary loss of reduction
- Loss of bone stock
- Heterotopic ossification
- Decreased Range of motion (ROM) (60-140)
- High Mortality Rates 25% (one year)
- ......................... The list is long
The aim

- Anatomical reduction
- Stable Fixation
- Early mobilisation
- Full range of motion
- Fast healing
- No complications
What is (more) important??

Ex-Mex Copenhagen 2014
Mono or polyaxial screws (RCT study)

- **Int Orthop.** 2014 Apr
- Mono- versus polyaxial locking plates in distal femur fractures: a prospective randomized multicentre clinical trial.

Scores as compared to the LISS® system (Table 3).

**Conclusion**

No significant difference

Tendency to better ROM

With polyaxial screws

Not important
Anatomical reduction of the joint? Correlation between step off and POA

<table>
<thead>
<tr>
<th>Joint</th>
<th>Step Off</th>
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<tbody>
<tr>
<td>Distal radius</td>
<td>&gt;2mm</td>
</tr>
<tr>
<td>Acetabulum</td>
<td>&gt;3mm</td>
</tr>
<tr>
<td>Distal femur ?? Rabbit joints</td>
<td></td>
</tr>
<tr>
<td>Tibial Plateau</td>
<td>&gt; 5-10mm</td>
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</tbody>
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POINT 3 - incongruity and instability

the sensitivity to step-offs was inversely correlated with cartilage thickness

Important

P.V. Giannoudisa, C. Tzioupisa, A. Papathanassopoulos, O. Obakponowwea, C. Robertsb

Ex-Mex Copenhagen 2014
Fractures of the distal femur carry a mortality risk comparable to that of hip fractures.

**One year mortality 25%**
The Open Orthopaedics Journal, 2014

Mid Term Results of Distal Femoral Fractures Treated with a Polyaxial Locking Plate: A Multi-Center Study
J.B. Erhardt*,1, M. Vincenti1
J. Pressmar2, F.A. Kuelling1, C. Spross1, F. Gebhard2 and G. Roederer2

Conclusion:
These fractures are often combined with concomitant injuries. Using modern locked implants high union rates can be achieved with a good function and patient satisfaction when respecting biologic and biomechanical principles.
Non-union in young patients

Patient factors: Age, Comorbidity, bone-quality, medication, smoking

Trauma factors: High energy, soft tissue, loss of bone stock

Surgery factors: Experience, MIPO/Open, bone-stripping

Implant factors: Design, features, strength

Construct factors: One or two column construct, stiffness, screws etc.

Many different strategies can be chosen
Our clinic – about 40 Cases/Year

Staged protocol
Staged protocol

Some Pitfalls

Stiffness of the construct

The medial column

Autograft-Pelvic/RIA
Dynamization of locked plating on distal femur fracture

Stiffness of the construct
The importance of the medial column
Reaming-Irrigation-ASpiration
Take home message

1. Analyze and form a strategy for each individual case.

1. Know the pitfalls

2. Delayed Union??-find them and treat them