Perioperative care of patients with proximal femur fractures

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Proximal femoral fractures

- **Common fractures** (No 2 in incidence of elderly patients)
- **Increasing incidence with age** (doubling every 8 years, reaching 4% per year in women over 90)
- **High-energy fractures in the young population**
- **Low-energy fractures in osteoporotic elderly patients** (90% of fractures in patients above 50 years of age)
- **More common in women**
- **Rate women/men – 2:1**
Proximal femur fracture classification

- Patients with type A fractures treated by PFN
- Patients with type B treated with THR
Distribution

- within the U.S. population
  - 49 percent intertrochanteric
  - 37 percent femoral neck
  - 14 percent subtrochanteric
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Fractura pertrochanterica
Fractura intertrochanterica
Fractura subtrochanterica
ED treatment

- ATLS protocol
- Analgesia (IV opioids)
- Determining cause of fall (other injuries, cardiologic)
- Determine blood type + cross-match
- VTE prophylaxis
- Application of traction – skin/skeletal
Skeletal traction

- K-Wire traction under tibial tuberosity
- Provides analgesic effect
- Prevents damage from bone fragments
- Prevents formation of pressure ulcers
- Used in warfarinised patients, those who are contraindicated for immediate surgery
Warfarin

- 1% of the population warfarinised
- 3-4% of prox. Femur fracture Patients
- Treatment delayed until INR falls below 1.3
Watch and wait or decrease pharmacologically?

- Fresh frozen plasma
- Vitamin K
- Prothrombin complex concentrates
Antibiotics

- Peroperatively AO recommends usage of 1st gen. cephalosporins
- Cephazolin 2g i.v. in theatre
- 1g for every 8 hrs for 24hrs thereafter
VTE prophylaxis

- LMWH according to weight and institutional protocols
- Clexane 0.4/0.6ml s.c.
- Begun 8 hours pre-operatively
- particular attention to those patients who have increased risk factors
- Continued for 1 month post-op
Nutritional supplementation

- many elderly patients have unrecognized malnutrition, even in the presence of apparently sufficient socioeconomic resources.
- Protein and fibre supplementation
- Infusions Physiological/ringer to manage ion dysbalance
  - +Na, K, HMR, etc
Pain management

- Extra care taken to avoid excessive use of narcotics (to reduce risk of postoperative delirium).
- Administration of analgesics pre-emptively in theatre
Analgesic combination

- NSAIDs commonly combined with opiates to lower dosage requirements
- NSAIDs given even as a single dose preoperatively can significantly decrease morphine requirements by up to 29% over 24 hours.
Implant selection

- PFN or DHS?
### Advantages
- Less expensive implant than IM nail
- May convert to ORIF for reduction or improved fixation
- Fracture stability
- Early mobilization
- Semi-open procedure, fracture site left untouched

### Disadvantages
- Risk of secondary displacement
- Challenging application of sliding hip screw
- Risks of surgery
PFN

**Advantages**
- Improved fixation stability, with reduced risk of secondary displacement
- Early mobilization
- Semi-open procedure, fracture site left untouched
- Small incision

**Disadvantages**
- Difficult technique, especially if greater trochanter comminution is present
- More expensive implant than sliding hip screw
- Risks of surgery
- Risk of secondary displacement
PFN preference

- DHS nowadays considered obsolete, used only in specific circumstances
- More physiological load bearing in axis of femur
- Reduced blood loss, shorter hospital stay, less morbidity
PF Targon features

- PFN made by B Braun
- Telescoping mechanism
- Antiroational pin
- Good visualisation during screw placement
The use of Targon PF at Department of Traumatology UH Motol

• Application of Targon PF 2000 - 2006
• Group of PF Targon patients: 673 patients
• Indication:
  – Pertrochanteric 50.0%
  – Per-subtrochanteric 24.3%
  – Subtrochanteric 14.0%
  – Basocervical 8.7%
  – Intertrochanteric 1.0%
  – Ipsilateral 2.0%
The use of Targon PF

- Patients – 673
- Men 42.7%
- Women 57.3%
- Average age
- Men 63.9 y
- Women 75.9
- Age range from 22 to 100 years
- Mainly ASA III and IV
Targon PF implant

- Very good implant for all proximal femur fractures especially for unstable ones
- Minimal invasive implantation
- Insertion of Targon PF is easy
- The rate of complication is very low
- Optional compression
- Early full weight bearing
Timing of surgery

• The 2010 Best Practice Tariff (BPT) offers financial rewards for the best treatment of hip fractures, including surgery within 36 hours of admission.

• The 2011 National Institute for Health and Care Excellence (NICE) hip fracture guidelines also recommend surgery within 48 hours of admission.
Surgery

- Timing of surgery – as soon as possible
- Interval from admitting till operation less than 6 hours (85% of patients)
- Operation time – Ø 56 min. (from close reduction to suture)
- X-ray exposure – Ø 35 s
- Anesthesia – 2/3 spinal, 1/3 total
Limb care after surgery

- Limb positioning
- Dry dressings
- Wound check
Postoperative treatment

- 1\textsuperscript{st} postoperative day – exercise in bed
- 2\textsuperscript{nd} postoperative day – drill of walk with crutches or walking frame
- Other days - walking with crutches and rehabilitation according to the physical condition of patient
- All geriatric patients - full weight bearing immediately after surgery
Post-op Transfusions

- Transfusion for symptoms or when hemoglobin fall below 8 g/dL
- Similar outcomes between liberal and symptomatic transfusions
- Iron supplementation with tablets
Pressure ulcers

- Pressure ulcers occur in 10 to 40% of patients hospitalized for hip fracture 5% at our dep.
- Increase nosocomial infection rates and lengths of stay
- Foam or alternating pressure mattresses, compared with usual care, reduce the incidence of pressure ulcers
Aftercare

- Follow up visits at six-week intervals with x-rays should be carried out until union and thereafter as necessary.
- Implant removal is not necessary unless clinically indicated.
- After surgery the outcomes of greatest concern are
  - mortality
  - loss of independence
  - loss of mobility
  - residual pain.
- Mortality generally occurs within the first six months after fracture; studies have shown that these rates range from 12-37%.
X-ray results

- X-ray consolidation by 3 months - 88%
- X-ray consolidation by 6 months - 94%
Practical results

Subjective – sporadic pain of hip and scars – 13%

Objective – range of movement in hip
  flexion and extension – no limitation
  abduction, adduction and rotation – range limitation within 1/3
  51%

Full weight bearing – immediately after surgery
  (geriatric patients)
Complications

**PF Targon sample group**

- Haematoma  11
- Deep wound infection  2
- Necessity of reaming  3
- Fracture of lateral cortex  1
- Open reduction  3
- Cut – out (perforation by AR pin)  2
- Implant failure  0
- Necrosis of femoral head  3
- Pseudoarthrosis  0
- Letality in hospital  3
Summary

• Early surgery important for better outcome
• Stable implant selection
• Nutritional supplementation
• Early full weight bearing rehabilitation
• More than 60% of fractures due to osteoporosis
Thank you for your attention.

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