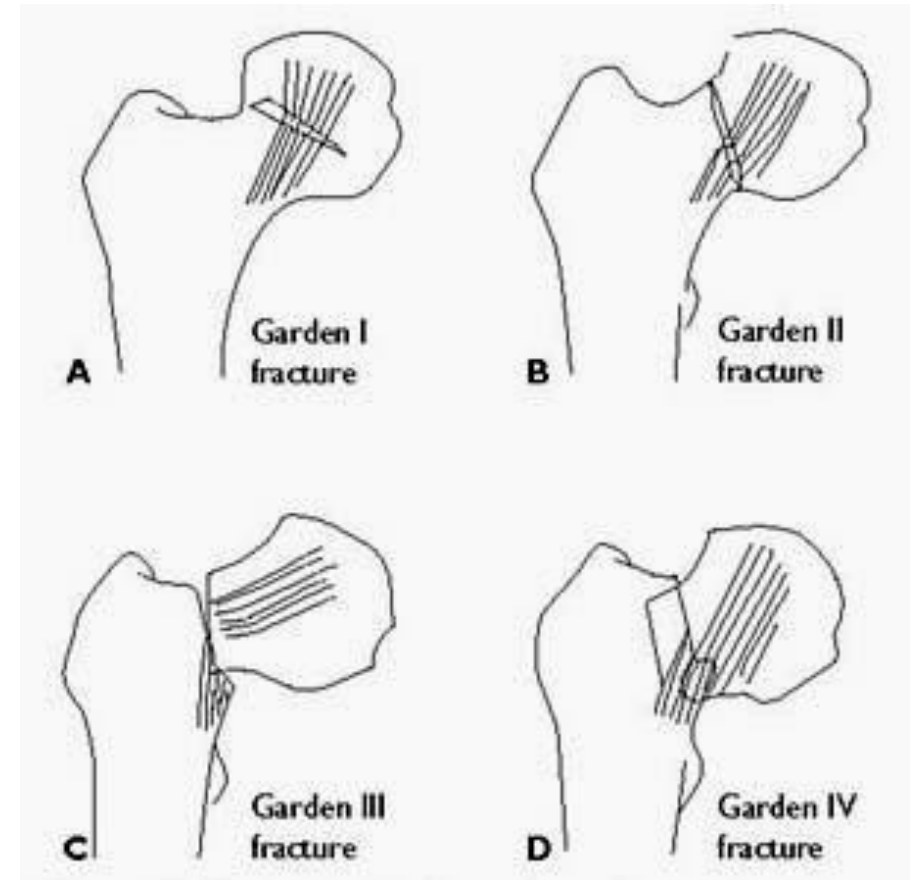
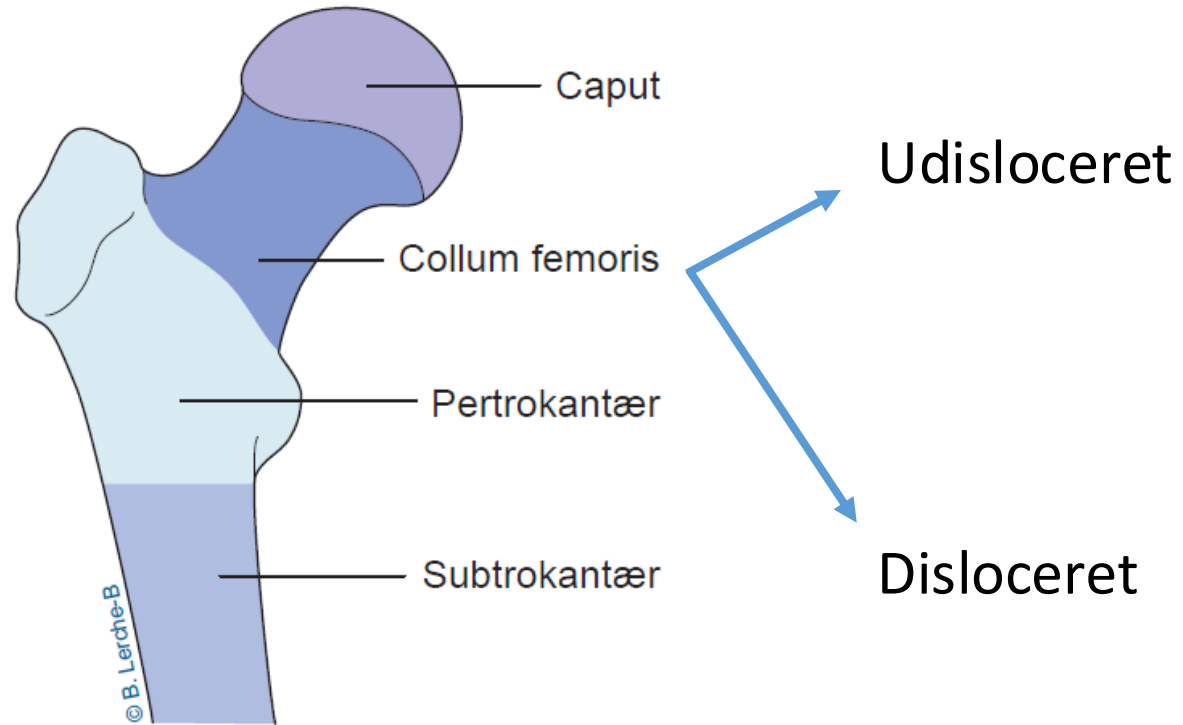


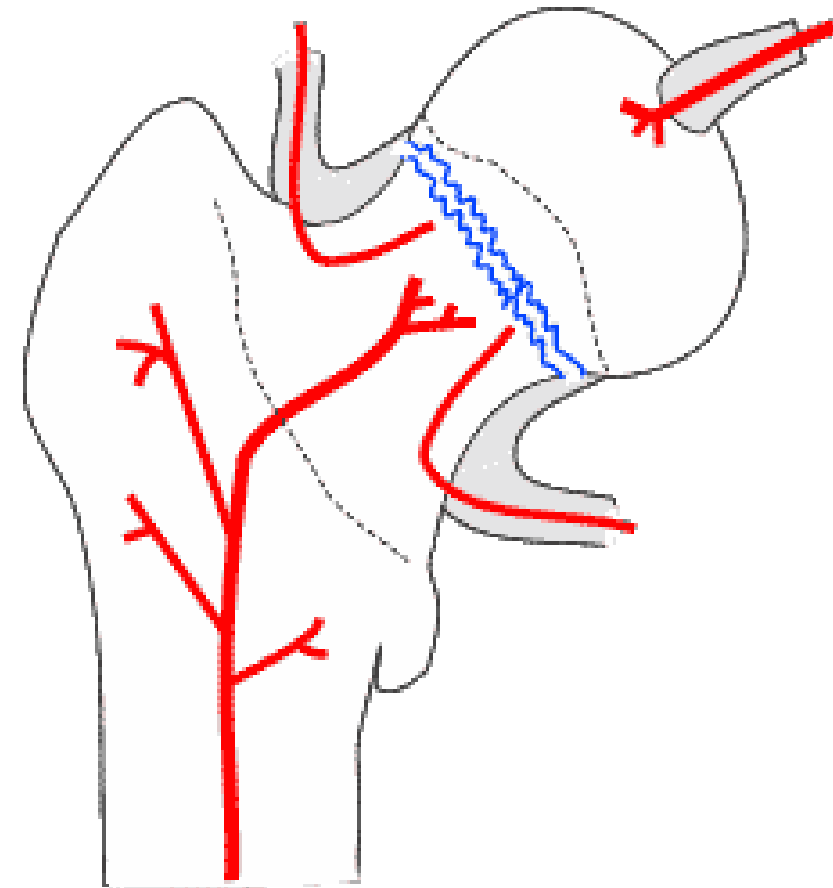
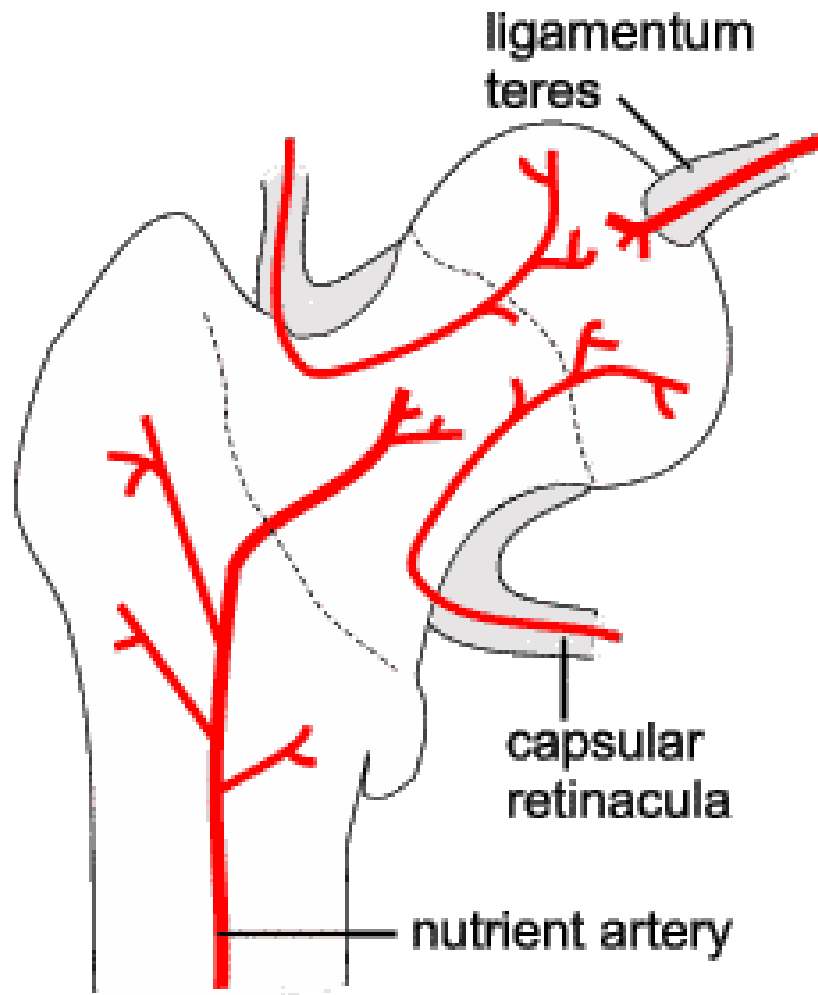
Collum femoris frakturer

Bjarke Viberg
Overlæge, ph.d., professor
Traumesektionen, OUH

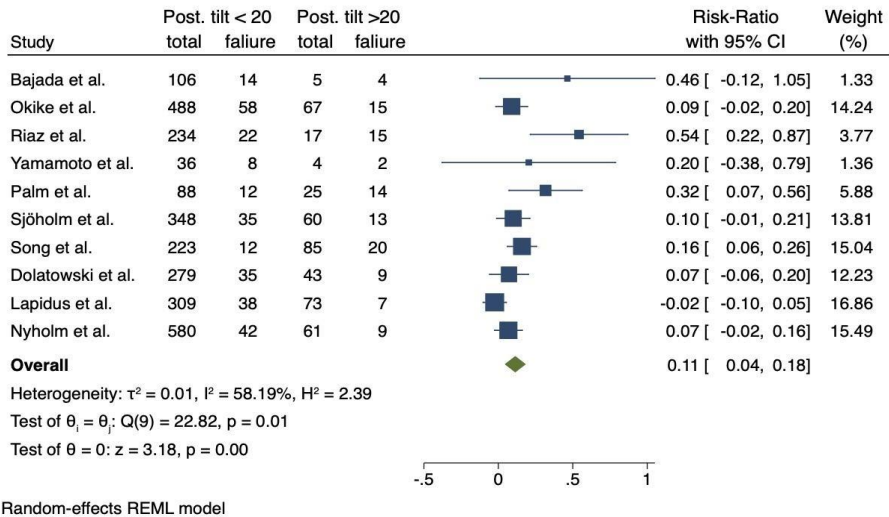
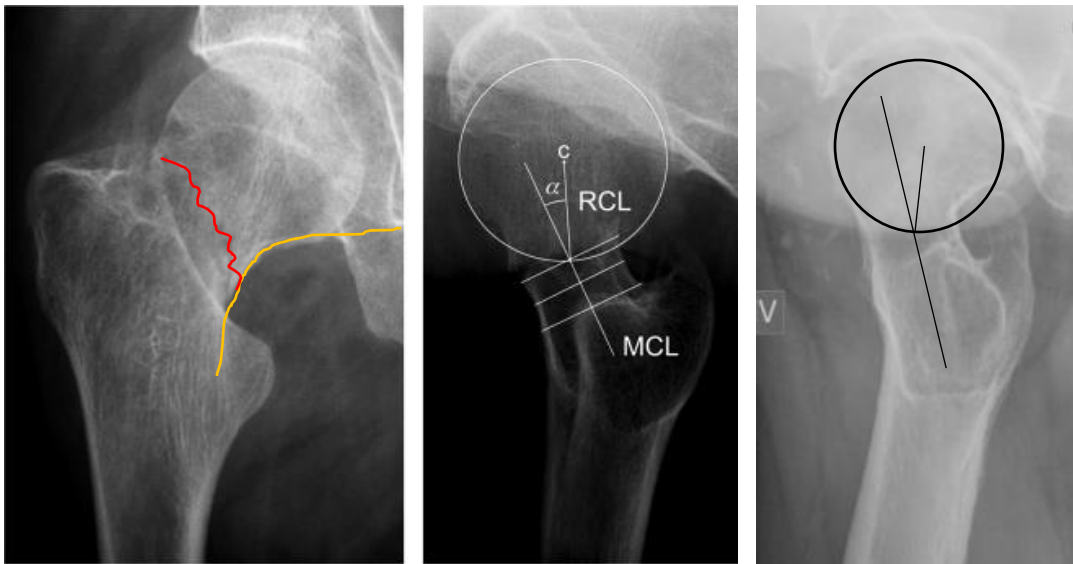
Department of Orthopaedic Surgery and Traumatology, Odense University Hospital
Department of Clinical Research, University of Southern Denmark



1. Garden RS. Low-angle fixation in fractures of the femoral neck. J Bone Joint Surg Br. 1961;43:647–663
2. Van Embden D, Rhemrev SJ, Genelin F, Meylaerts SA, Roukema GR. The reliability of a simplified Garden classification for intracapsular hip fractures. Orthop Traumatol Surg Res. 2012 Jun;98(4):405-8.

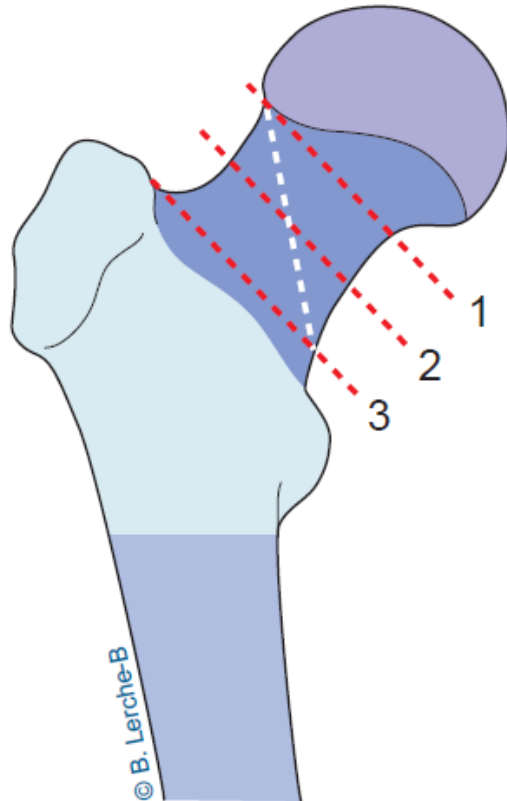


Hvis udisloceret, mål posterior tilt



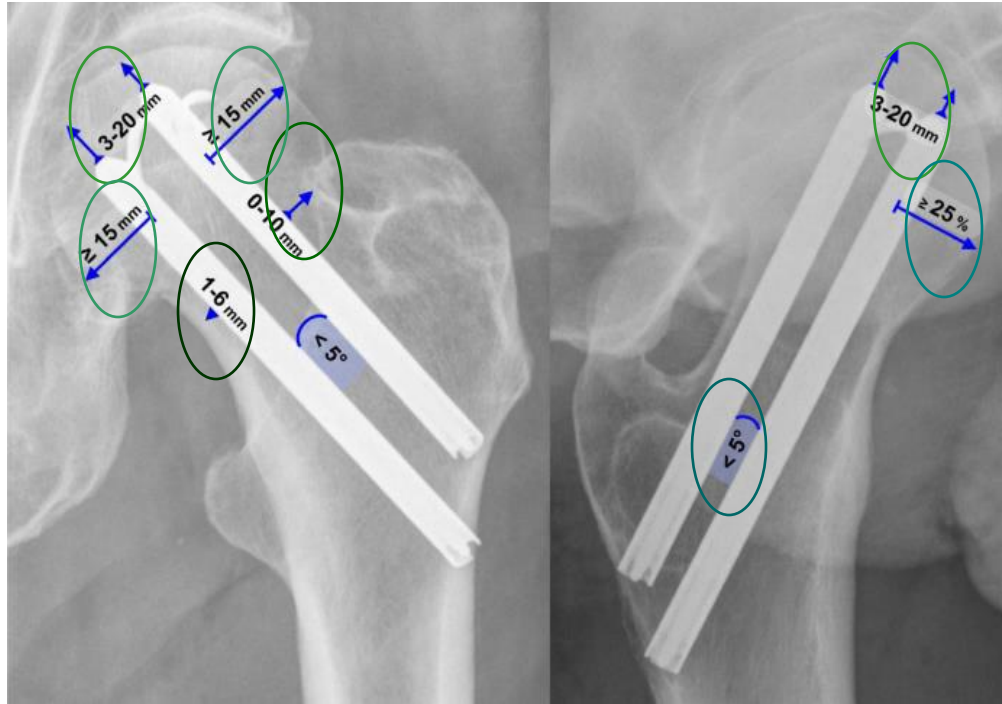
1. Nielsen, LL et al., *Posterior tilt in nondisplaced femoral neck fractures increases the risk of reoperations after osteosynthesis. A systematic review and meta-analysis.* Injury, ahead of print

Hvis osteosyntese, så vurder fraktursted

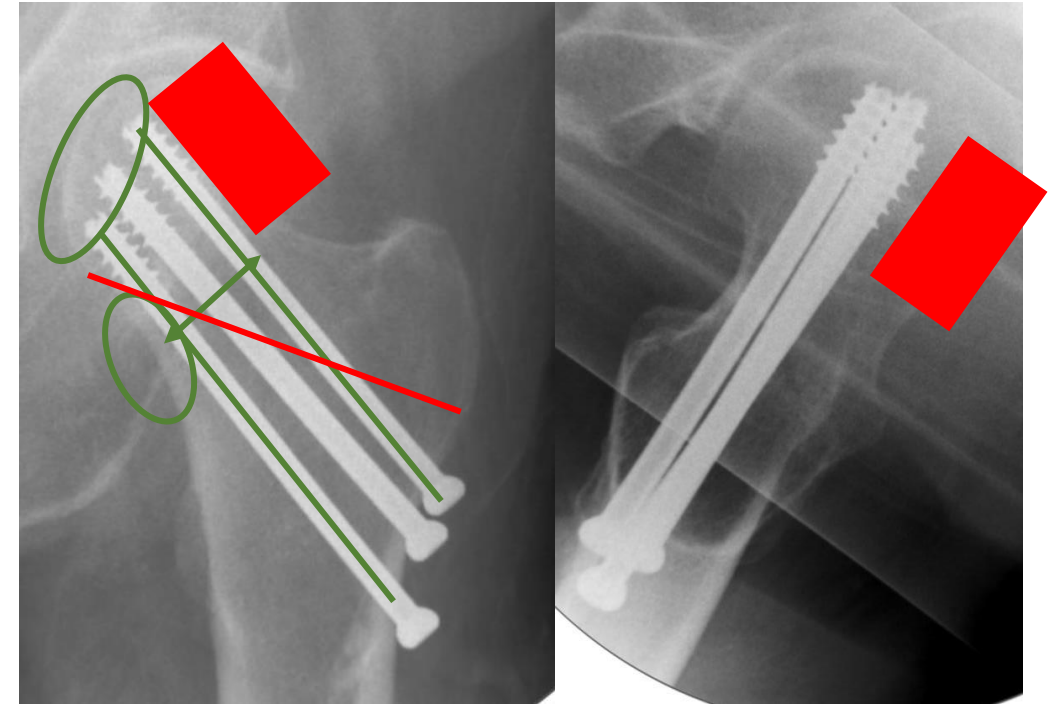


1. Subcapital
2. Mid-/transcervical
3. Basocervical
4. Hvid: vertikal

Osteosyntese – hvordan?



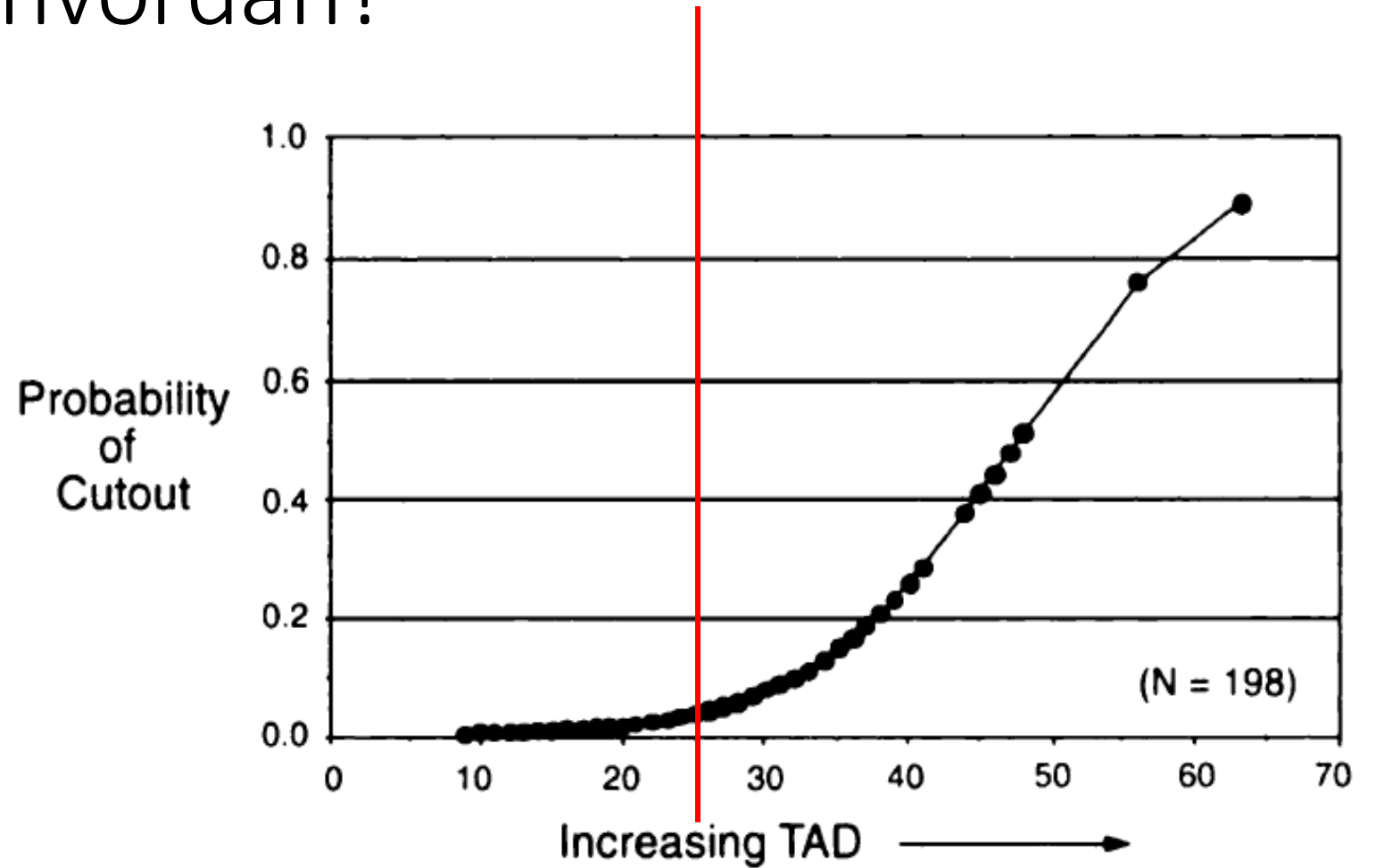
1. Inferior screw to the inferior calcar = 1–6 mm (AP)
2. Superior screw to the superior cortex = 0–10 mm (AP)
3. Tip of the screws to the articular margin of the femoral head = 3–20 mm (AP+lat)
4. Screw placement in femoral head (AP)
 - a. Inferior screw ≥ 15 mm to inferior edge
 - b. Superior screw ≥ 15 mm to superior edge
5. Anterior screw placement in femoral head $\geq 25\%$ of the caput diameter (lat)
6. Inter-implant angle $< 5^\circ$ (AP+lat)



Skrue tæt på god knogle =
 God afstand mellem skruerne =
 Parallelle skruer =
 Undgå varus skruer =
 Kend safe zones =

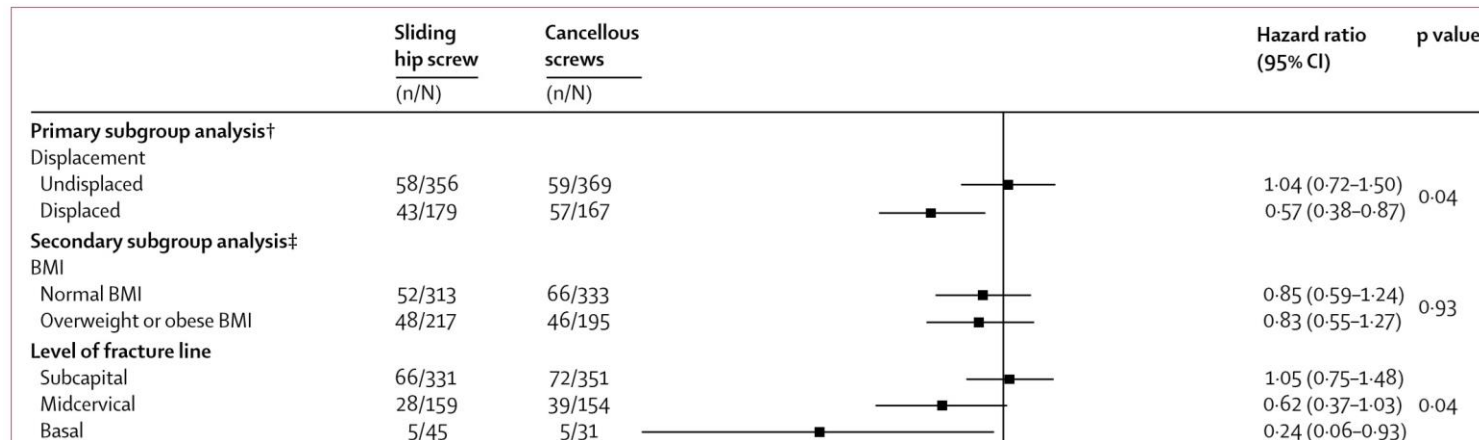
↑Stabilitet
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Osteosyntese – hvordan?



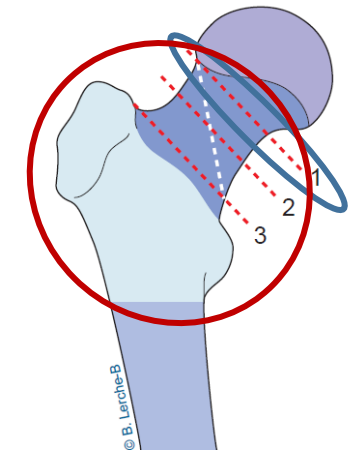
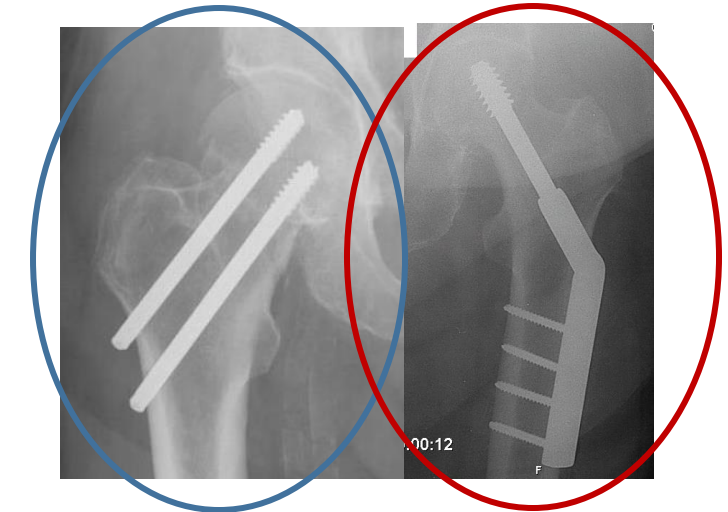
1. Baumgaertner, M.R., et al., The value of the tip-apex distance in predicting failure of fixation of peritrochanteric fractures of the hip. J Bone Joint Surg Am, 1995. 77(7): p. 1058-64.

Skruer vs. DHS



N=2598	CCS n (%)	SHS n (%)	Relative risk (RR) Crude	Adjusted
1-year overall	261 (15)	114 (13)	1.13 (0.91; 1.41)	1.10 (0.88; 1.37)
Undisplaced (31B1)	127 (11)	32 (9)	1.15 (0.78;1.70)	1.15 (0.77; 1.69)
Transcervical (31B2)	59 (19)	59 (13)	1.40 (1.02; 2.10)	1.35 (0.94; 1.94)
Displaced (31B3)	75 (29)	23 (28)	1.00 (0.63; 1.60)	1.09 (0.68; 1.75)

1. Fixation using Alternative Implants for the Treatment of Hip fractures (FAITH) Investigators. Fracture fixation in the operative management of hip fractures (FAITH): an international, multicentre, randomised controlled trial. *Lancet*. 2017 Apr 15;389(10078):1519-1527.
2. Reoperation for sliding hip screws vs cannulated cancellous screws in femoral neck fractures: A study from the Danish Fracture Database Collaborators. Viberg B, Barat S, Rotwitt L, Gundtoft PH; DFDB collaborators. *Injury*. 2022 Sep 21:S0020-1383(22)00689-1.



Reponering

- A rough alignment index of reduction was found to provide an almost infallible guide to the prognosis both in regard to union and to avascular change. It may therefore be possible to base prognosis on the quality of reduction before the fixation appliance has been inserted¹
- Varus reponering OR 4.3, varus og svær reponering OR 13.6 or 75% failure²
- Vigtigste prediktor for AVN er dårlig reponering, OR 13.9³
- Reoperation var 50 % i utilstrækkelig reponeret gruppe sammenlignet med god reponering med reoperation på 14.7%, OR 5.8⁴

1. Garden, RS. LOW-ANGLE FIXATION IN FRACTURES OF THE FEMORAL NECK. The Bone and Joint Journal, 1 Nov 1961
2. Chua, D., et al. *Predictors of early failure of fixation in the treatment of displaced subcapital hip fractures*. J Orthop Trauma. 1998 May;12(4):230-4
3. Byung-Woo, M. et al. *Avascular Necrosis of the Femoral Head After Osteosynthesis of Femoral Neck Fracture*. Orthopedics. 2011;34(5):e6-e11
4. Yamamoto, T., et al. *Undisplaced femoral neck fractures need a closed reduction before internal fixation*. Eur J Orthop Surg Traumatol. 2018 Aug 1

Hvem skal osteosynteres?

- Alder
 - Bartels¹ register viser reoperation 55-70 årige på
 - 25 % for IF
 - 3,8 % for HA
 - 2,8 % for THA
 - HA og THA mere tilfredse
 - Bartels² RCT viser
 - Ikke klinisk signifikant forskel i HHS
 - THA mere glade og tilfredse
 - IF 51% reoperation vs. 4% ved THA

1. Bartels S et al. High failure rate after internal fixation and beneficial outcome after arthroplasty in treatment of displaced femoral neck fractures in patients between 55 and 70 years. Acta Orthop. 2017 Sep 15:1-6.
2. Bartels et al. Total Hip Arthroplasty Leads to Better Results After Low-Energy Displaced Femoral Neck Fracture in Patients Aged 55 to 70 Years. J Bone Joint Surg Am. 2022 Aug 3;104(15):1341-1351.

Guideline	Disloceret collum femoris fraktur
Danmark, 2008	IF <70 Allo > 70
Skotland, 2009	IF yngre frisk Allo ældre (biologisk), THA ved medium/høj aktivitet
England, 2011 (incl. 2017 addendum)	Alloplastik, THA hvis gående og kognitivt intakt
Australien, 2014	Alloplastik, THA hvis gående og kognitivt intakt
USA, 2014	Alloplastik, THA ved selekteret
Tyskland/Østrig, 2015	IF yngre, god reponering, høj aktivitet, god knoglekvalitet Alloplastik ved artrose og modsat ovenstående
Holland, 2016	Overvej IF ved ASA 1+2, 18-80 år THA 61-80 ved ASA 1+2 og uafhængig gang Ellers hemi

Osteosyntese

Acta Orthopaedica 2023; 94: 505–510

505

The different strategies in treating displaced femoral neck fractures: mid-term surgical outcome in a register-based cohort of 1,283 patients aged 60–69 years

Johan LAGERGREN¹, Sebastian STRØM RÖNNQUIST², Olof WOLF^{3,4}, Sebastian MUKKA⁵, Michael MÖLLER^{4,6,7}, Jonatan NÄTMAN^{4,8}, and Cecilia ROGMARK^{8,9}



Acta Orthopaedica 2022; 93: 547–553

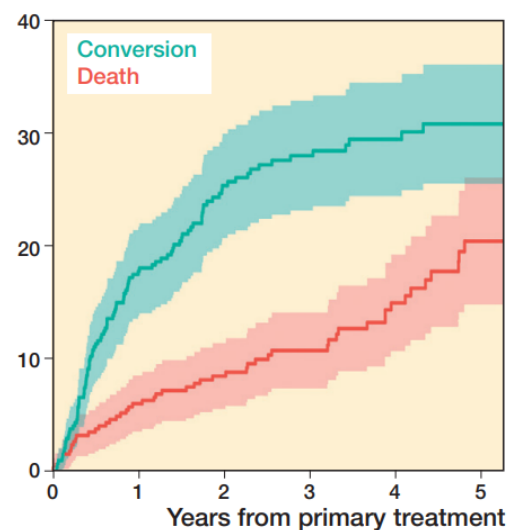
547

Rate of conversion to secondary arthroplasty after femoral neck fractures in 796 younger patients treated with internal fixation: a Swedish national register-based study

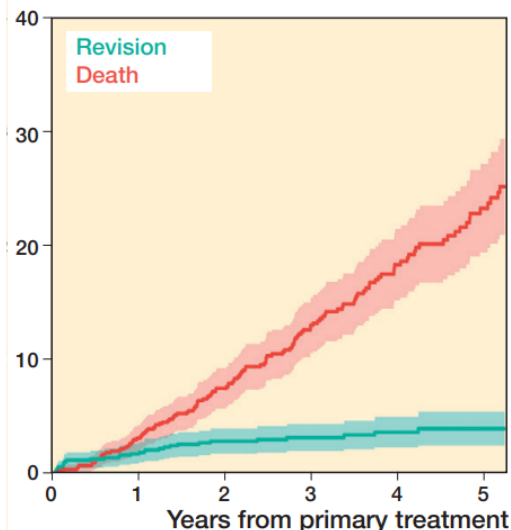
Sebastian STRØM RÖNNQUIST^{1,2}, Johan LAGERGREN^{3,4}, Bjarke VIBERG^{2,5}, Michael MÖLLER^{6–8}, and Cecilia ROGMARK^{1,8,9}



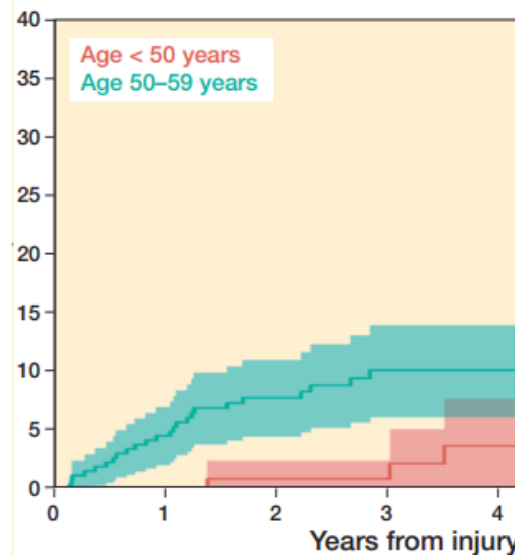
Probability of an event (%) — IF



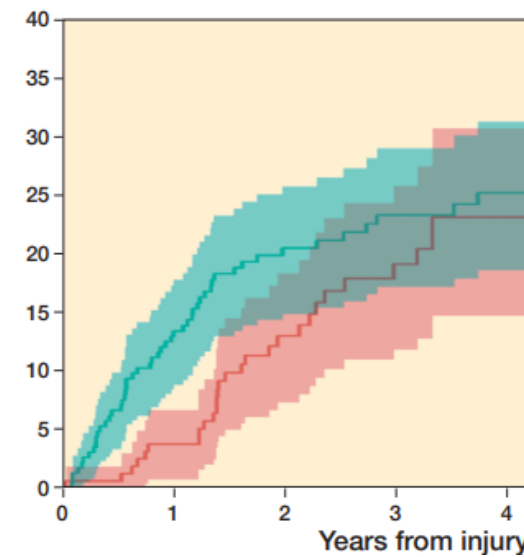
Probability of an event (%) — THA



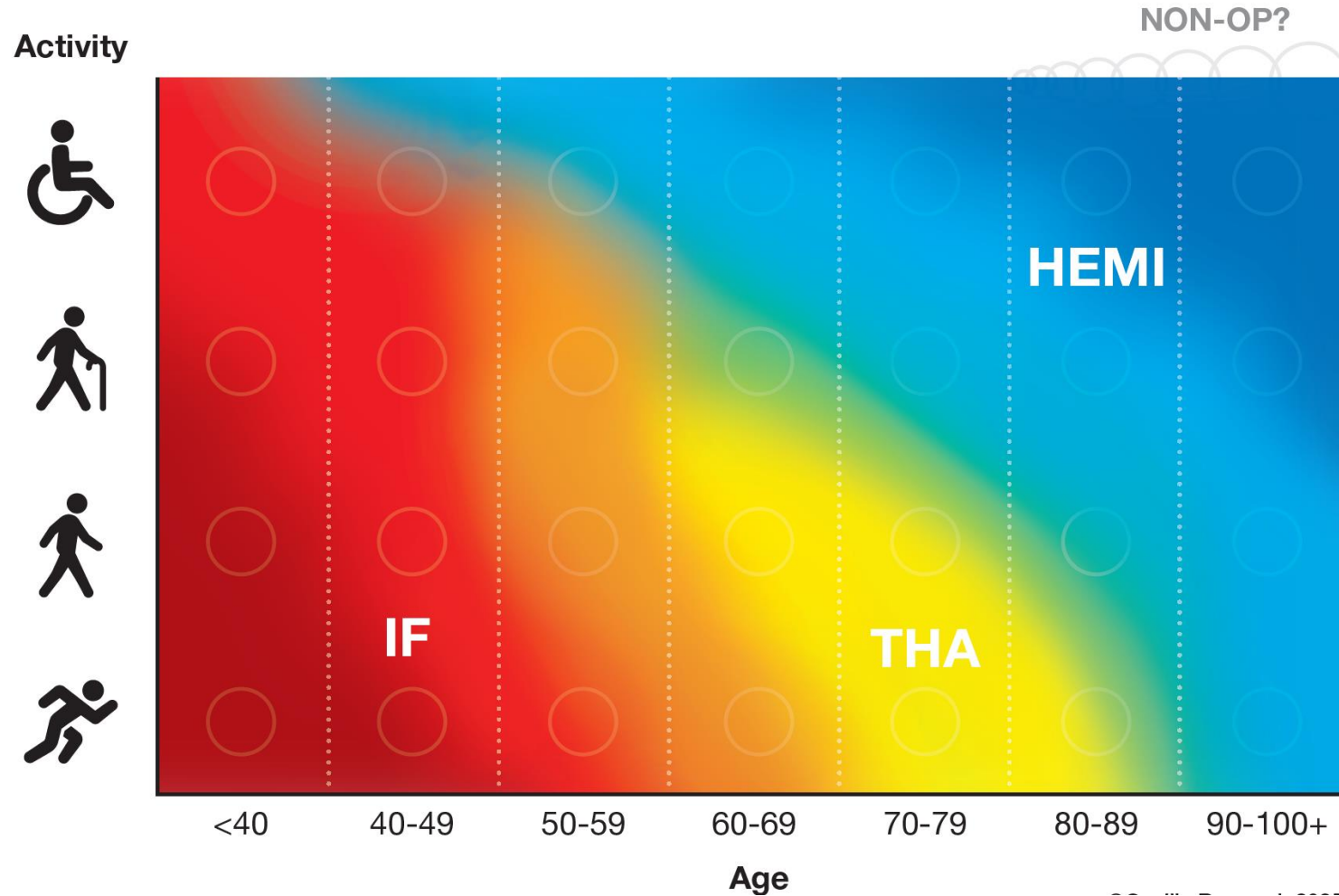
Cumulative reoperation rate (%) — uFNF



Cumulative reoperation rate (%) — dFNF



Vejledning i alloplastik versus osteosyntese

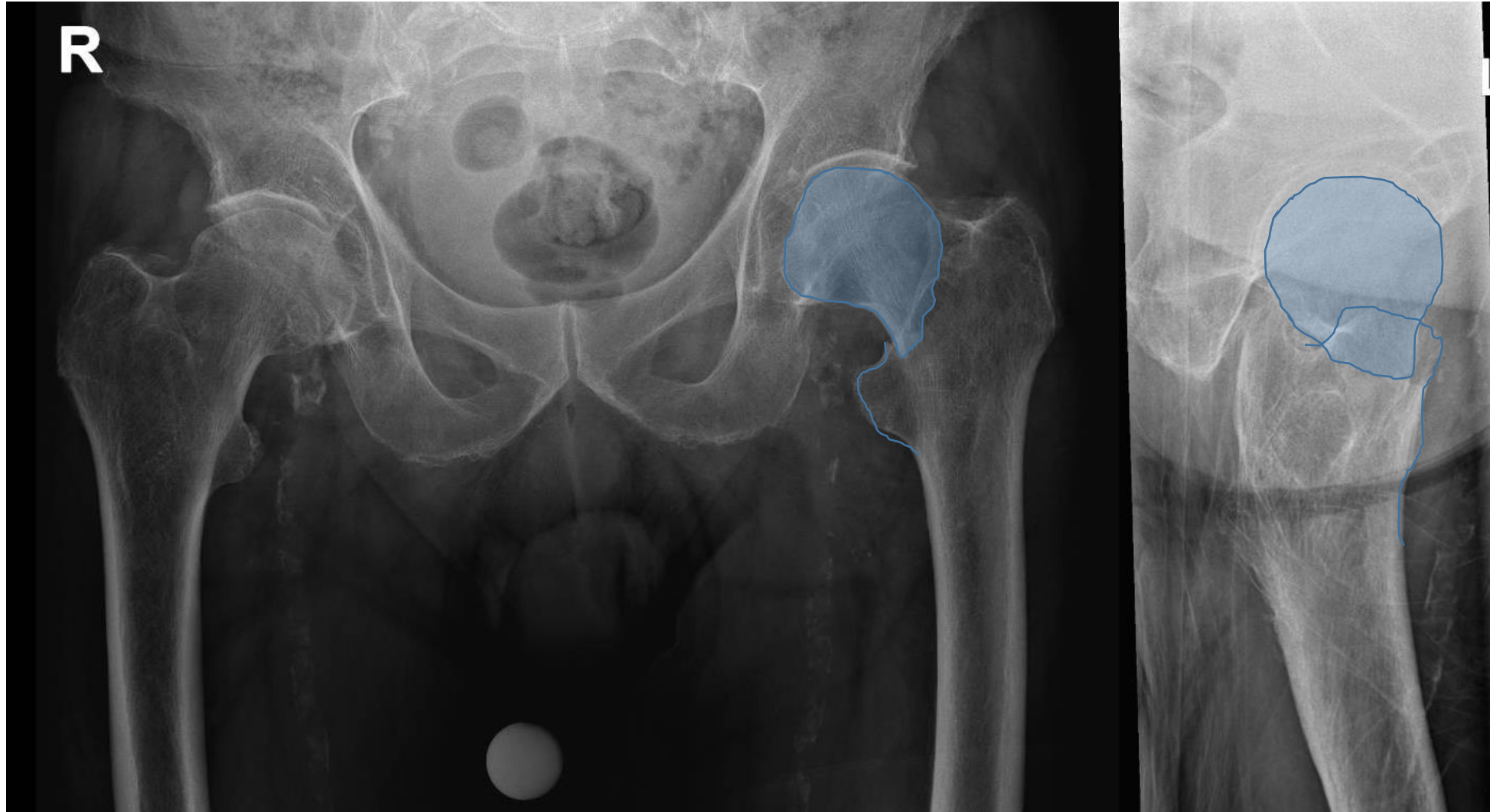


Take home message

1. Klassificer frakturen i udisloceret og disloceret
 - Udisloceret: Husk posterior tilt
 - Disloceret: Se efter fraktursted på collum
2. Kend dit implantat
 - Skruer: Subcapitale frakturer
 - DHS: Alle collum femoris frakturer
3. Høj reoperationsrate ved disloceret, selv ved 50-70 årige
 - Overvej at se på funktionsniveau
4. REPONER EKSAKT

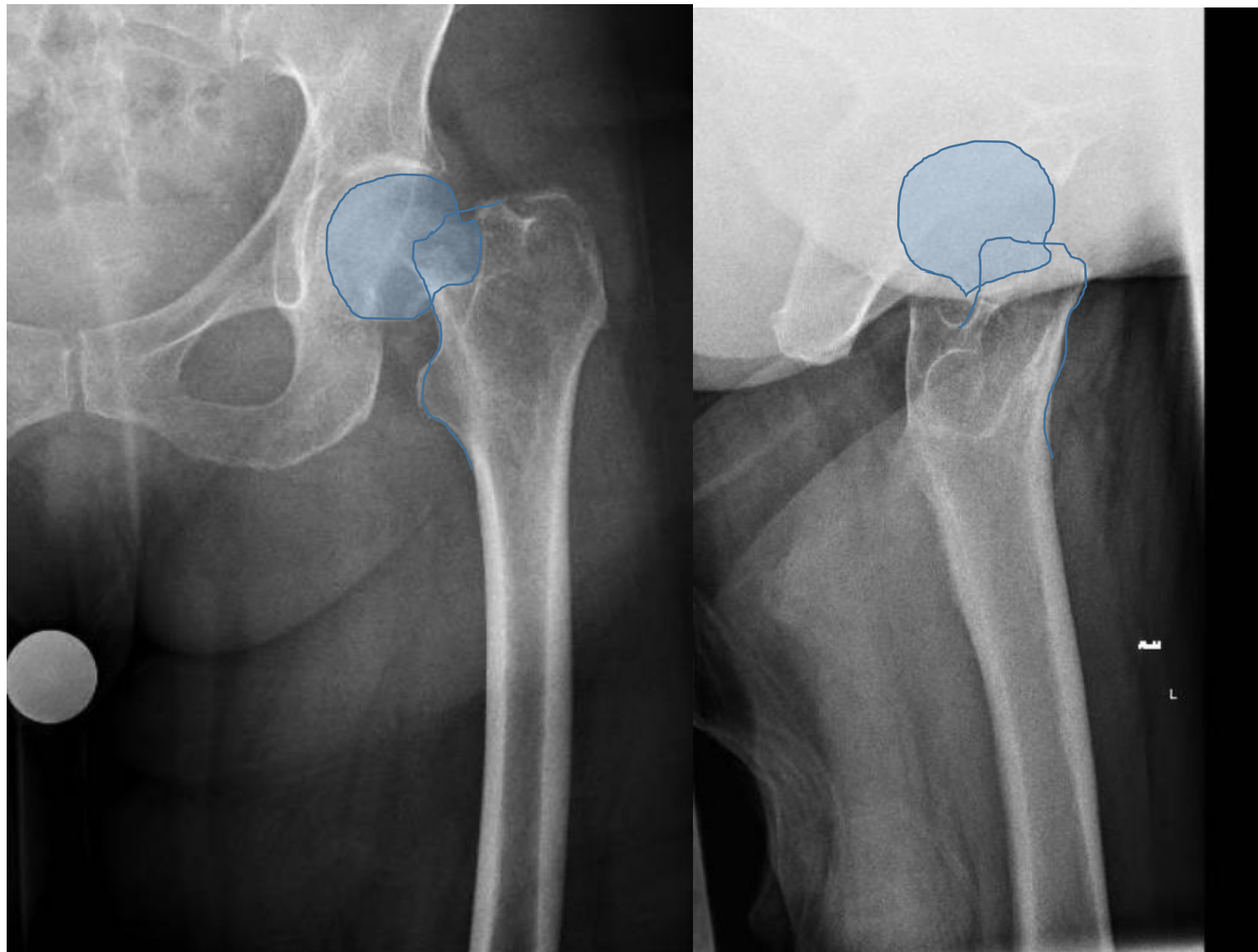
Case 1

- 94 årig mand
- Let hjertesvigt
- NOAC
- Går med rolator



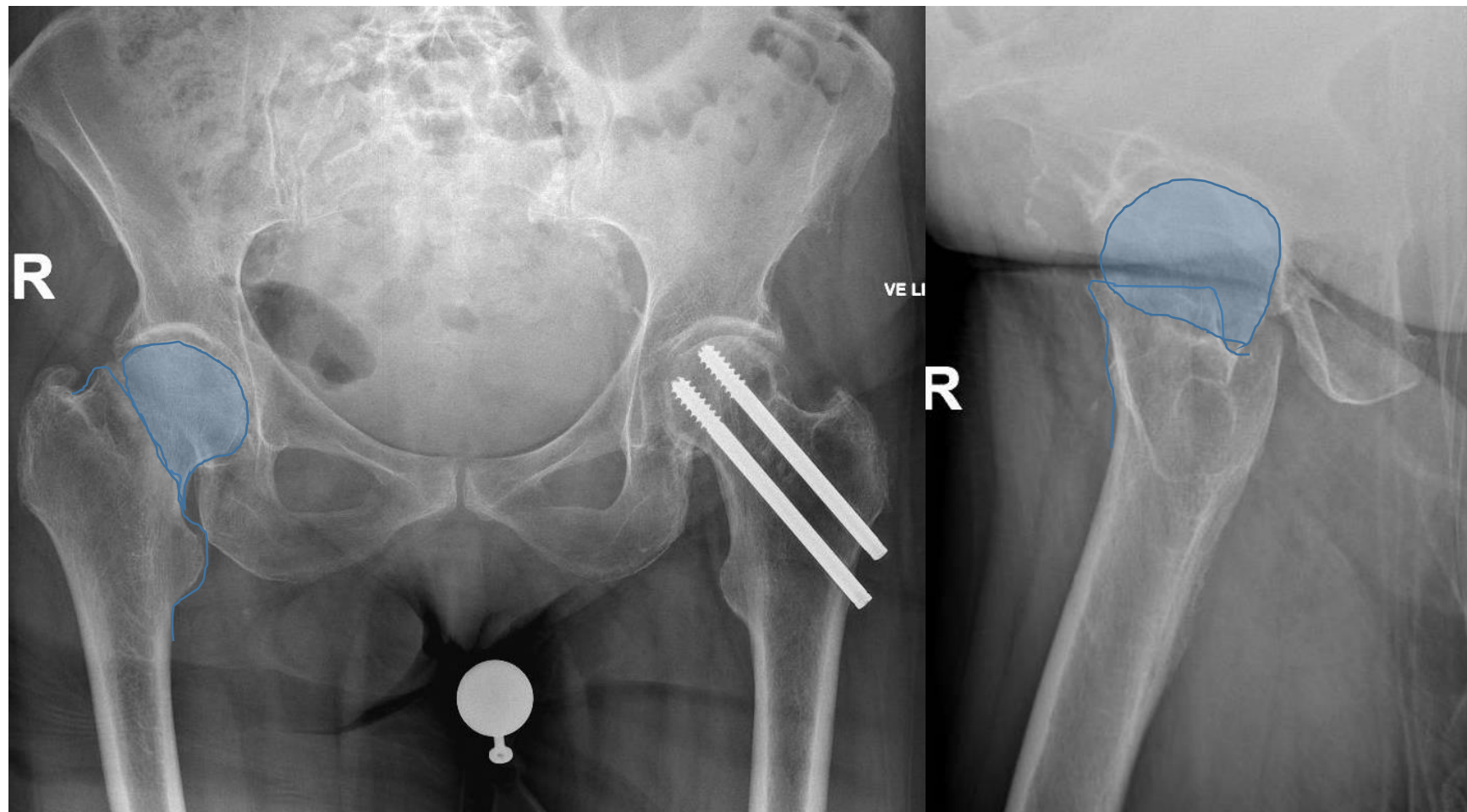
Case 2

- 70 årig kvinde
- Osteoporose
- DM2
- Hypertension
- Højt funktionsniveau



Case 3

- 64 årig kvinde
- Går med stok
- Let hjertesvigt
- Demens medicin
- KOL
- DM2



Case 5

- 53 årig mand
- Sund og rask
- Intet medicin til daglig
- Falder i badet

