

Orthopedics Update  
«Die Kinderhüfte»  
24. November 2011

# **The importance of bony reconstruction in dislocated hip in patients with cerebral palsy**

Stefan Dierauer

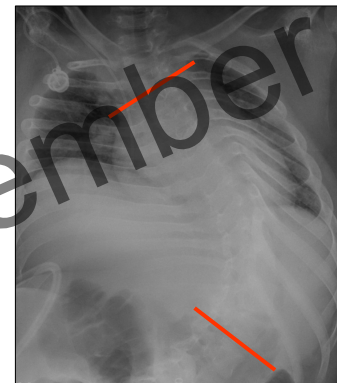
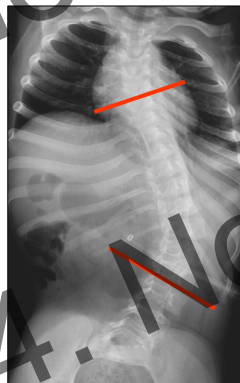
# Goal in patients with cerebral palsy

prevention of...



08/2003

actually



# Goal in patients with cerebral palsy

prevention of...



First superficial, secondary deep infection with osteomyelitis due to lack in perineal hygiene; treatment with antibiotics and by repeated surgery not sufficient, bad general condition!



# Dislocation of the hip

in patient with cerebral palsy

- **occures...**
  - in 1% in hemiplegia up to 75% in quadriplegia
- **becomes...**
  - apparent 2 to 6 years after birth
- **causes...**
  - in up to 50% hip pain, femoral fracture, decubitus and severe problems performing daily activity

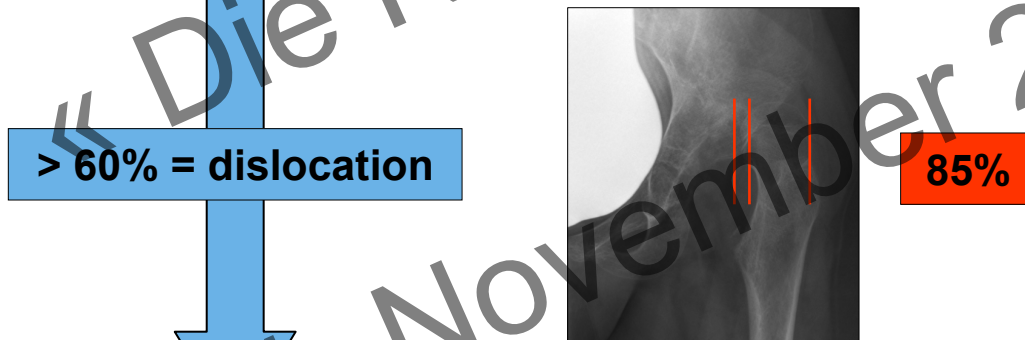
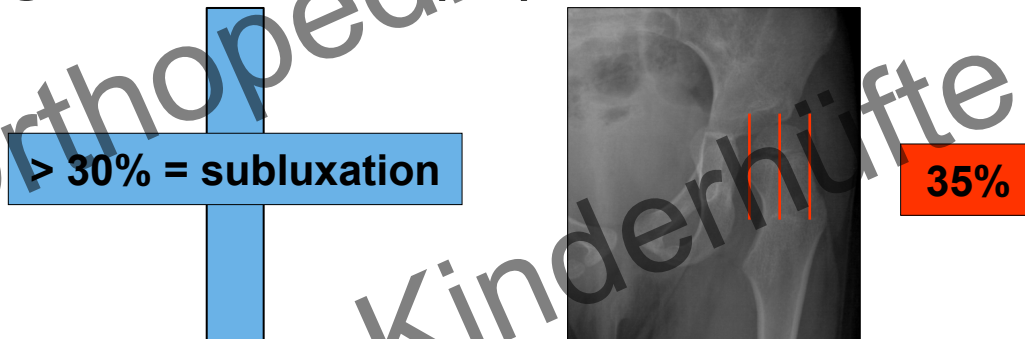
various



# Subluxation/dislocation of the hip

## definition

- migration index (MI)



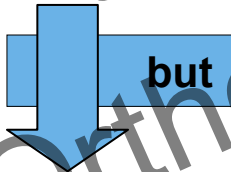
Reimers J; Acta Orthop Scand Suppl 1980



# Subluxation/dislocation of the hip

## acetabular deficiency

- no globally deficient acetabulum



- channel-like bony deformity of the acetabulum

relativ to the axis of the body:

median 2° dorsally (range 33° anterior – 70° posterior)



pelvic forward tilt

relativ to the pelvis:

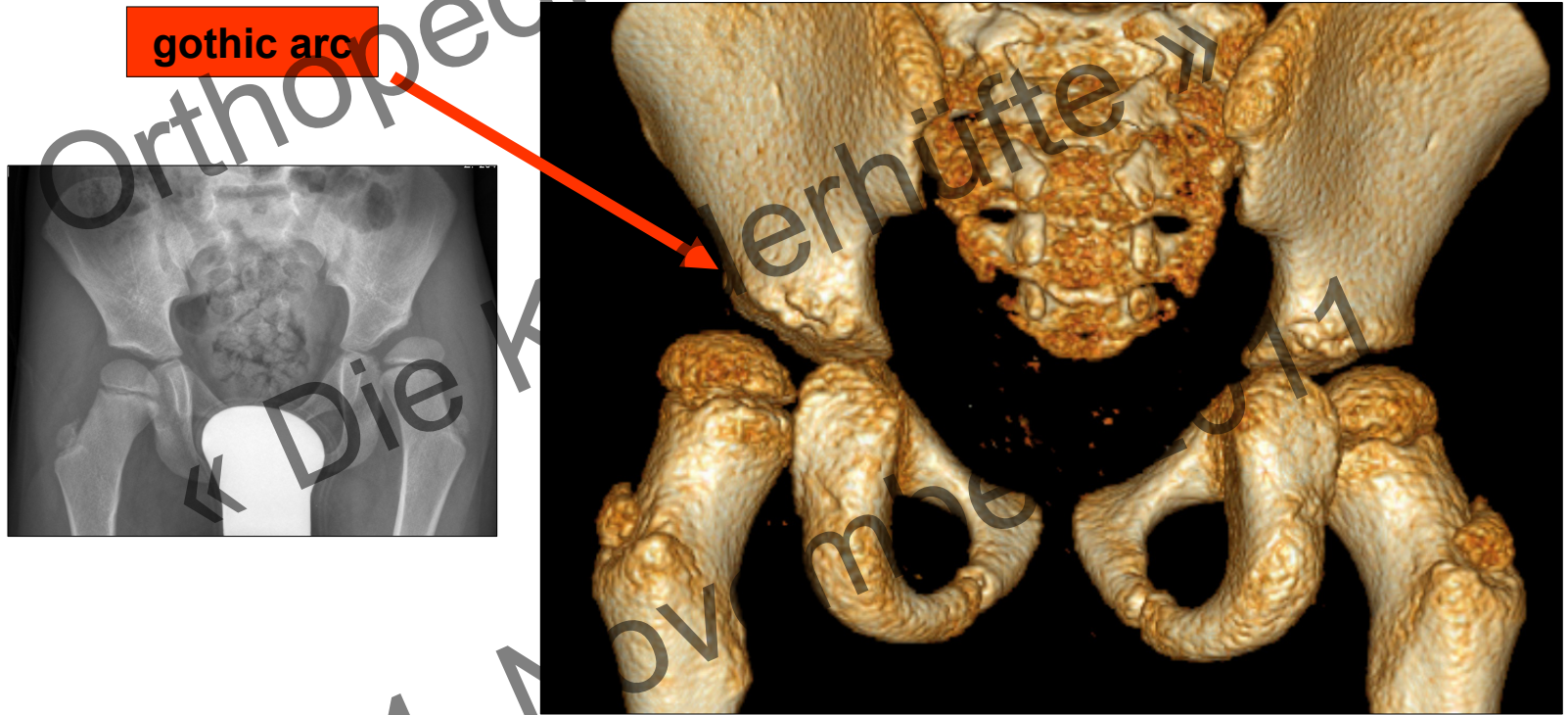
median 15.5° dorsally (range 14° anterior – 89° posterior)

Brunner R et al.; J Pediatr Orthop B 1997



# Subluxation/dislocation of the hip

acetabular deficiency



# Subluxation/dislocation of the hip

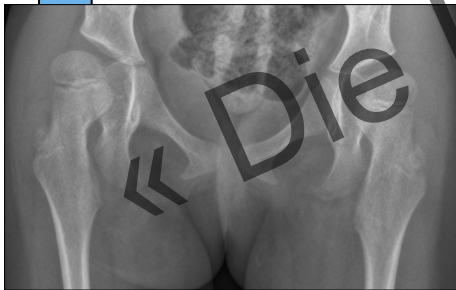
## femoral growth deformity

- coxa valga et antetorta

neck-shaft angle on average 144.5°  
anteversion on average 54.9°

Brunner R et al.; J Pediatr Orthop B 1997

- caput valgum



These deformities are associated with hip instability !

various



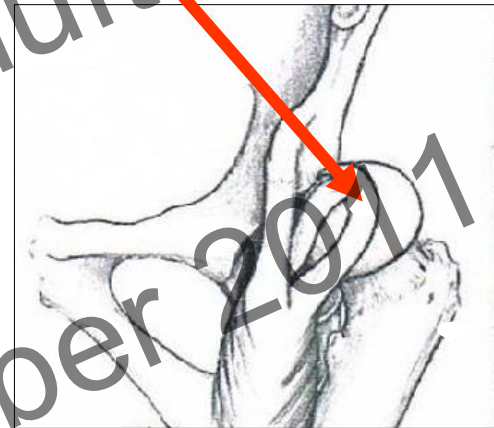
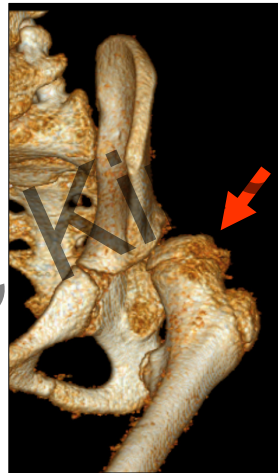


# Subluxation/dislocation of the hip

## femoral defect

- deep ulceration of cartilage penetrating into bone

capsular attachment of rectus femoris muscle



This defect triggers hip pain !



# Prophylactic treatment

conservative

- postural management

or

- postural management and Botox®-injections



„...might lead to a delay for some children in the timing of surgery, but a similar number of children would require surgery...“

Graham HK et al.; JBJS Am 2008



# Prophylactic treatment

operative

- surgical adductor release



„However, the evidence that these benefits were obtained after adductor release was lacking in most studies.“

reduced pain  
increased motion  
easier seating  
improved perineal hygiene

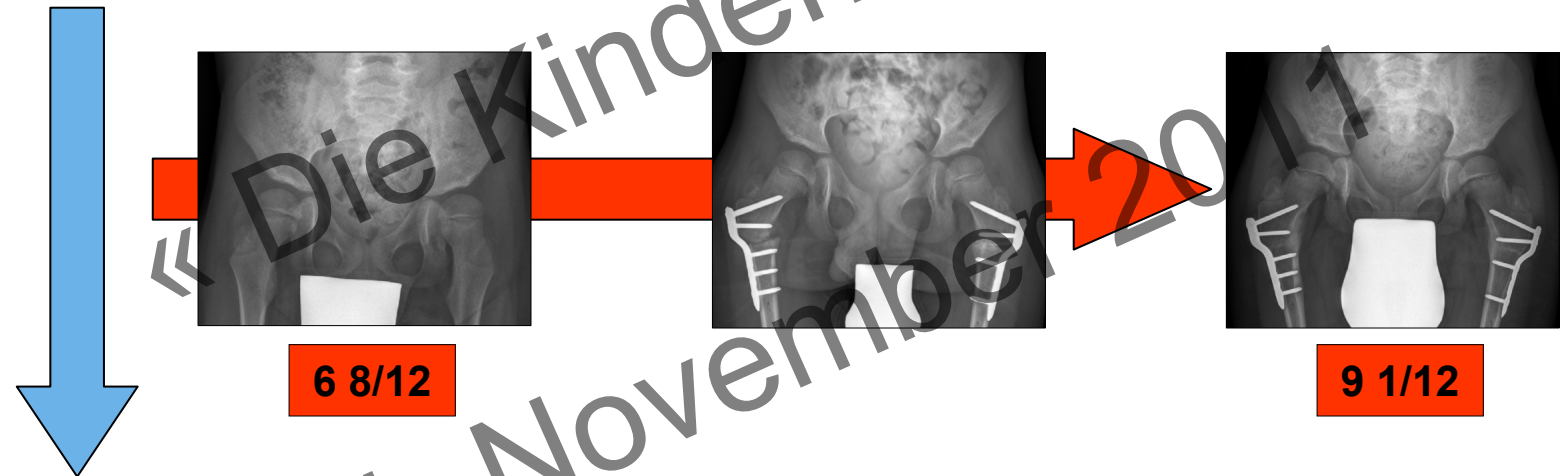
Stott NS, Piedrahita L, HK et al.; Dev Med Child Neurol 2005



# Prophylactic treatment

operative

- femoral varisation osteotomy in case of...
  - age < 8 years
  - MI < 40%
  - normal shaped acetabulum



... but still risk of subluxation or dislocation in 30% !

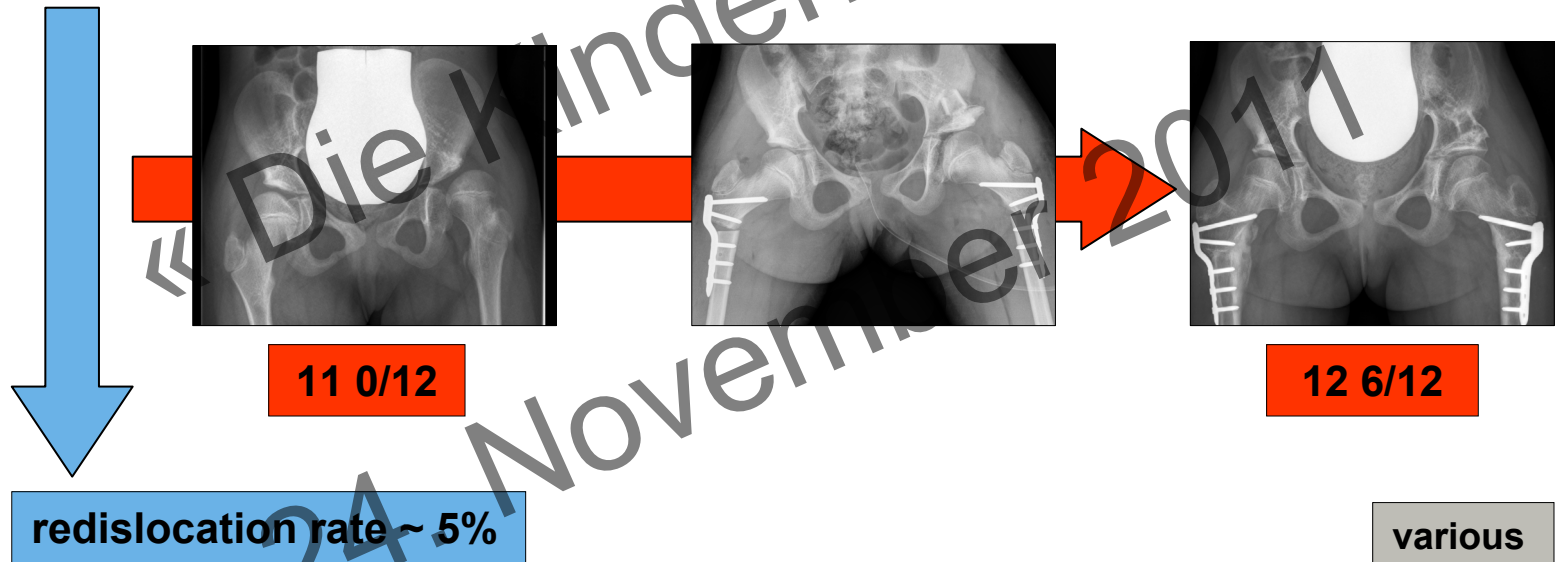
various



# Treatment

## operative

- hip reconstruction in case of...
  - MI > 60% independent of age
  - MI > 40% in age over 8 years
  - pain, restriction of motion



# Treatment

## hip reconstruction

- „containing...“
  - open reduction of the femoral head:
    - resection of lig. teres and transversum
    - reduction of hypertrophic posteroinferior facies lunata
  - pelvic osteotomy
  - femoral osteotomy
  - tendon lengthening:
    - intrapelvine lengthening of iliopsoas
    - reduction of spina iliaca anterior superior



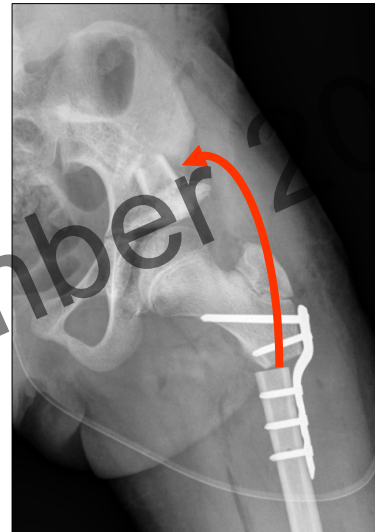
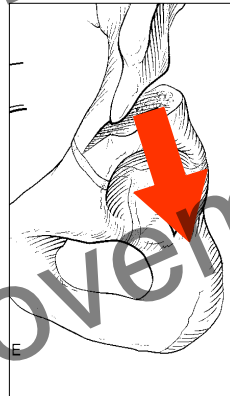
# Hip reconstruction

## pelvic osteotomy

- Dega > Pemberton >>> Triple (or periacetabular)



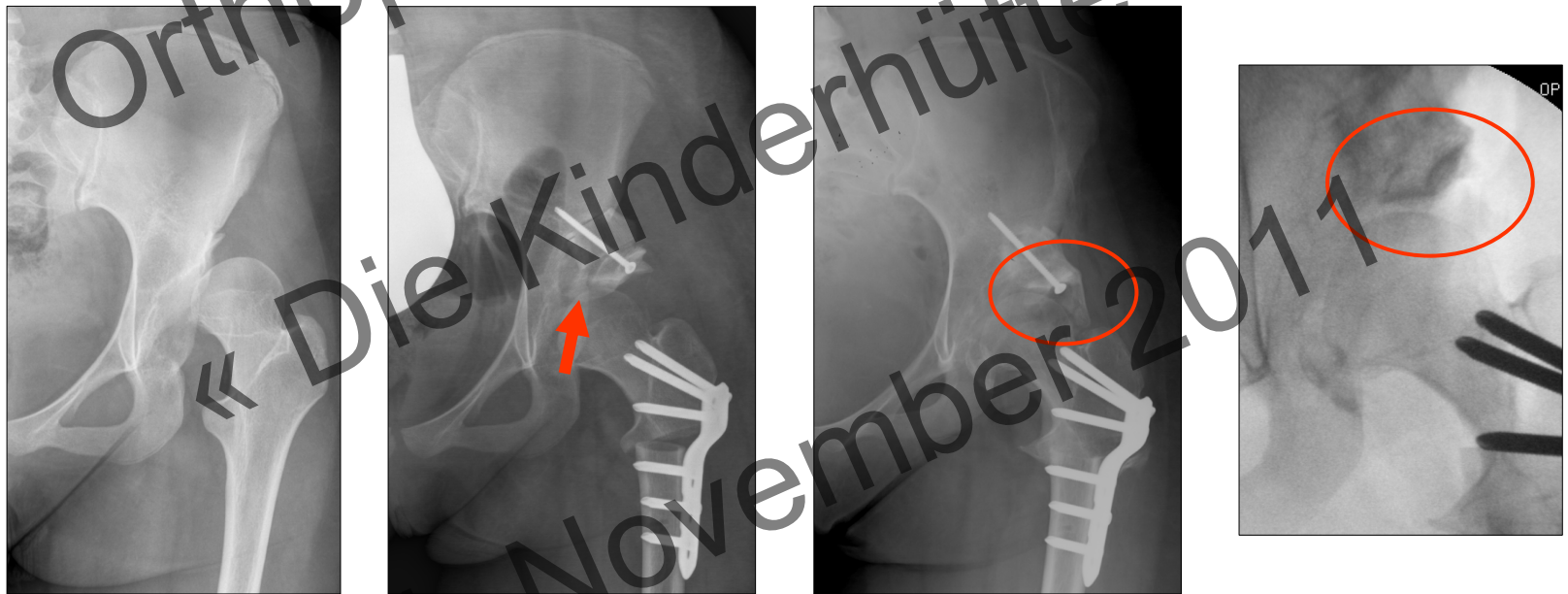
specific correction correlating with the direction of the dislocation respectively the pelvic deformity



# Hip reconstruction

in elderly patients

- Doing the Dega's osteotomy a fracture of the acetabulum has to be provoked!



Robb JE, Brunner R; J Bone Joint Surg Br 2006





# Hip reconstruction

## femoral osteotomy

- variation

- goal: neck-shaft angle not  $< 130^\circ$

and

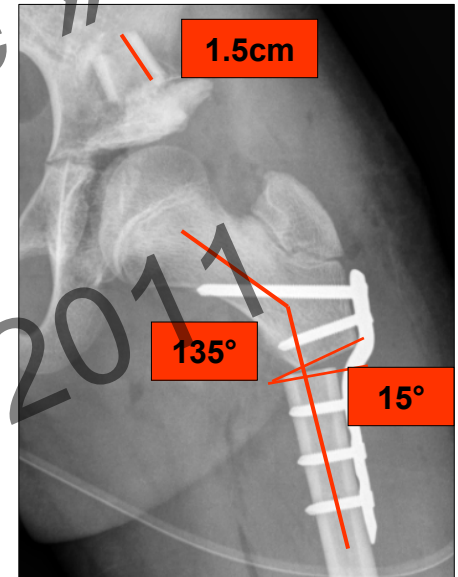
- external rotation

- goal: anteversion  $20^\circ$

and

- shortening

- depending on the pelvic correction



# Hip reconstruction

in case of...

- severe spastic or dystonia
  - prior to hip surgery implantation of an intrathecal Baclofen pump
- severe wind swept deformity
  - prior to hip surgery correction of scoliosis respectively pelvic obliquity
  - within hip surgery balancing of the hip motion

« Die Kinderhüfte »  
24. November 2011



# Wind swept deformity

case (age 7 years)



# Hip reconstruction

„Don't forget the contralateral side!“

- balancing of the hip motion
  - lengthening of the hip abductors
  - or
  - femoral osteotomy with varisation and internal rotation
- restoring leg length discrepancy
  - femoral osteotomie with shortening

« Die Kinderhüfte »  
24. November 2011



# Hip reconstruction

## rehabilitation

- plaster for two weeks
- seating allowed starting 5 weeks postoperatively
- weight bearing allowed starting 7 weeks postoperatively
- need for an abduction device while sleeping for one year postoperatively

« Die Kinderhüfte »  
24. November 2011



# Take home message

- The bony reconstruction with combined pelvic and femoral osteotomies is the best solution in correcting hip dislocation in patient with cerebral palsy !

« Die Kinderhüfte »  
24. November 2011



# Take home message

- A normal centered hip with good mobility stands for painlessness and normal sitting ability !



**The end !**



**Thank you for your attention !**

