



# Modified Dunn procedure for slipped capital femoral epiphysis (SCFE) Complications and mid-term outcome

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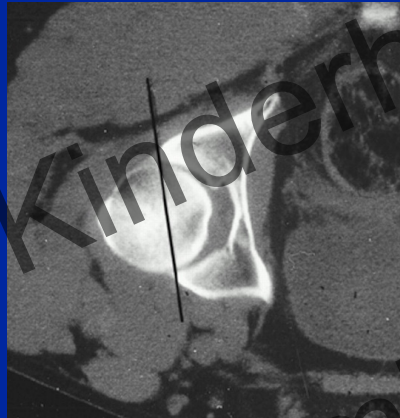
Oberarzt Kinderspital Zürich

« Die Kindermittelt »  
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# SCFE: When & Why does it slip?

- Average age of occurrence (girls 12 y, boys 13.5 y) around the peak height velocity
- Mechanical factors



- Endocrine disorders: hypothyroidism, renal osteodystrophy, growth hormone treatment, (lack of vitamin D)

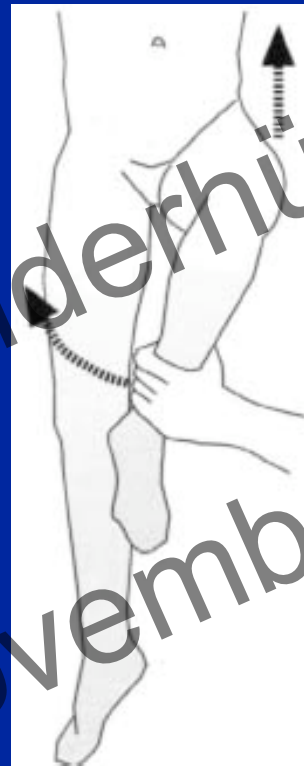


# SCFE: Diagnosis

Clinical:

Positive Impingement-Test

Positive Drehmann's sign



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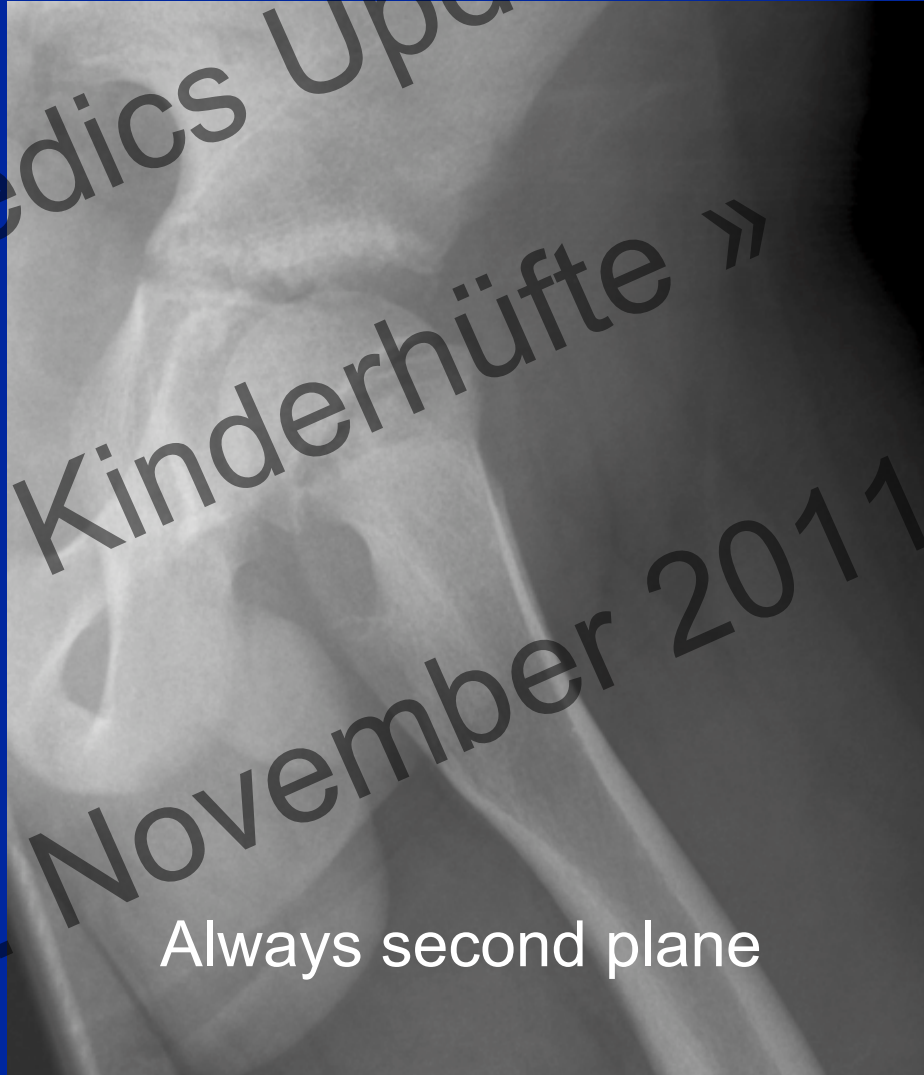
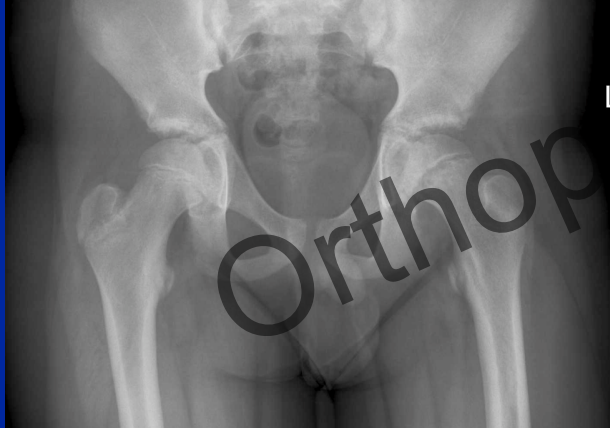
# SCFE: Diagnosis

RX:



# SCFE: Diagnosis

RX:



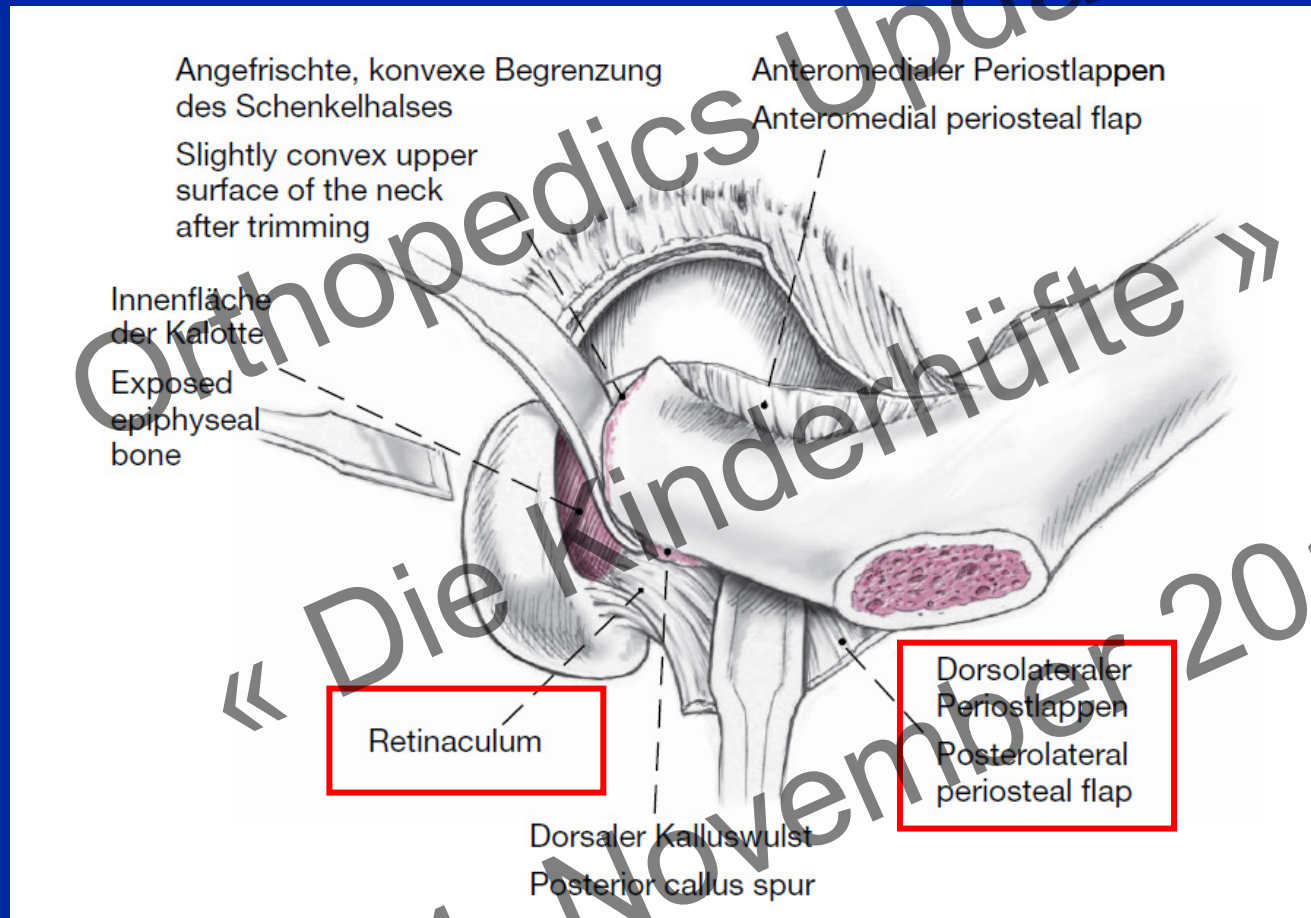
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# CONTROVERSY IN TREATMENT

| in situ-fixation  | open reduction  |
|---|---|
| <p>+</p> <ul style="list-style-type: none"><li>• easy to perform</li><li>• safe (low risk of AVN)</li></ul>                 | <p>+</p> <ul style="list-style-type: none"><li>• restoration of range of motion</li><li>• (slows down further deterioration)</li></ul> |
| <p>-</p> <ul style="list-style-type: none"><li>• reduced range of motion</li><li>• femoro-acetabular impingement</li></ul> | <p>-</p> <ul style="list-style-type: none"><li>• technically demanding</li><li>• safety ?</li></ul>                                 |



# MODIFIED DUNN-OSTEOTOMY



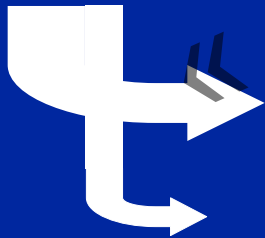
Leunig M, Oper Orthop Traumatol 19(4), 2007

Ziebarth K, CORR 467(3), 2009



# PATIENTS

- **June 2001 - Nov 2008**
- **28 patients** mean age 12.2 y (range 9 – 16 y)
  - 17 female
  - 11 male
- **30 hips (28 patients)**



27 hips classified as stable<sup>1</sup>

3 hips unstable<sup>1</sup>

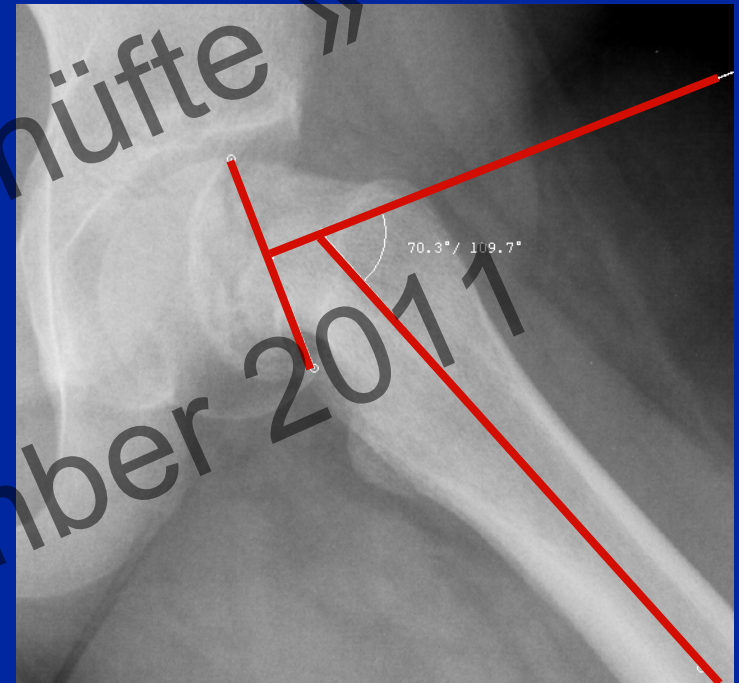
1. Loder RT, JBJS A 75(8), 1993



# SOUTHWICK-CLASSIFICATION

- **Lateral Epiphyseal-Shaft-Angle<sup>1</sup>**
  - Mean 45° (range 19 - 77°)

|                   |    |
|-------------------|----|
| mild (0-30°)      | 3  |
| moderate (30-50°) | 17 |
| severe (>50°)     | 9  |



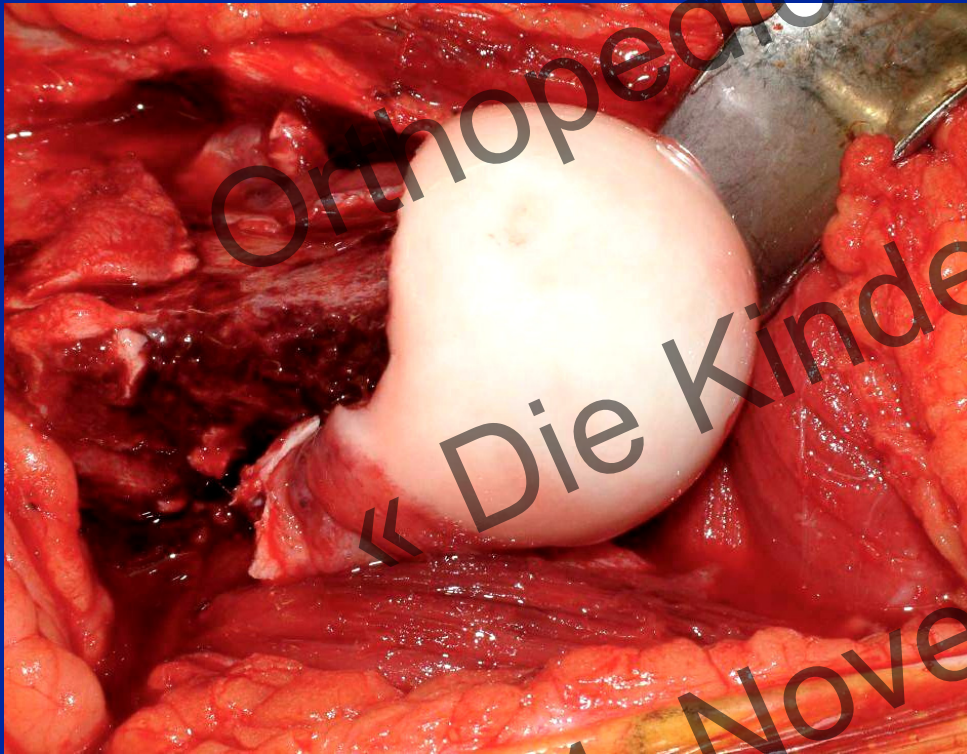
1. Southwick WO, JBJS A 49(5), 1967

# OPERATIVE TECHNIQUE 1



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# OPERATIVE TECHNIQUE 2



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# 1 AVASCULAR EPIPHYSIS



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# 4 IMPLANT FAILURES

cortical screws



n = 20

implant failures 4

3 mm full threaded K-wires



n = 10

no implant failure

# QUALITY OF REDUCTION

- Mean postoperative lateral Epiphyseal-Shaft-Angle (n=30) 5° (range -18 - 25°)
- All hips showed an epiphysis which was well centered above the femoral neck



# CLINICAL OUTCOME (n = 27)

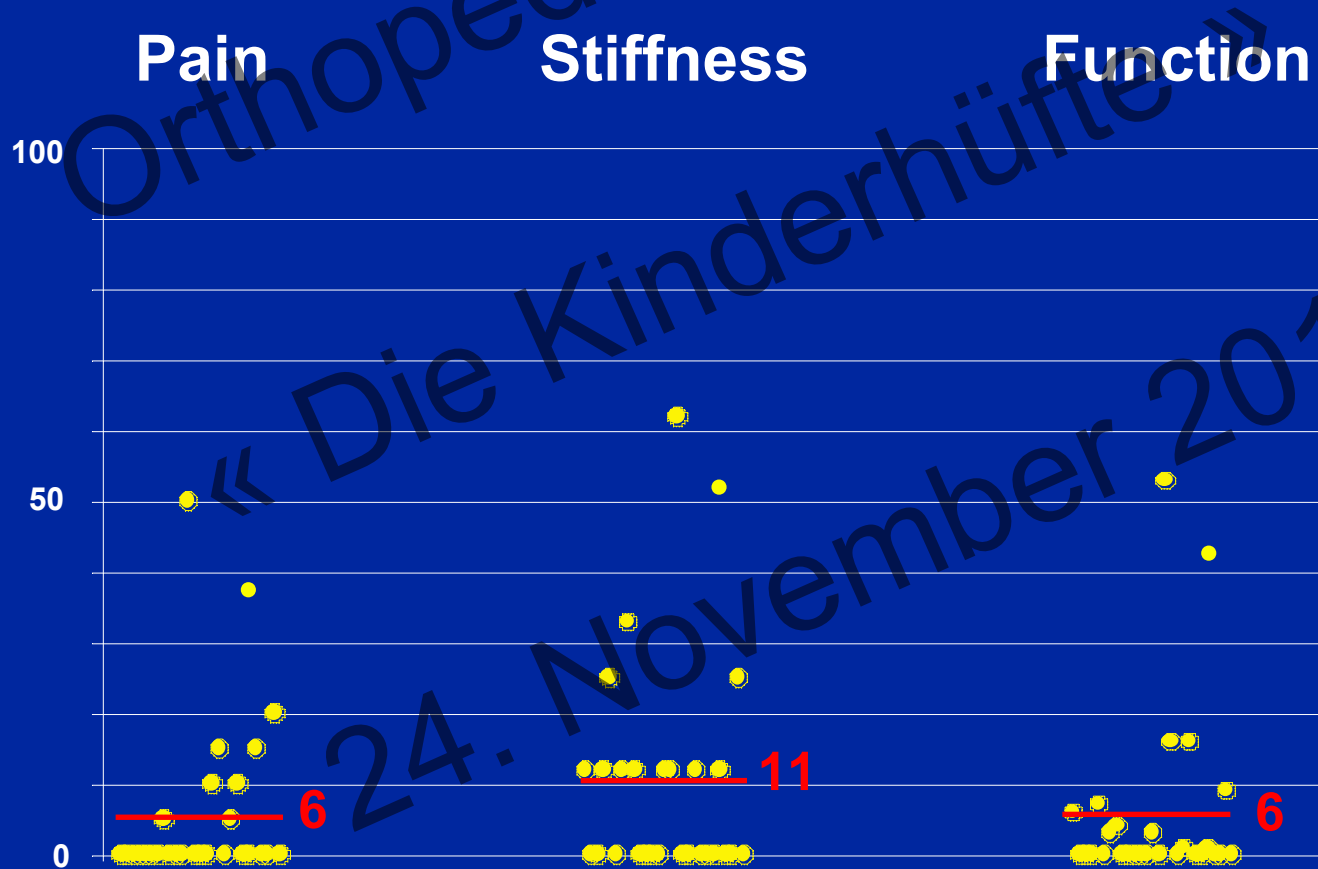
- Mean clinical follow up 3.8 y (range 1.0 - 8.5)

|   | Mean | Minimum | Maximum |
|---|------|---------|---------|
| Flexion                                     | 99°  | 90°     | 130°    |
| Internal Rotation                           | 33°  | 10°     | 50°     |
| Harris Hip Score<br>(100 points rated best) | 98 p | 56 p *  | 100 p   |

\* 1 patient with marked pain, rest all above 95 points

# SUBJECTIVE OUTCOME (n = 28)

- Self-administered questionnaires (WOMAC) completed by all patients (Mean FU 4.3 years)





# CONCLUSION

1. **Method is reliable: Anatomy and range of motion can be restored**
2. **No primary AVN if head was bleeding before reposition**
3. **Fixation of the epiphysis caused some problems**
  - > 3.0mm full-threaded K-wires rather than cortical screws**

Adolescent slipped capital femoral epiphysis treated by a modified Dunn-osteotomy with surgical hip dislocation

Huber H, Dora C, Ramseier LE, Buck F, Dierauer S. JBJS Br 2011; 93(6): 833-8. *uniklinik balgrist*



THANK YOU FOR YOUR ATTENTION

