

# Influence Meniscus repair on acquired stability in reconstruction (CAOS)

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COMPUTER ASSISTED  
ANTERIOR CRUCIATE  
LIGAMENT RECONSTRUCTION



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Thesis 2000  
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# CAOS in ACL

- Computer assistance allows
  - Intraoperative guidance of placement
  - Intraoperative laxity measurements
  - Intraoperative quality control
  - EVIDENCE BASED SURGERY !

# Computer assisted placement

- Parameters in placement
- Intraobserver variability in placement
- Fluoroscopic CAOS in ACL
- Results in CAOS / ACL
- Registration and evaluation
  - Hamstring vs PTB





# Computer assisted Laxity measurement

- Parameters for laxity measurement

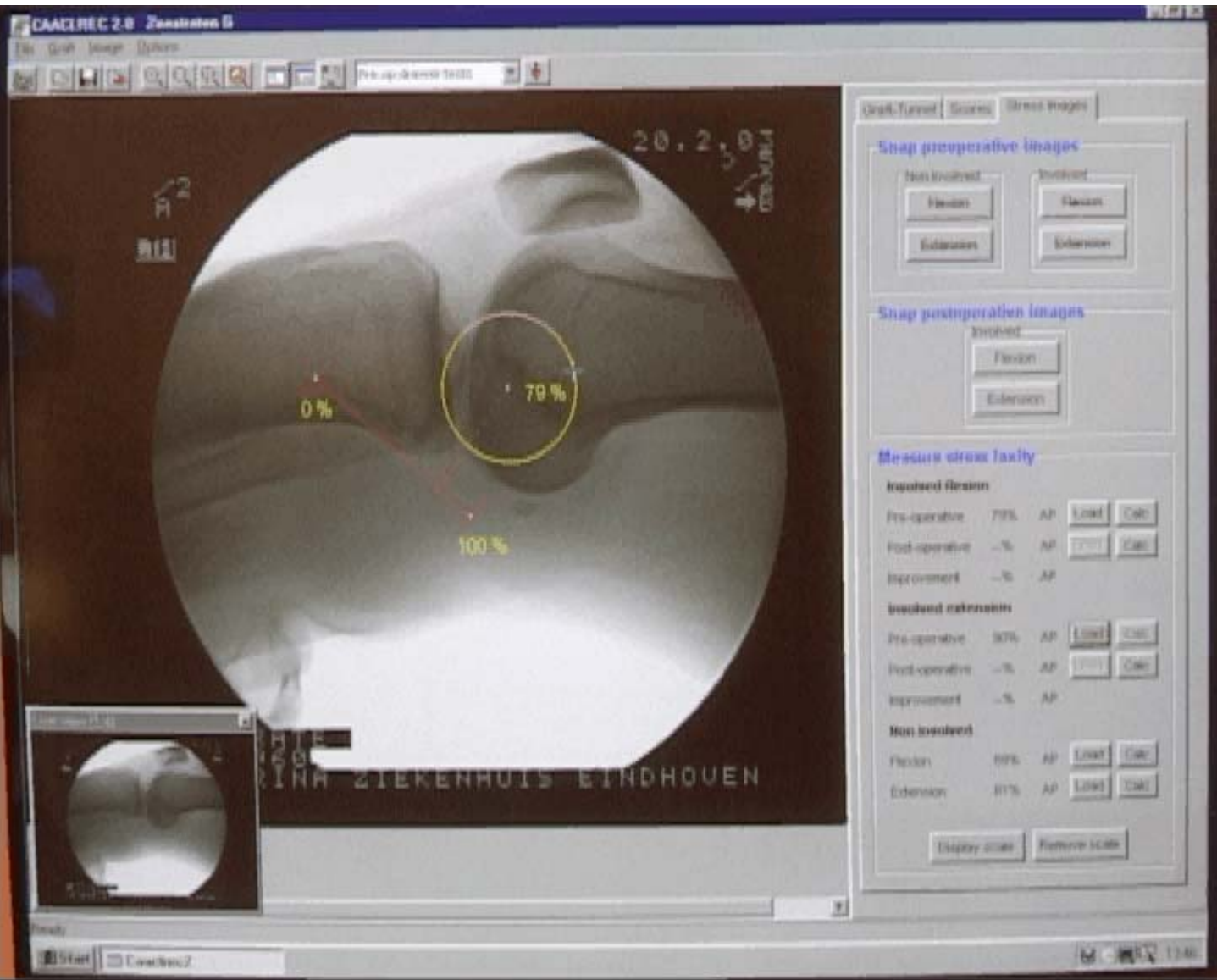


Figure 1  
Figure 2



# Postreconstruction





CAACI REC 2.0 Ziekataten 8

File Graph Image Database

Pre-op-Default 1000

20.2.0  
↓  
↑

20  
10.3

0%

70%

100%

INNH ZIEKERHUIS EINDHOVEN

Draft-Viewer Scores Stress Images

Snap preoperative images

Non involved

Flexion

Extension

Involved

Flexion

Extension

Snap postoperative images

Involved

Flexion

Extension

Measure stress laxity

Involved flexion

Pre-operative	70%	AP	Load	Calc
Post-operative	-%	AP	Load	Calc
Improvement	-%	AP		

Involved extension

Pre-operative	80%	AP	Load	Calc
Post-operative	-%	AP	Load	Calc
Improvement	-%	AP		

Non involved

Flexion	80%	AP	Load	Calc
Extension	80%	AP	Load	Calc

Display scale

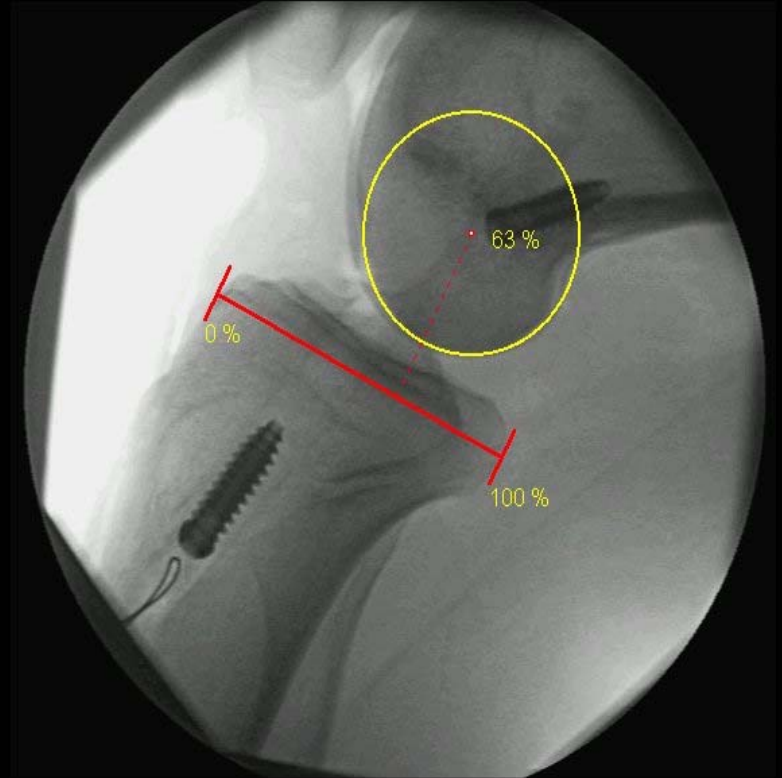
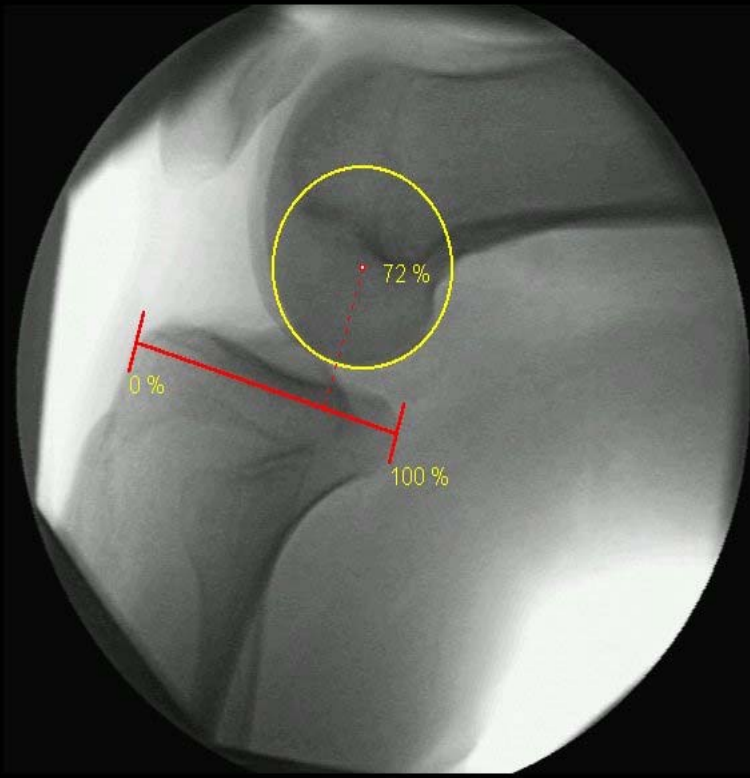
Remove scale

Results

Start CoverRec2

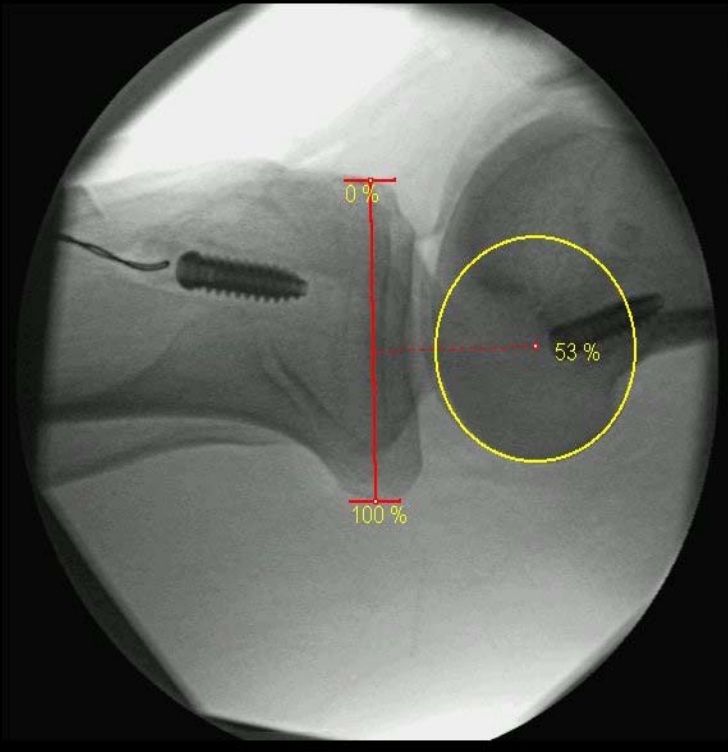
11:40

# Pre- post-reconstruction Flexion





# Noninvolved- Reconstructed





# Patient groups

- 1: previous meniscal repair/ trephination
- 2: previous meniscal removal
- 3: meniscal repair during ACL reconstruct
- 4: meniscal removal during ACL
- 5: no meniscal surgery

# Questions

- Difference in stability between meniscal repair and removal
- Difference in stability between meniscal removal and no meniscal surgery
- Concurrent influences :
  - Collateral ligaments
  - Timing of surgery
  - Cartilage damage

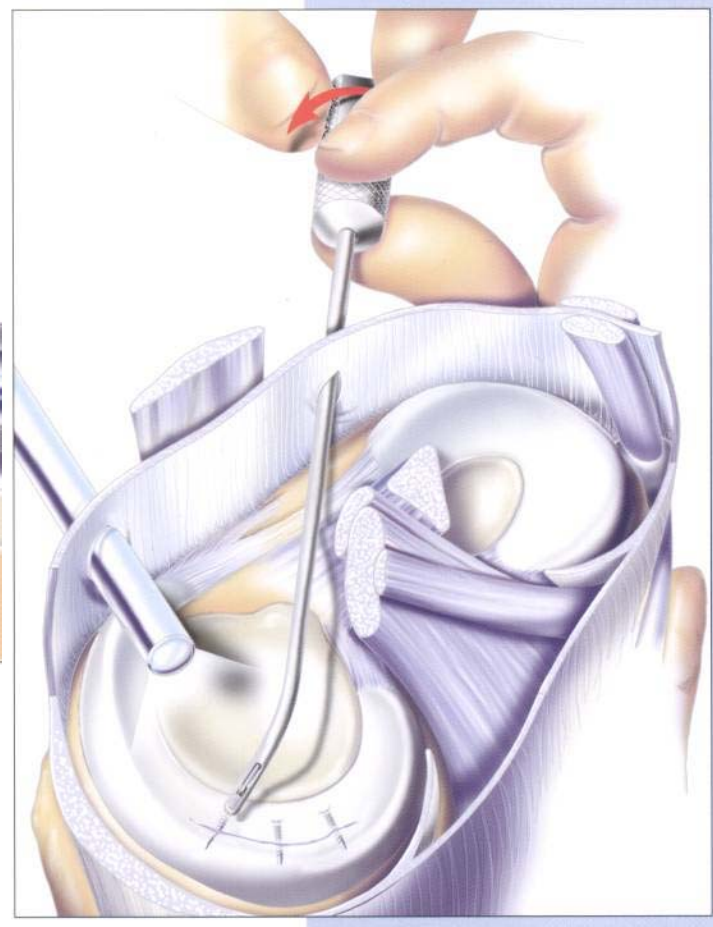
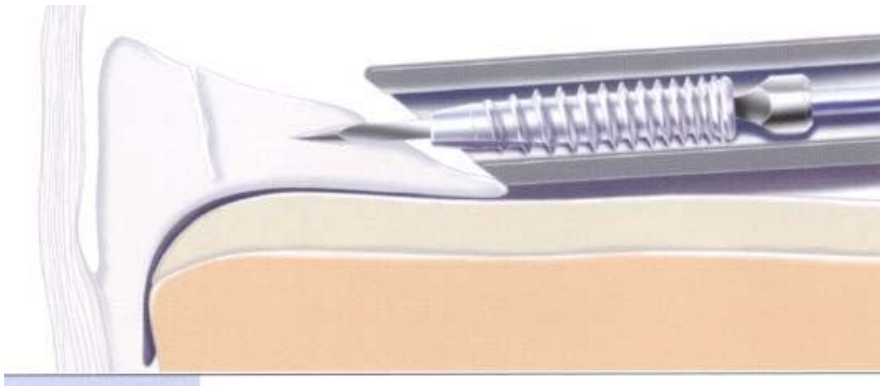
# Method

- CAOS laxity measurements in flexion and extension
  - Prereconstruction
  - Postreconstruction
  - Contralateral "normal"

# Patients

	1	2	3	4	5
Hamstring					
Tot 84	9	18	12	7	38
PTB					
Tot 141	22	32	21	16	50

# Meniscal repair



# ACL / meniscal repair

de witt  
04-04-1974 M  
re knie



Catharina Ziekenhuis Eindhoven  
NoName  
Orthopaedics  
23-01-2004 13:47

de witt  
04-04-1974 M  
re knie



Catharina Ziekenhuis Eindhoven  
NoName  
Orthopaedics  
23-01-2004 13:46

de witt  
04-04-1974 M  
re knie

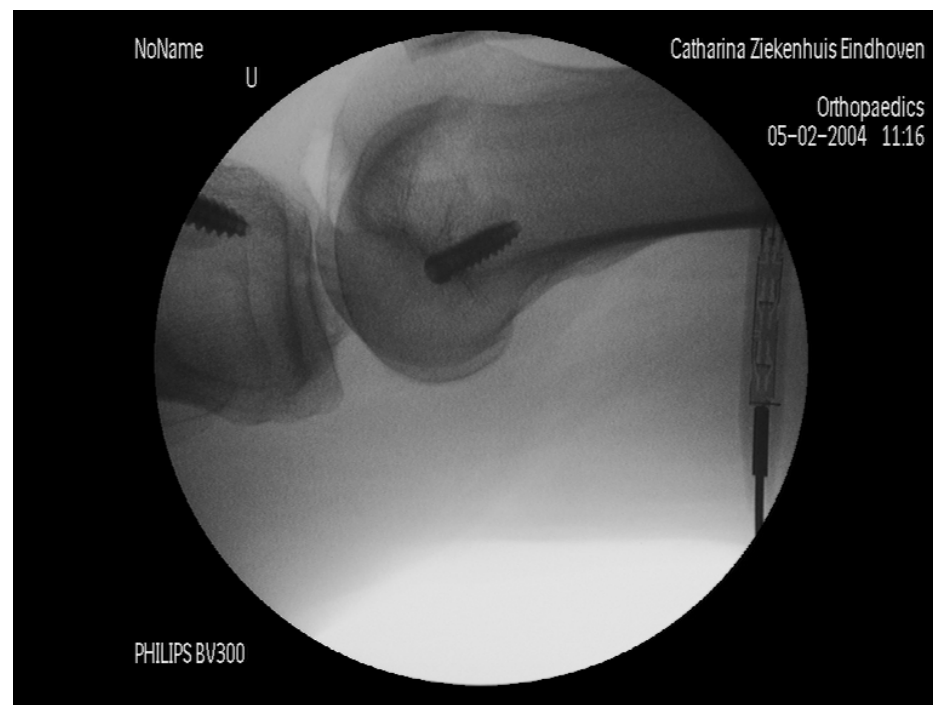


Catharina Ziekenhuis Eindhoven  
NoName  
Orthopaedics  
23-01-2004 15:05

PHILIPS BV300

PHILIPS BV300

# ACL / lat meniscus resection



# Paired T test

	<b>N=225</b>	<b>1=31</b>	<b>2=50</b>	<b>3=33</b>	<b>4=23</b>	<b>5=88</b>
<b>Flexie</b>	<b>0,209</b>	<b>0,215</b>	<b>0,289</b>	<b>0,916</b>	<b>0,111</b>	<b>0,201</b>
<b>Extensi</b>	<b>0,515</b>	<b>0,216</b>	<b>0,679</b>	<b>0,466</b>	<b>0,893</b>	<b>0,748</b>

# Conclusion

- Difficult to prove value of meniscal repair for stability
- Improved stability in flexion due to meniscal repair ?
- CAOS is good tool in calculating increased stability in relation to meniscal status / graft position