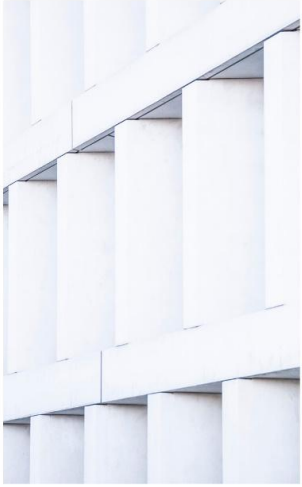


3D planning bij heupoperaties zinvol of vol onzin



Dr. L. Follet

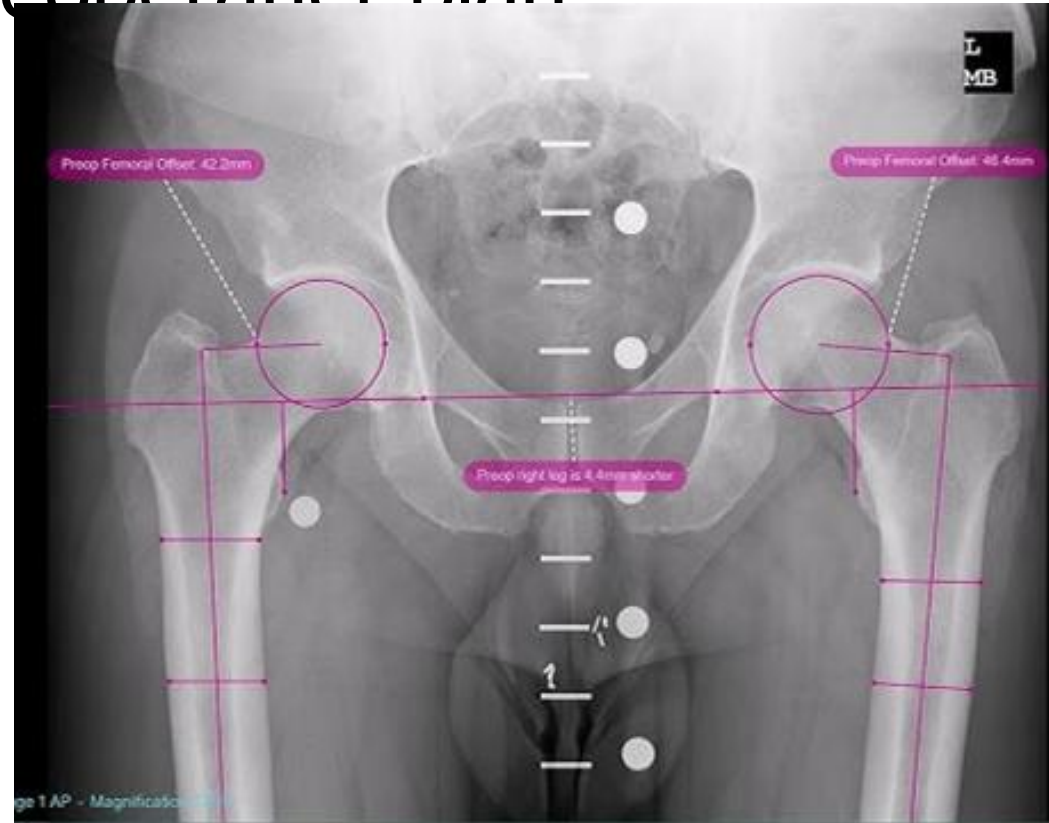
27 april 2026
Kortrijk

Inhoud

1. Belang van een preoperatief plan
2. Planning in 2D
3. Uitvoeren van het plan
4. 3D planning bij complexe revisies
5. 3D planning bij heupsparende chirurgie
 1. casus 1
 2. casus 2
6. Blik op de Toekomst

1. Belang van het preoperatief plan

- Mentale voorbereiding
- Niet blind opereren
- Moeilijkheden anticiperen
- herstellen van de anatomie
 - biomechanica herstellen
 - soft tissue balancing
 - beenlengte



2. Planning in 2D

3. Uitvoeren van een plan

Conventioneel



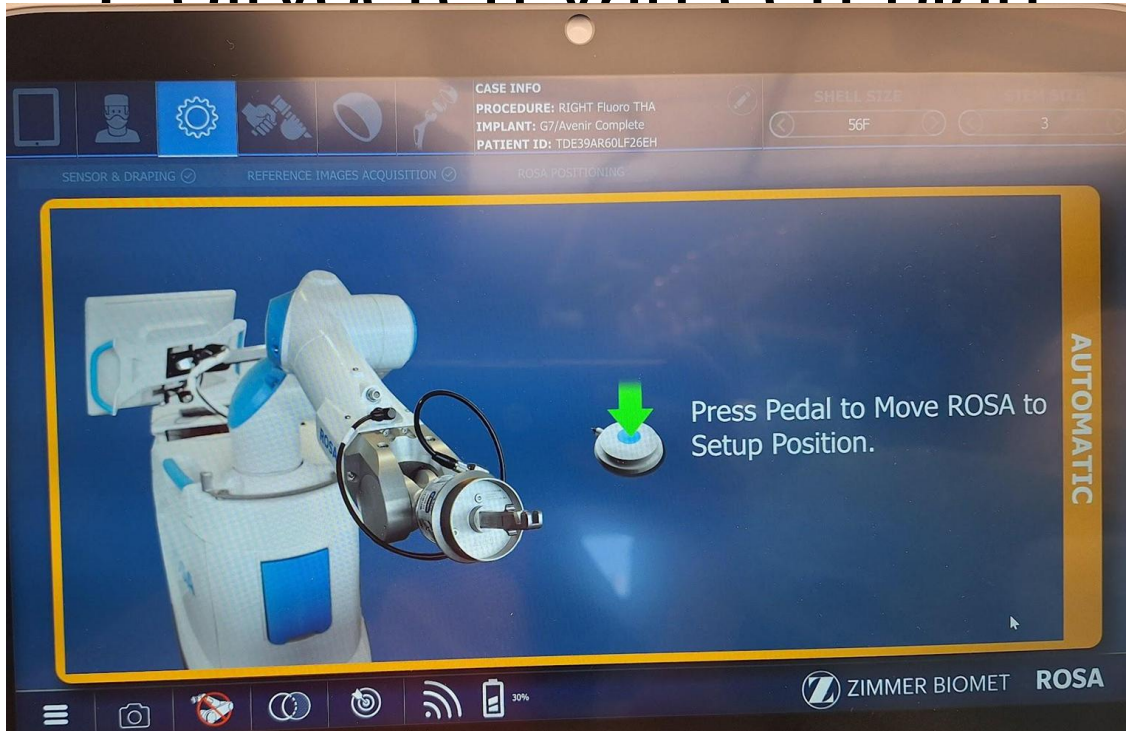
Vs.

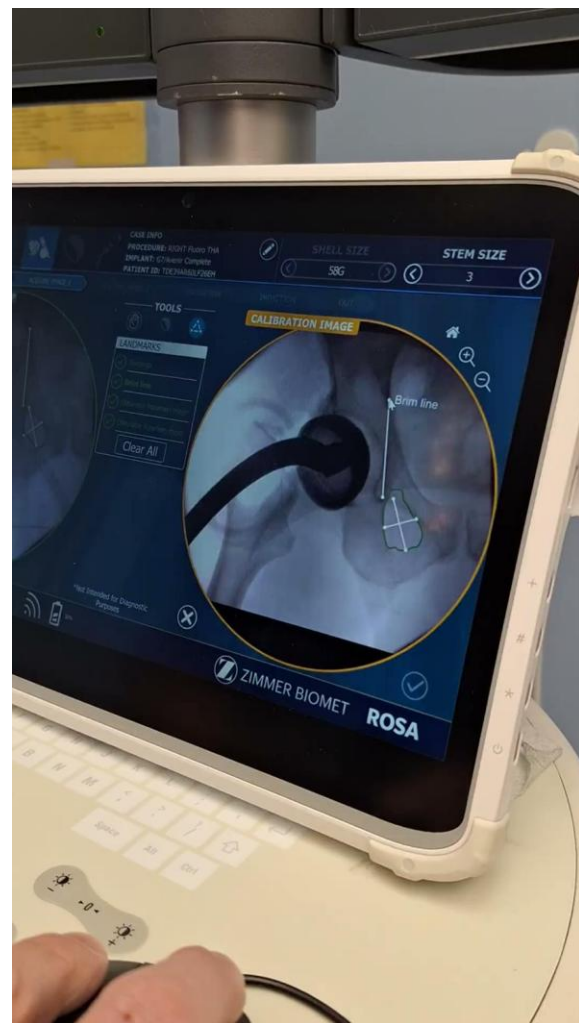
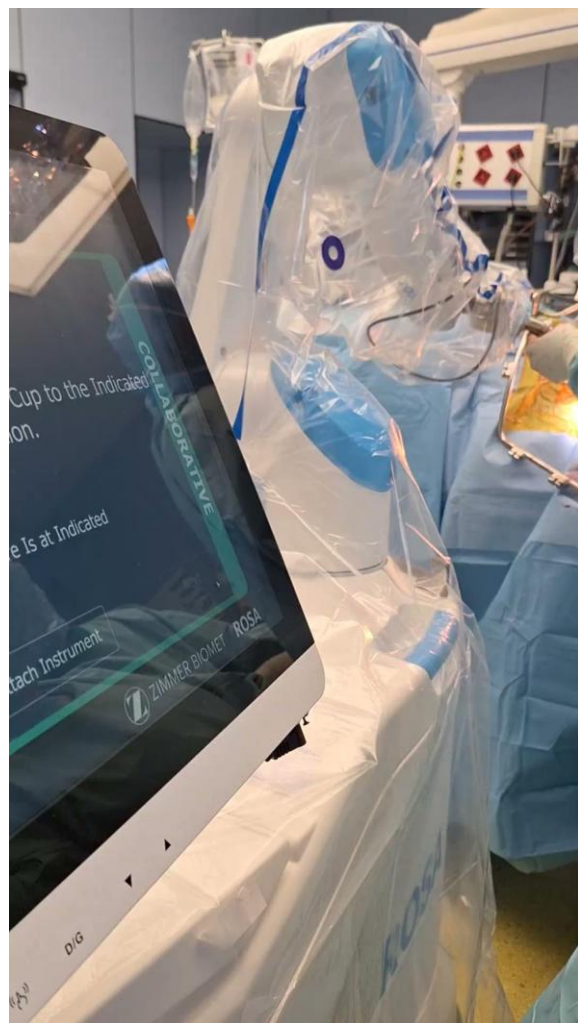
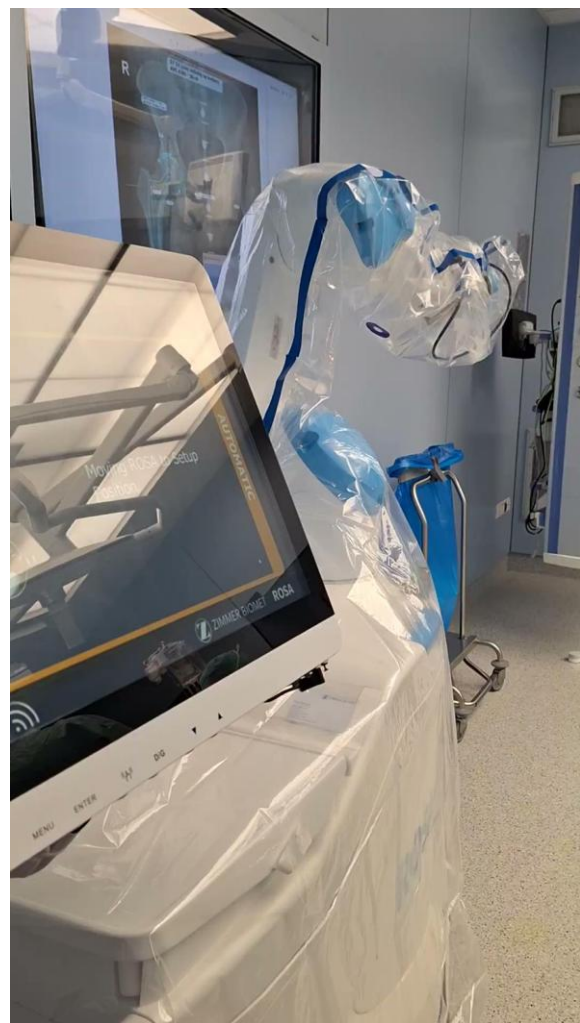
Robot (Rosa)

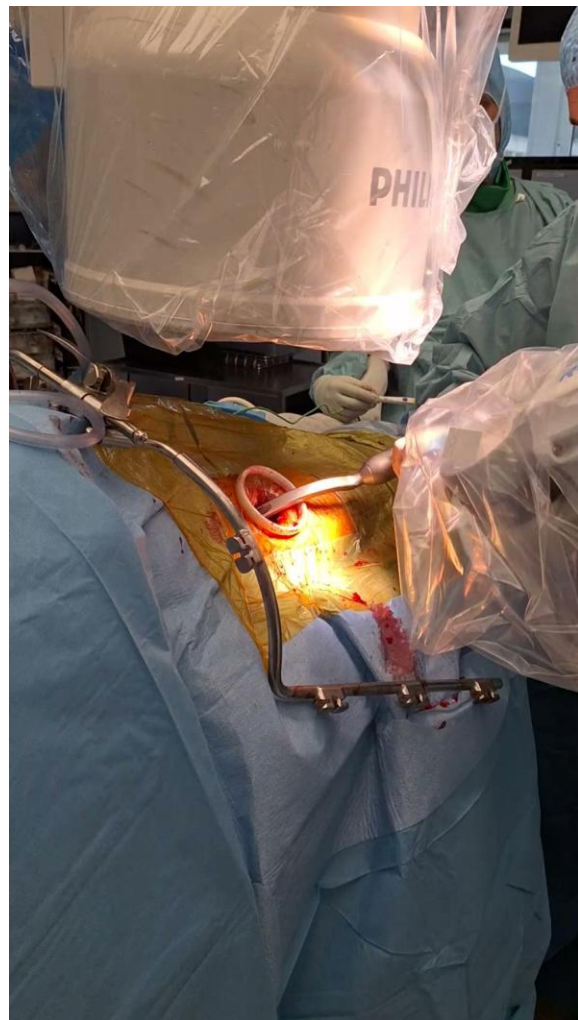


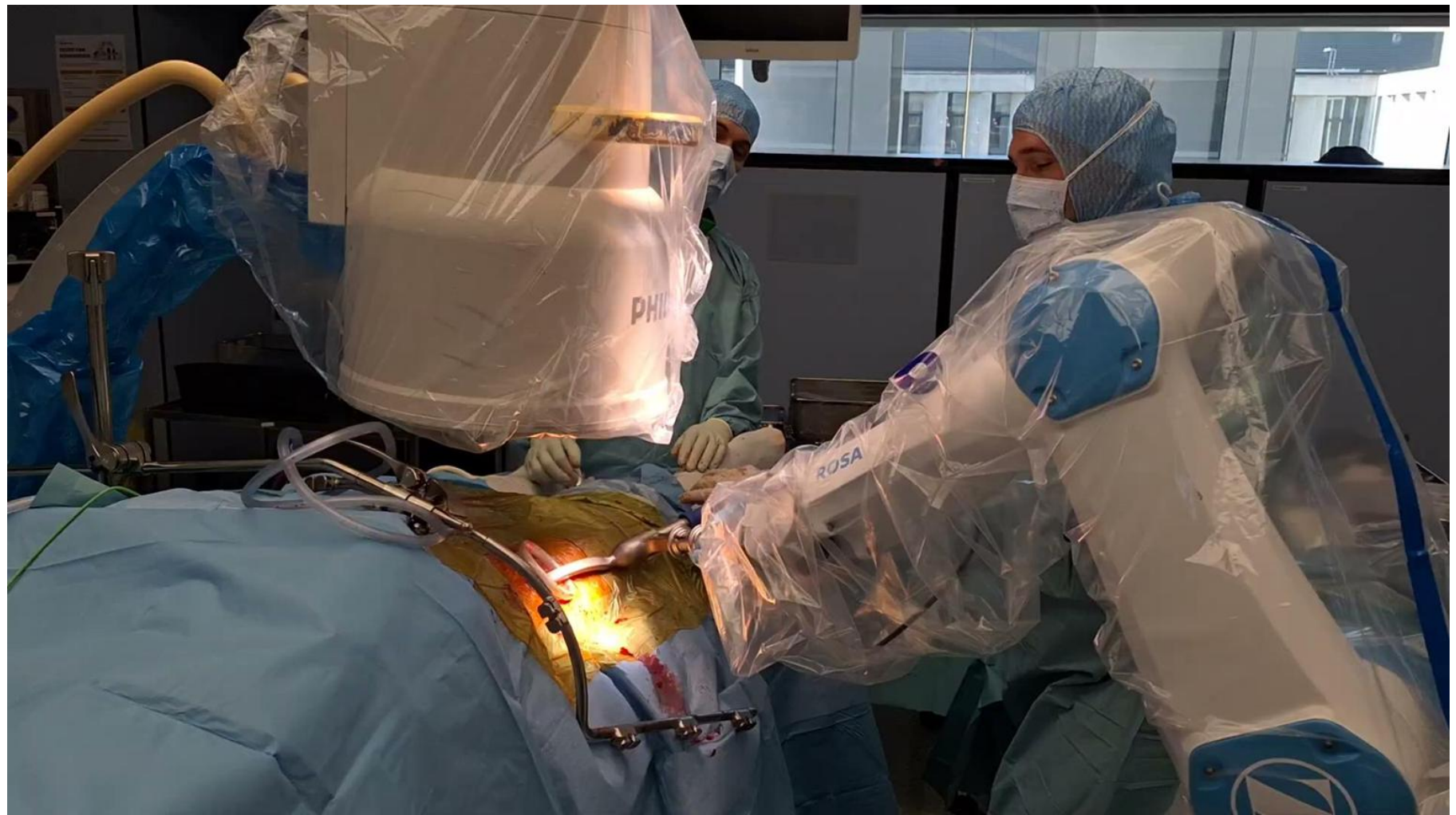
3 Litvoeren van een plan

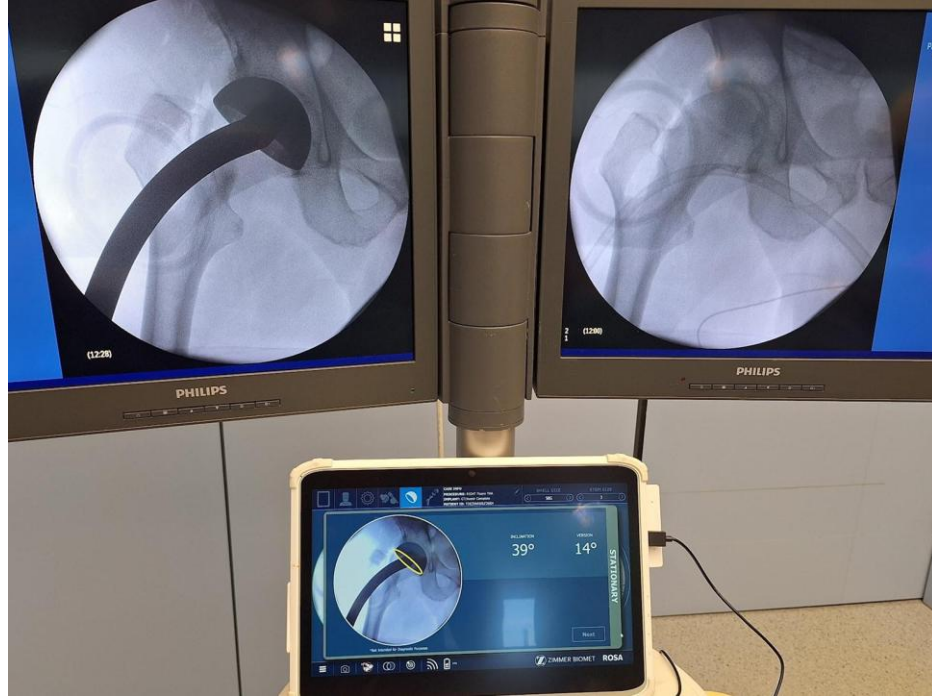
1. Templating
2. Patiënt steriel afdekken
3. Nemen van referentie beelden
4. Rosa referentie punten
5. Positionering Rosa



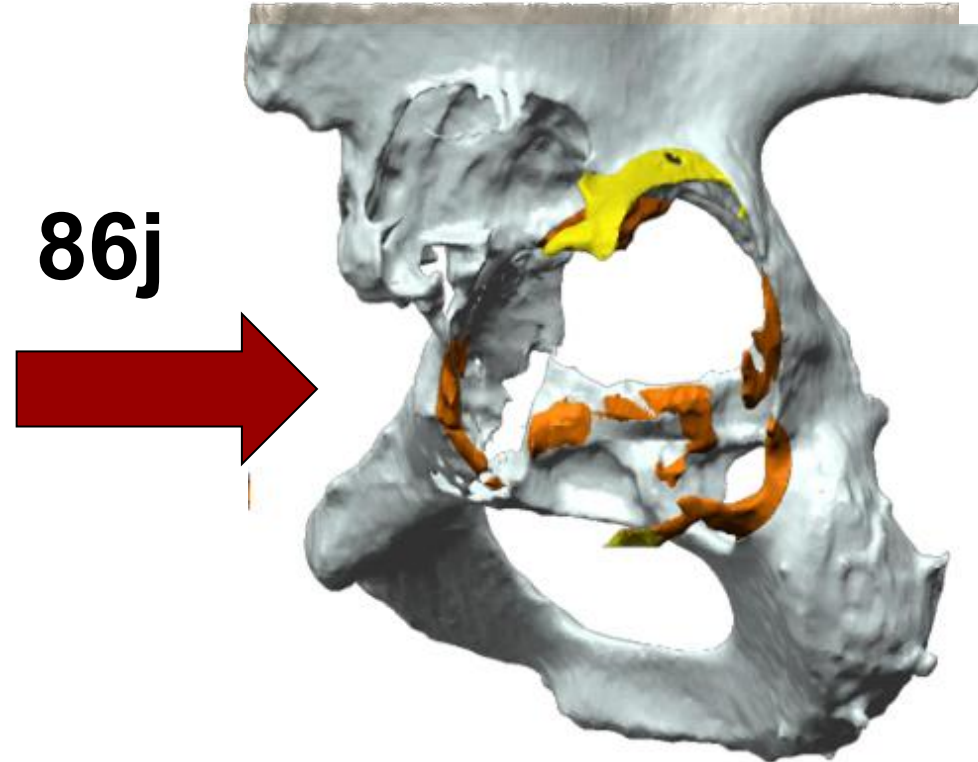




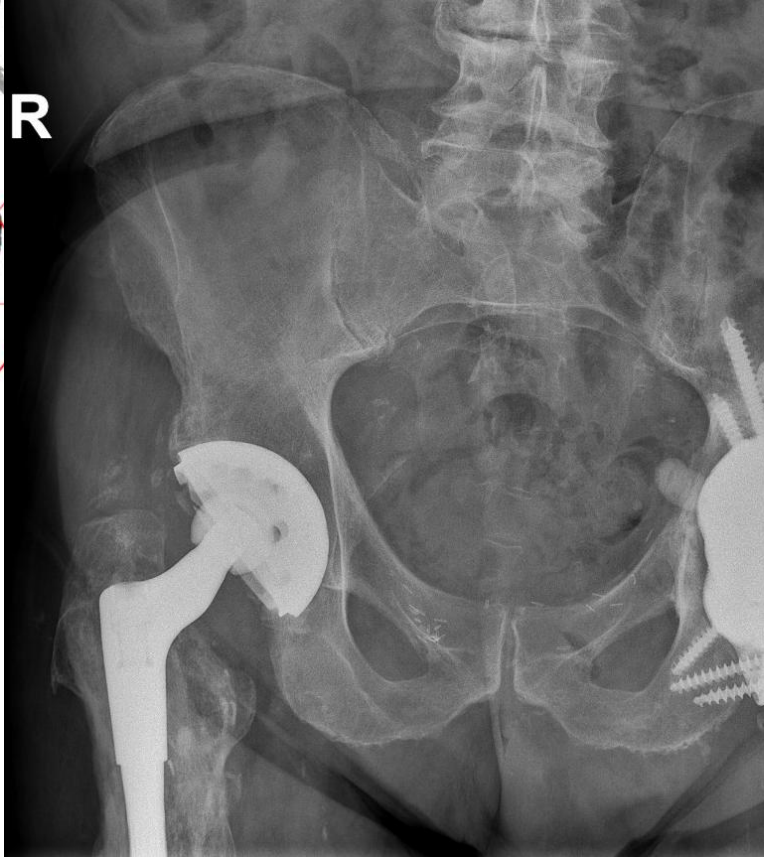
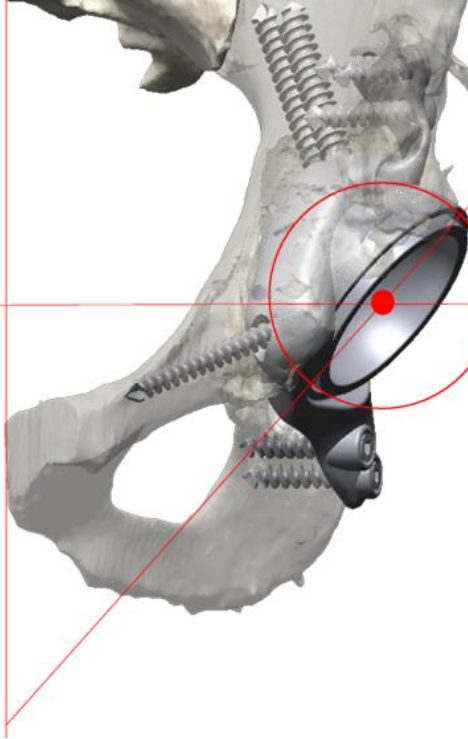




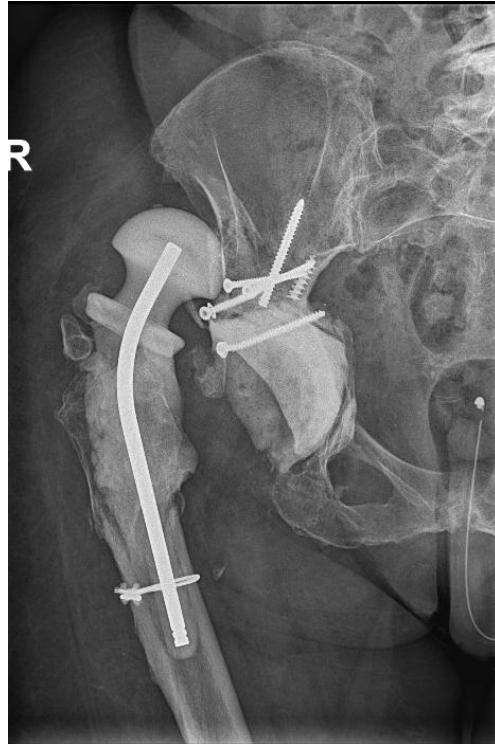
4. 3D planning bij complexe revisies



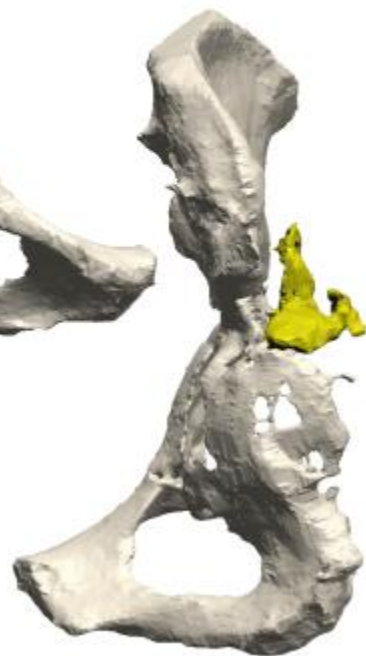
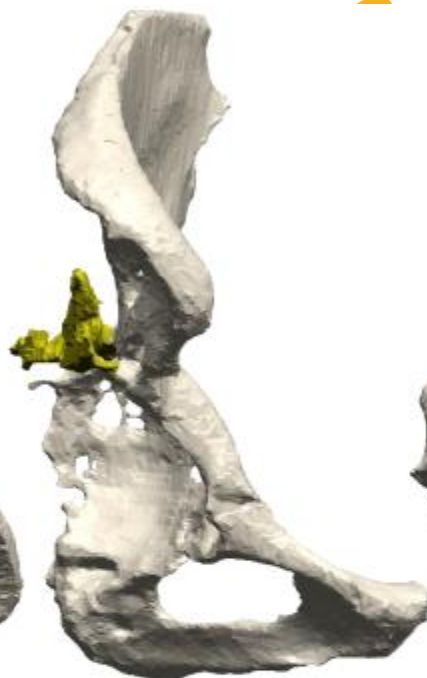
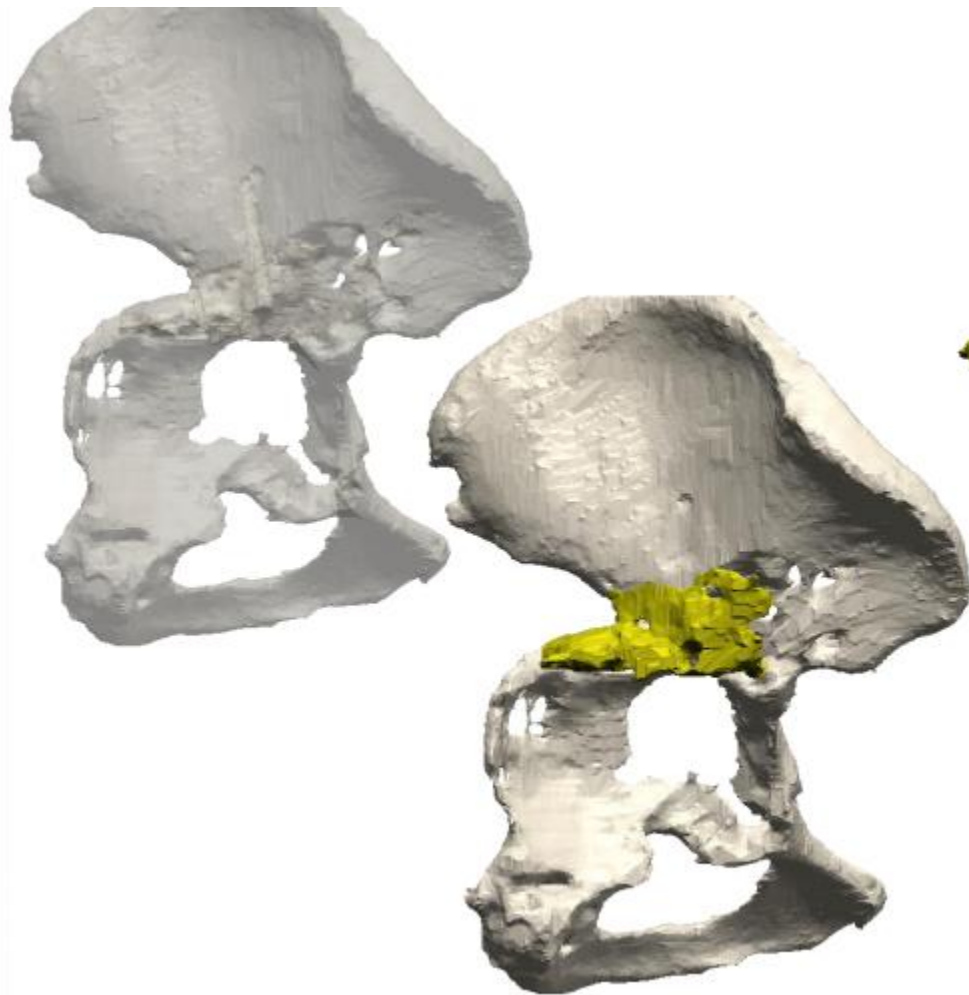
4 3D planning bij complexe revisies

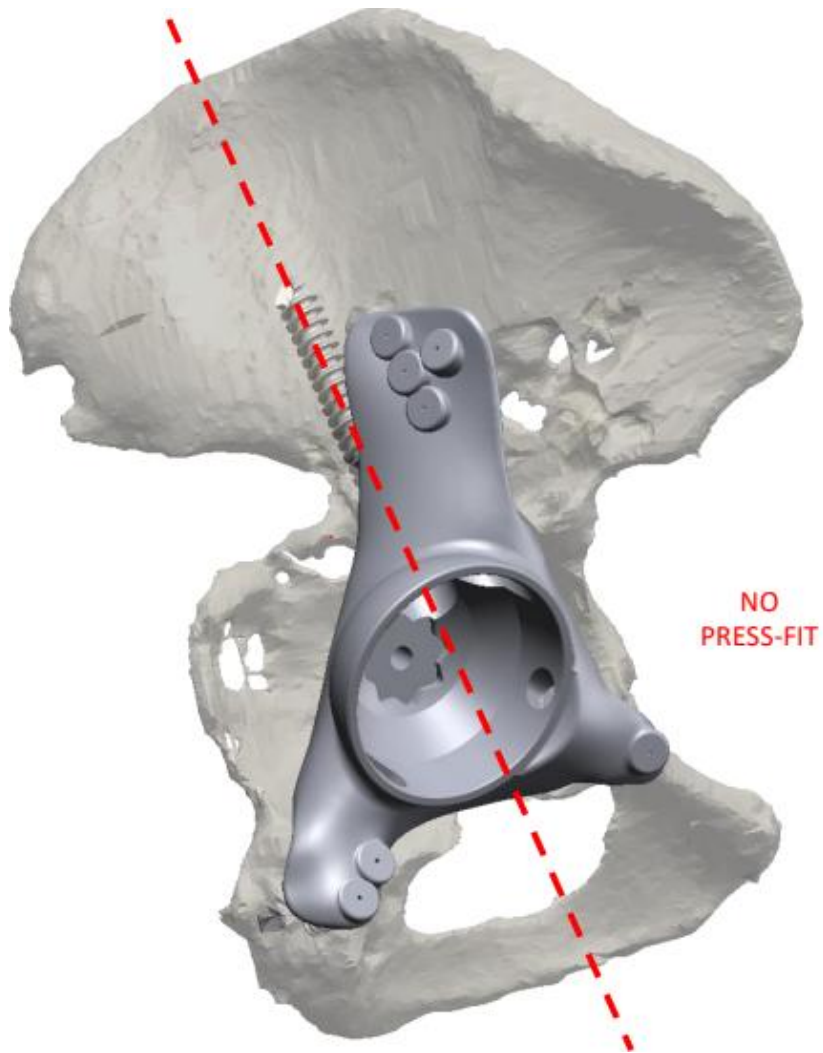


4. 3D planning bij complexe revisie



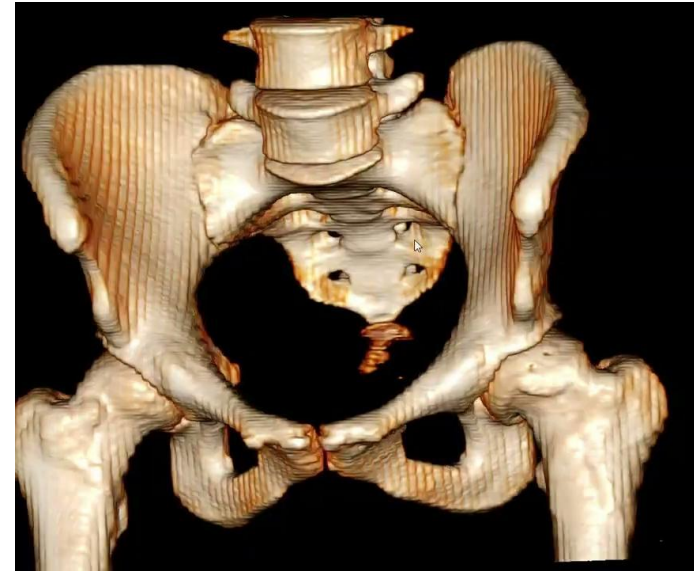
CURRENT
SITUATION





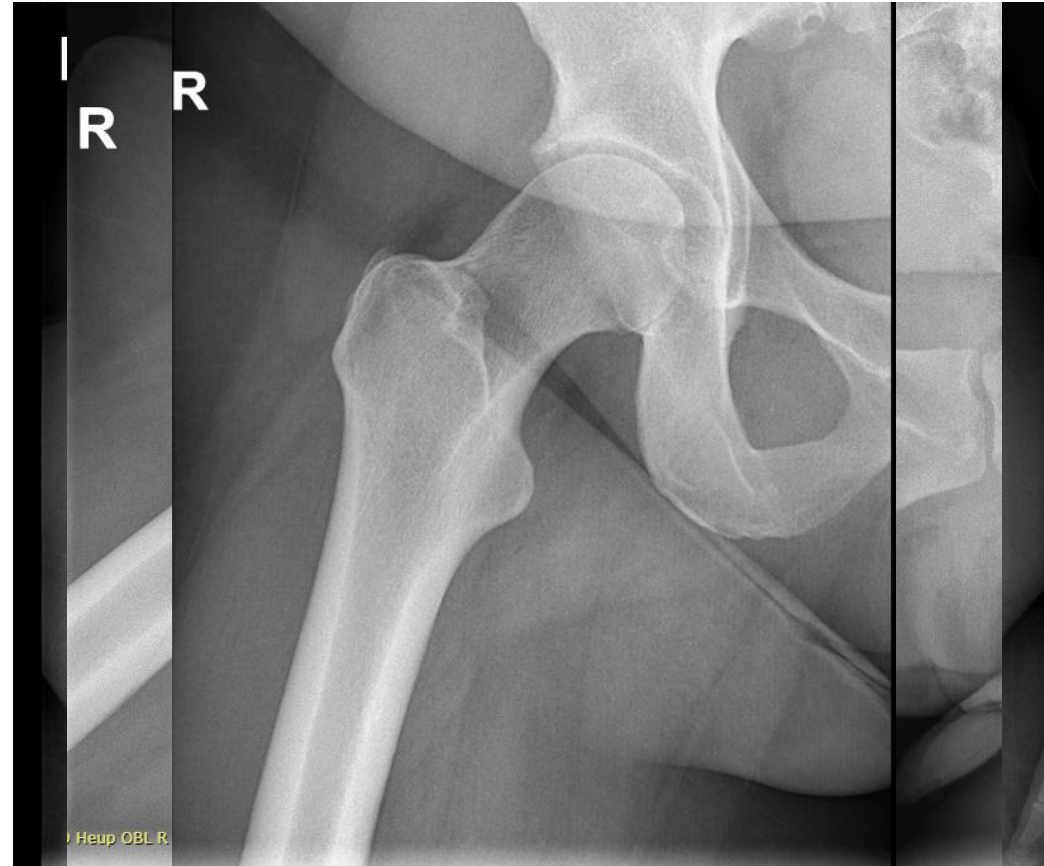
4. 3D planning bij heupsparende chirurgie

- Diagnose: verstaan van complexe 3D anatomie vanop Rx alleen?
 - verschillende vlakken: axiaal, sagittaal en coronaal
 - intra- en extra-articulaire impingement
 - femorale versie
- Simulatie van de bewegingen die in vivo moeilijk zijn
- Plannen ingreep: Kan effect van een ingreep op mobiliteit en impingement tonen.
- Betere voorspelling van de uitkomst



5.1. Casus 1

- 31j♀ (AXI dec)
- AI 4.7° , LCE 37°
- prominente posterior wall
- alfa hoek: 68.5°



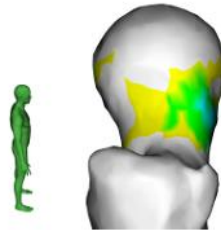
3D analyse - replasia

Colormap of the deviation of the femoral cam surface from its healthy model
0.00mm 3.2mm

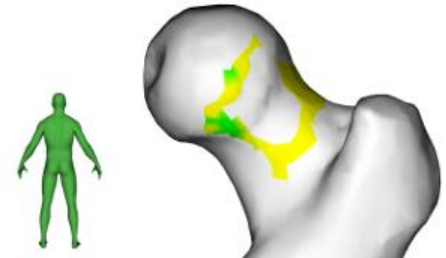
Anterior



Lateral



Posterior



Flexion
($121 \pm 13^\circ$)^[2]



Extension
($19 \pm 8^\circ$)^[2]



Abduction
($42 \pm 11^\circ$)^[2]

Endorotation
($32 \pm 8^\circ$)^[2]

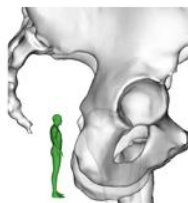
Preoperative

>40°



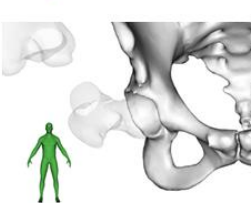
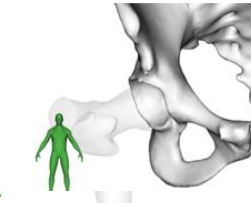
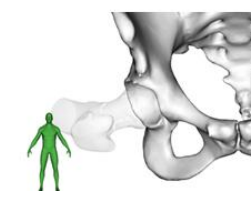
Exorotation
($32 \pm 9^\circ$)^[2]

>41°



Adduction
($30.5 \pm 7.3^\circ$)^[1]

Movements Tests

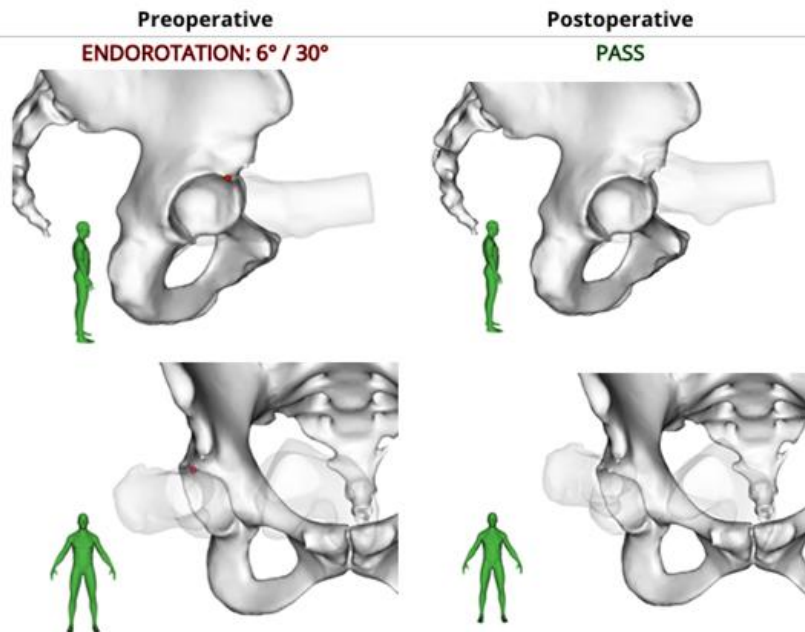
	Preoperative	Postoperative
Sitting	PASS	PASS
		
		
FABER	PASS	PASS
		
		

Range of Motion (bone-bone contact)

Flexion	112°		>134°	
Extension	>27°		>27°	
Abduction	>53°		>53°	
Adduction	>37.8°		>37.8°	
Endorotation	>40°		>40°	
Exorotation	>41°		>41°	

Movements Tests

FADIR



Femoral head coverage

	Preoperative	Postoperative
Total coverage	49%	48%
Load bearing coverage	69%	68%
LCEA	33°	33°
AASA	52°	52°
PASA	113°	113°
HASA	165°	165°
Extrusion Index	17%	17%
Tönnis Angle	13°	13°

Femur Morphology

	42.1mm	42.1mm
Femoral Head Diameter		
Neck-Shaft Angle	131°	131°
Femoral Anteversion	-7°	-7°
Alpha Angle 12 o'clock	54°	47°
Alpha Angle 1 o'clock	62°	52°
Alpha Angle 2 o'clock	50°	42°
Alpha Angle 3 o'clock	51°	35°

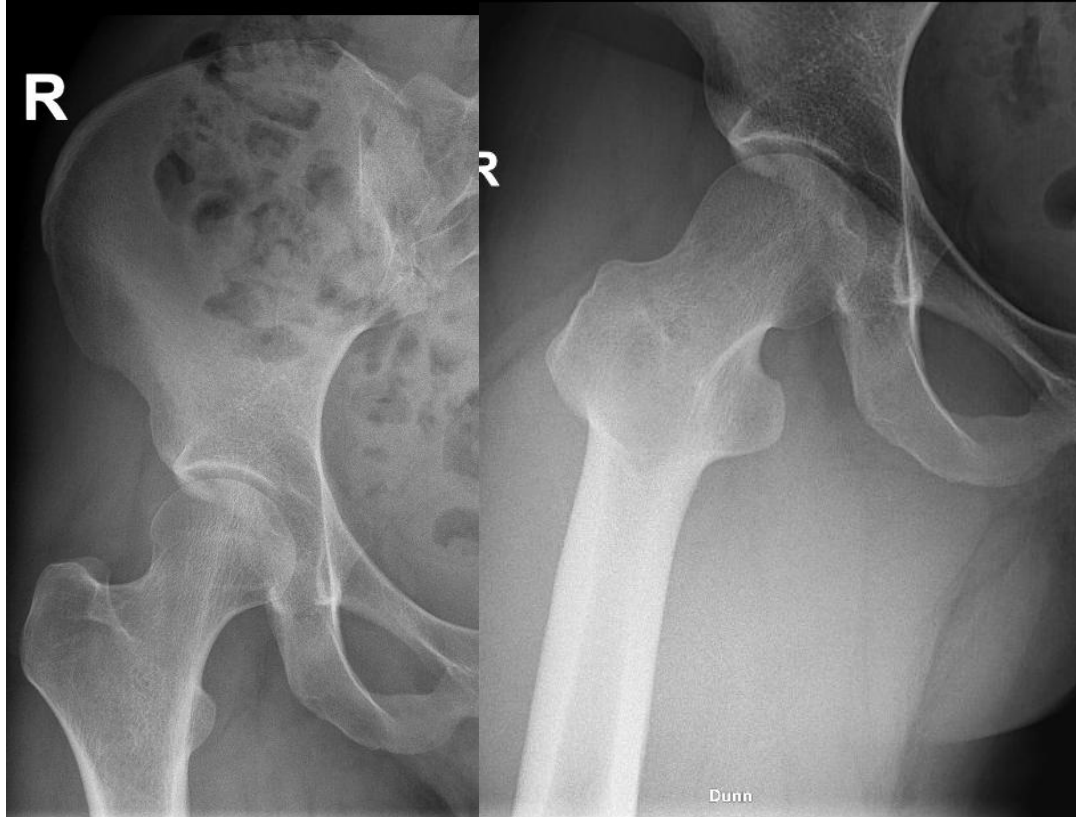
Acetabular Morphology

	46.1mm	46.1mm
Acetabular Cup Diameter		
Acetabular Inclination	47°	47°
Acetabular Anteversion	34°	34°
Acetabular Tilt	37°	37°
Acetabular Cartilage Area	2480mm ²	2480mm ²

Pelvic Orientation

Pelvic Incidence	56°	56°
Spinopelvic Tilt	13°	13°
Sacral Slope	43°	43°
App Angle	4°	4°

5.2 casus 2



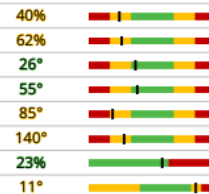
- 31j♀ (LEO Dom)
- AI 6.3° , LCE 34°
- prominente
anterieure wall
- ischial spine sign
- crossing sign
- alfa hoek: 60°



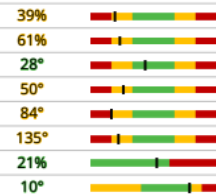
Femoral head coverage

Total coverage
Load bearing coverage
LCEA
AASA
PASA
HASA
Extrusion Index
Tönnis Angle

Right



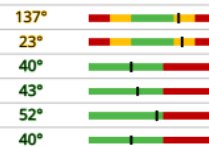
Left



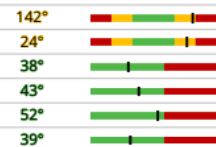
Femur Morphology

Femoral Head Diameter
Neck-Shaft Angle
Femoral Anteversion
Alpha Angle 12 o'clock
Alpha Angle 1 o'clock
Alpha Angle 2 o'clock
Alpha Angle 3 o'clock

45.4mm



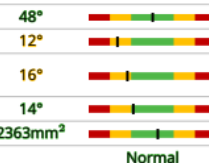
45.6mm



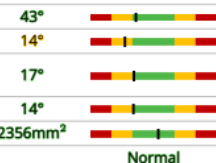
Acetabular Morphology

Acetabular Cup Diameter
Acetabular 3D Inclination
Acetabular 3D Anteversion
Acetabular In-plane Anteversion
Acetabular 3D Tilt
Acetabular Cartilage Area
McKibbin Index

50.3mm



50.4mm



Pelvic Orientation

Pelvic Incidence
Spinopelvic Tilt
Sacral Slope
APP Angle

49°



7°



41°



5°



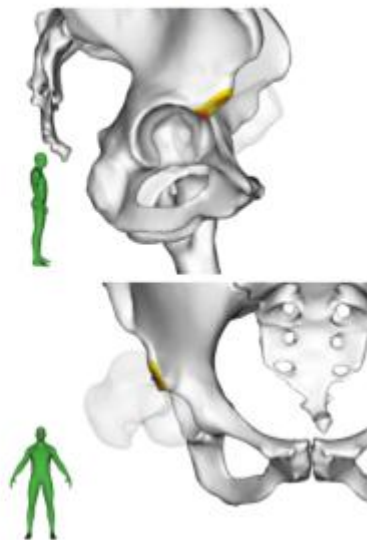
Range of Motion (bone-bone contact)

Flexion	112°		>134°	
Extension	>27°		>27°	
Abduction	>53°		>53°	
Adduction	>37.8°		>37.8°	
Endorotation	>40°		>40°	
Exorotation	>41°		>41°	
Endorotation @ 90° Flexion	20°		8°	
Exorotation @ 90° Flexion	>41°		>41°	

Preoperative

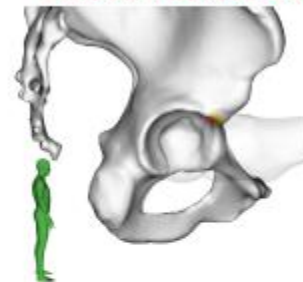
Flexion
(121 ± 13°)^[2]

112°



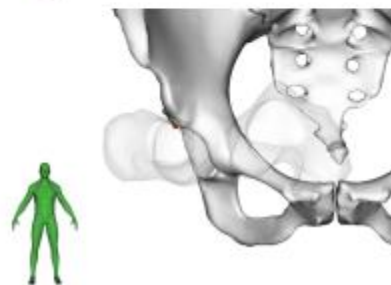
Preoperative

ENDOROTATION: 17° / 30°



Postoperative

ENDOROTATION: 20° / 30°



FADIR

6. Blik op de toekomst

- 3D planning heup sparende chirurgie op MRI
 - stralingsbeperking
 - niet enkel beenderige impingement
 - rotationele problematiek



"That's all Folks!"



Cartoon Songs From

MERRIE MELODIES & LOONEY TUNES