PRINCIPLES OF HIP ARTHROPLASTY

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HARLOW

1. EXAMINATION OF THE HIP

2. RATIONALE FOR DECISION MAKING -- PRIMARY THR

3. COMPLEX PRIMARY

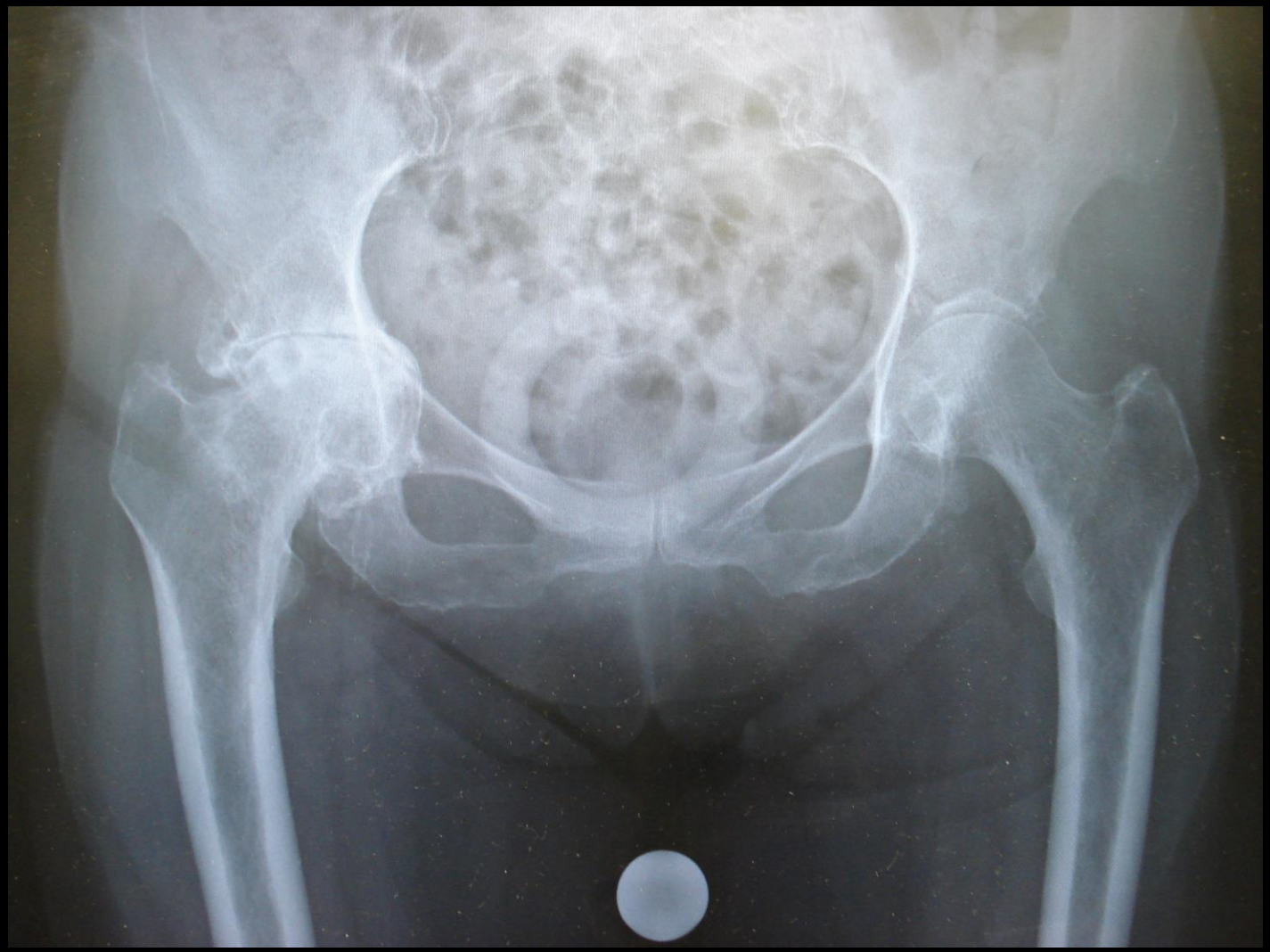
1. FRCS (ORTH) QUESTIONS?

2. PRINCIPLES OF THR

3. COMPLEX THR

4. EXAMINATION OF THE HIP

FRCS (ORTH) QUESTIONS



65 YR OLD FEMALE

WHAT TYPE OF HIP REPLACEMENT ARE YOU GOING TO PUT IN ME??

CONSENT PATIENT FOR THR

CONSENT PATIENT FOR THR

INFECTION

DISLOCATION

LEG LENGTH INEQUALITY

NEUROVASCULAR INJURY

VENOUS THROMBOEMBOLISM

BLEEDING

FRACTURE

PAIN – IMPINGEMENT

STIFFNESS

FAILURE TO LAST- EVERY IMPLANT -10-15 YRS

DEATH

1. CEMENT

WHAT IS IT???

PMMA

POWDER—

1. DI BENZOYL PEROXIDE
2. PMMA
3. BARIUM SULPHATE/ZINC SULPHATE

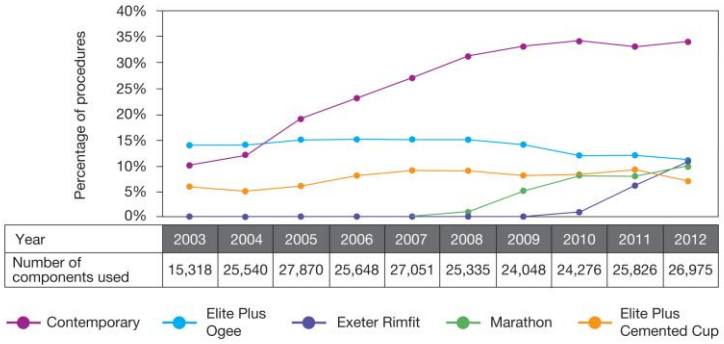
LIQUID –

1. METHYL METHACRYLATE MONOMER
2. HYDROQUININE
3. N-DIMETHYL-P- TOLUIDINE

NJR

Figure 2.10

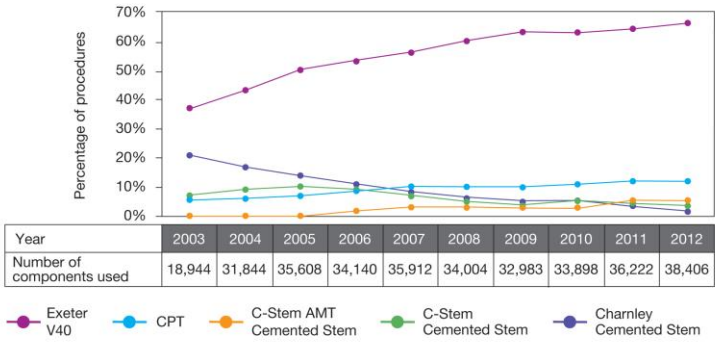
Top five cemented hip cup brands, trends 2003 to 2012.



Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of components used	15,318	25,540	27,870	25,648	27,051	25,335	24,048	24,276	25,826	26,975

Figure 2.9

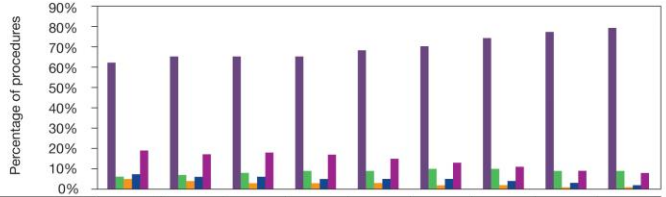
Top five cemented hip stem brands, trends 2003 to 2012.



Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of components used	18,944	31,844	35,608	34,140	35,912	34,004	32,983	33,898	36,222	38,406

Figure 2.8

Bone cement types for primary hip replacement procedures undertaken between 2004 and 2012.



Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Antibiotic-loaded high viscosity	62%	65%	65%	65%	68%	70%	74%	77%	79%
Antibiotic-loaded medium viscosity	6%	7%	8%	9%	9%	10%	10%	9%	9%
Antibiotic-loaded low viscosity	5%	4%	3%	3%	3%	2%	2%	1%	1%
High viscosity	7%	6%	6%	5%	5%	5%	4%	3%	2%
Medium viscosity	19%	17%	18%	17%	15%	13%	11%	9%	8%
Low viscosity	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Number of procedures using cement	34,497	40,473	40,544	44,334	43,362	41,514	41,108	43,359	43,789

NJR

Figure L2

Estimated cumulative incidence of revision for 55-year-old male by prosthesis type.

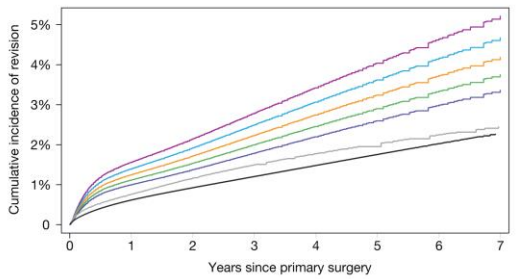


Figure L3

Estimated cumulative incidence of revision for 55-year-old female by prosthesis type.

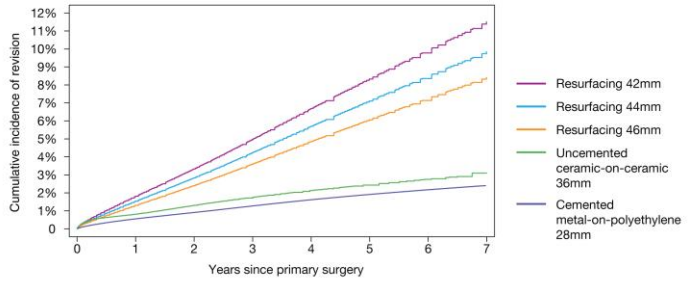
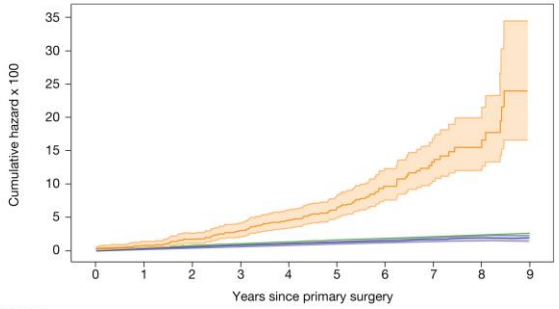


Figure 3.2

Comparison of cumulative hazard of first revision for cemented hips with different bearing surfaces (with 95% CI).



Numbers at risk

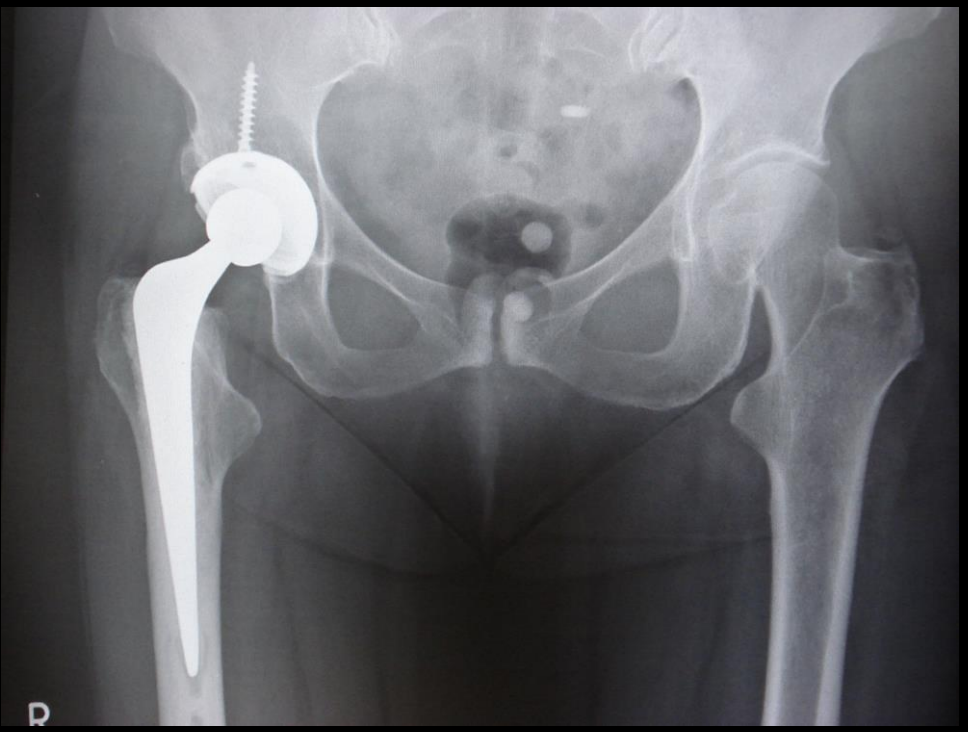
Cemented MoP	178,077	152,981	130,206	108,931	88,203	67,448	47,008	30,708	16,134	5,594
Cemented MoM	1,229	1,151	1,072	1,002	880	612	397	216	96	15
Cemented CoP	17,202	14,022	11,325	8,961	6,984	5,172	3,652	2,319	1,164	344

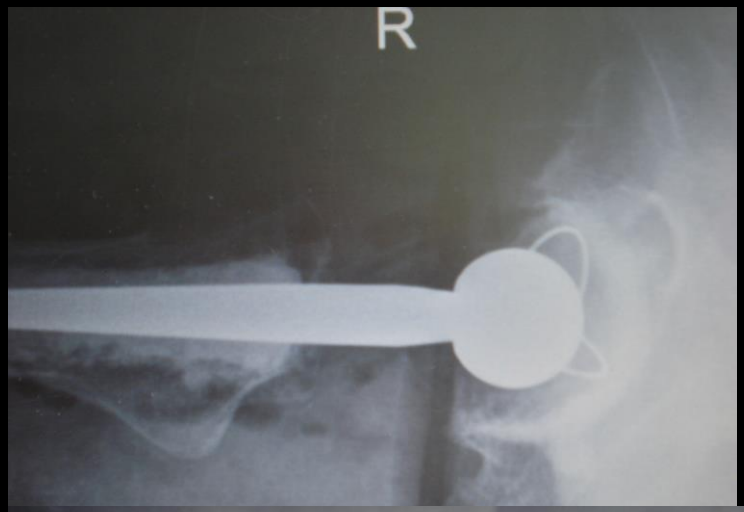
CEMENT MANTLE

HOW MUCH??

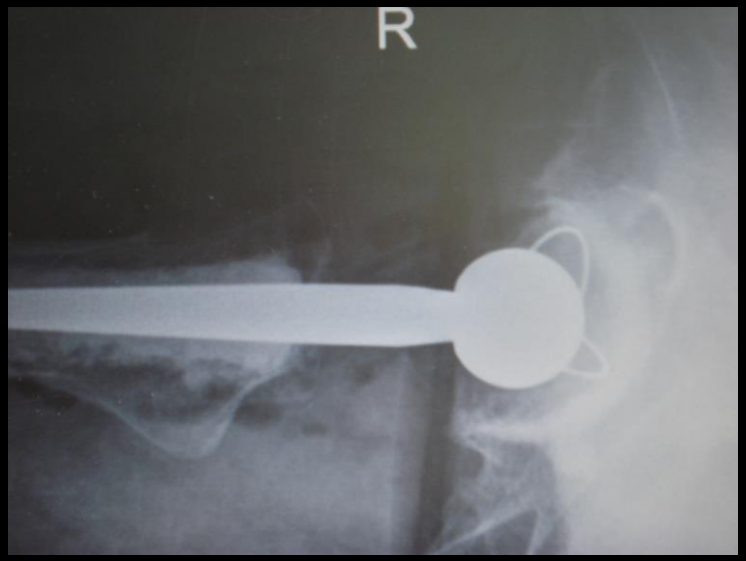
2-4 MM

CEMENT MANTLE



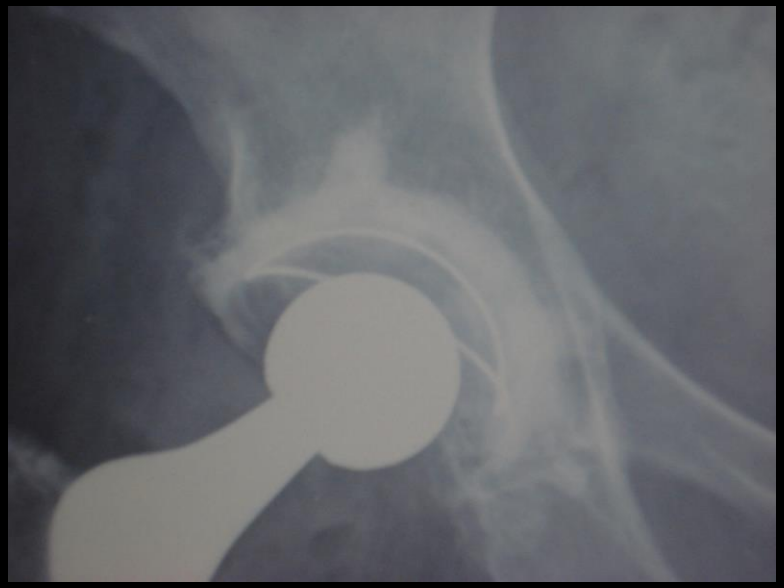


CEMENT MANTLE



QUALITY

BARRACK GRADING- A B C D



CEMENT MANTLE

THE FRENCH PARADOX

COMPOSITE BEAM

TAPER SLIP

EVOLUTION OF THE CEMENTED STEM- CHARNLEY TO ‘C -STEM’

CEMENT--

WHAT PROPERTIES OF CEMENT DOES THE TAPER SLIP STEM UTILISE??

CEMENT WORKS BEST IN COMPRESSION

VISCOELASTIC PROPERTIES OF CEMENT- CREEP

HOW WILL THIS FAIL???

PHYSICAL

CHEMICAL

BIOLOGICAL

GRUEN'S MODES OF FAILURE

STEM PISTONING WITHIN CEMENT

CEMENT EMBEDED STEM PISTONING

MEDIAL MID STEM PIVOT

CALCAR PIVOT

BENDING CANTILEVER

WHAT IS THIS??

POLYMERS

- PTFE – VOLUMETRIC WEAR

- UHLMWPE– REDUCED VOLUMETRIC WEAR

- HIGHLY CROSS LINKED POLYMERS- IMPROVES WEAR RESISTENCE
  BUT MORE STIFF

ANNEAL/REMELT

LINEAR /VOLUMETRIC WEAR

UNCEMENTED STEMS/CUPS

ONGROWTH

INGROWTH

CALCIUM HYDOXYAPATITE

APPROACHES

Table 2.7 Surgical technique for primary hip replacement patients in 2012.

	Primary total prosthetic replacement using cement		Primary total prosthetic replacement not using cement		Primary total prosthetic replacement not classified elsewhere (e.g. hybrid)		Primary resurfacing arthroplasty of joint		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Total hip primaries	**25,316**	**33%**	**34,143**	**45%**	**15,907**	**21%**	**1,082**	**1%**	**76,448**	
Patient position										
Lateral	22,965	91%	31,864	93%	15,303	96%	1,077	100%	71,209	93%
Supine	2,351	9%	2,279	7%	604	4%	5	<1%	5,239	7%
Incision										
Lateral (inc. Hardinge)	10,131	40%	10,878	32%	4,092	26%	133	12%	25,234	33%
Posterior	13,731	54%	21,185	62%	11,157	70%	916	85%	46,989	61%
Trochanteric osteotomy	310	1%	26	<1%	11	<1%	13	1%	360	<1%
Other	1,144	5%	2,054	6%	647	4%	20	2%	3,865	5%
Minimally-invasive surgery										
Yes	478	2%	2,884	8%	365	2%	14	1%	3,741	5%
No	24,838	98%	31,259	92%	15,542	98%	1,068	99%	72,707	95%
Image-guided surgery										
Yes	32	<1%	158	<1%	31	<1%	33	3%	254	<1%
No	25,284	100%	33,985	100%	15,876	100%	1,049	97%	76,194	100%
Bone graft used - femur										
Yes	173	<1%	400	1%	44	<1%	13	1%	630	<1%
No	25,143	99%	33,743	99%	15,863	100%	1,069	99%	75,818	99%
Bone graft used - acetabular										
Yes	1,014	4%	1,321	4%	841	5%	79	7%	3,255	4%
No	24,302	96%	32,822	96%	15,066	95%	1,003	93%	73,193	96%

DISLOCATION AFTER THR

WOO & MORREY JBJS AM1982- 3.2%

MORREY- OCNA 1992- 2.5%

SURGICAL APPROACH- 75-80%- POSTERIOR

5.8%-POST

2.3% ANTERO-LAT

SUBGROUP ANALYSIS- SIMILAR

IMPROVED– SOFT TISSUE REPAIR

DISLOCATION AFTER THR

SOFT TISSUE TENSION

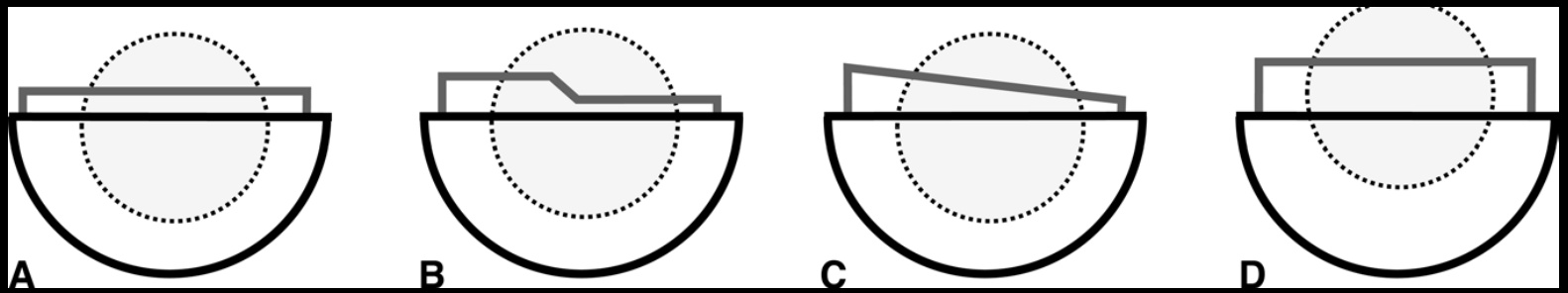
COMPONENT POSITIONING- ABDUCTION, ANTERVERSION
COMBINED ANTERVERSION

HEAD SIZE

IMPINGEMENT

LINER PROFILE

PATIENT PROFILE


A
B
C
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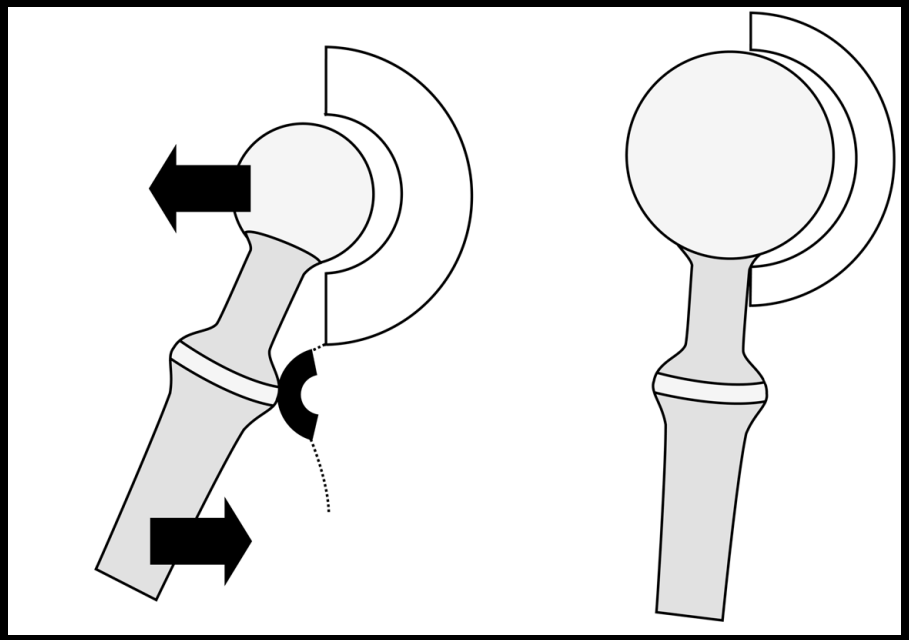


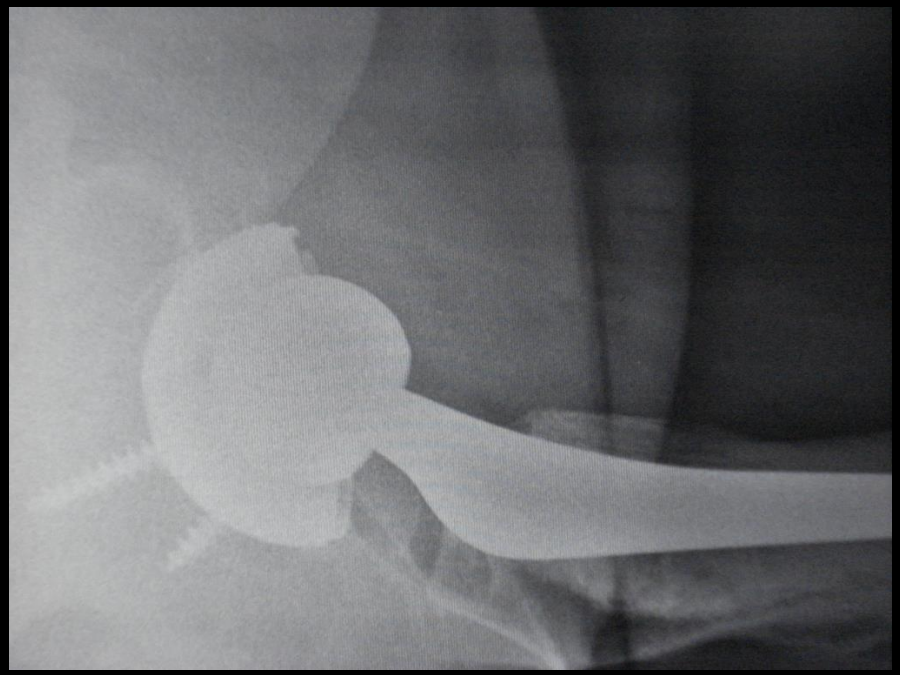
VTE

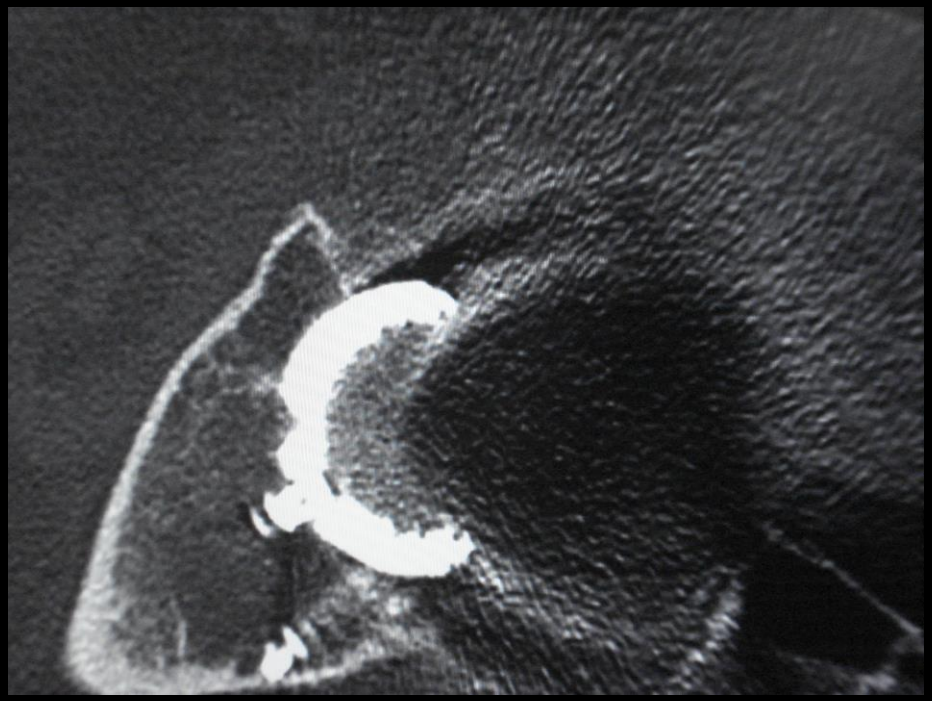
SYMPTOMATIC- .8%-- UPTO 30 DAYS

90 DAYS- 0.29%

PAIN AFTER THR

IMPINGEMENT AFTER THR--- PAIN

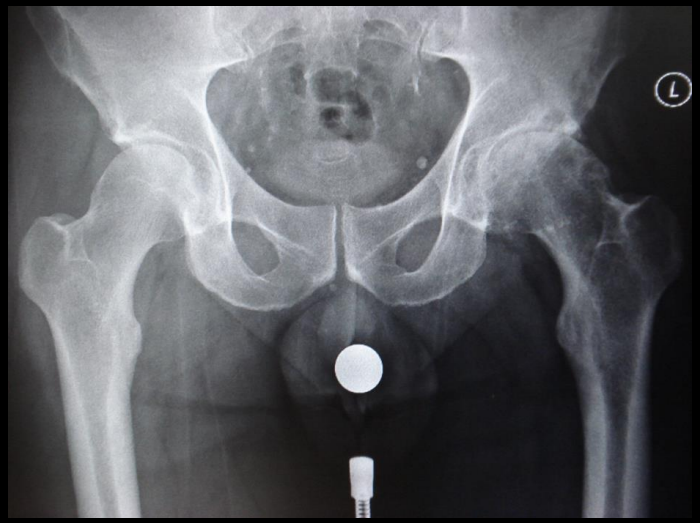




HOW TO DO A TOTAL HIP REPLACEMENT

FEMORAL MORPHOLOGY

DORR CLASSIFICATION



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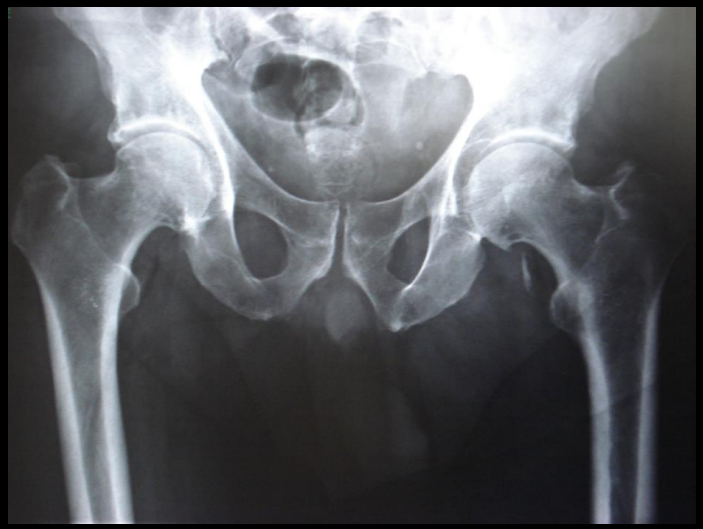

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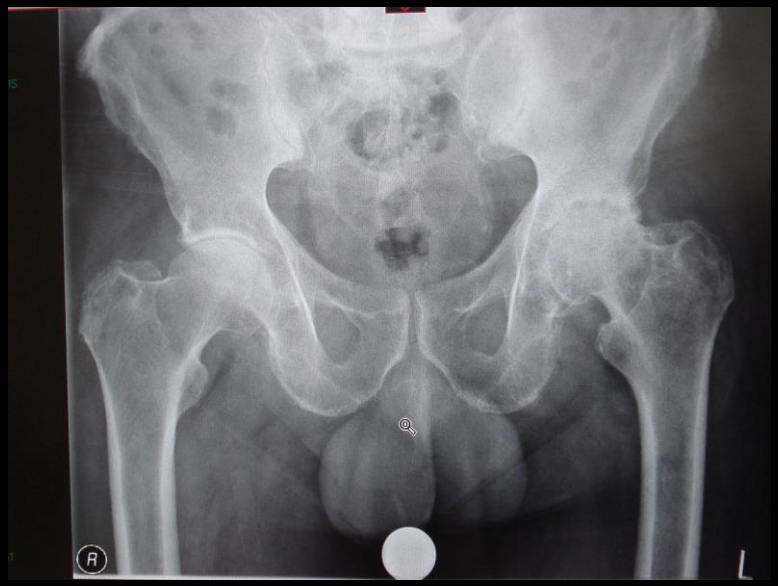
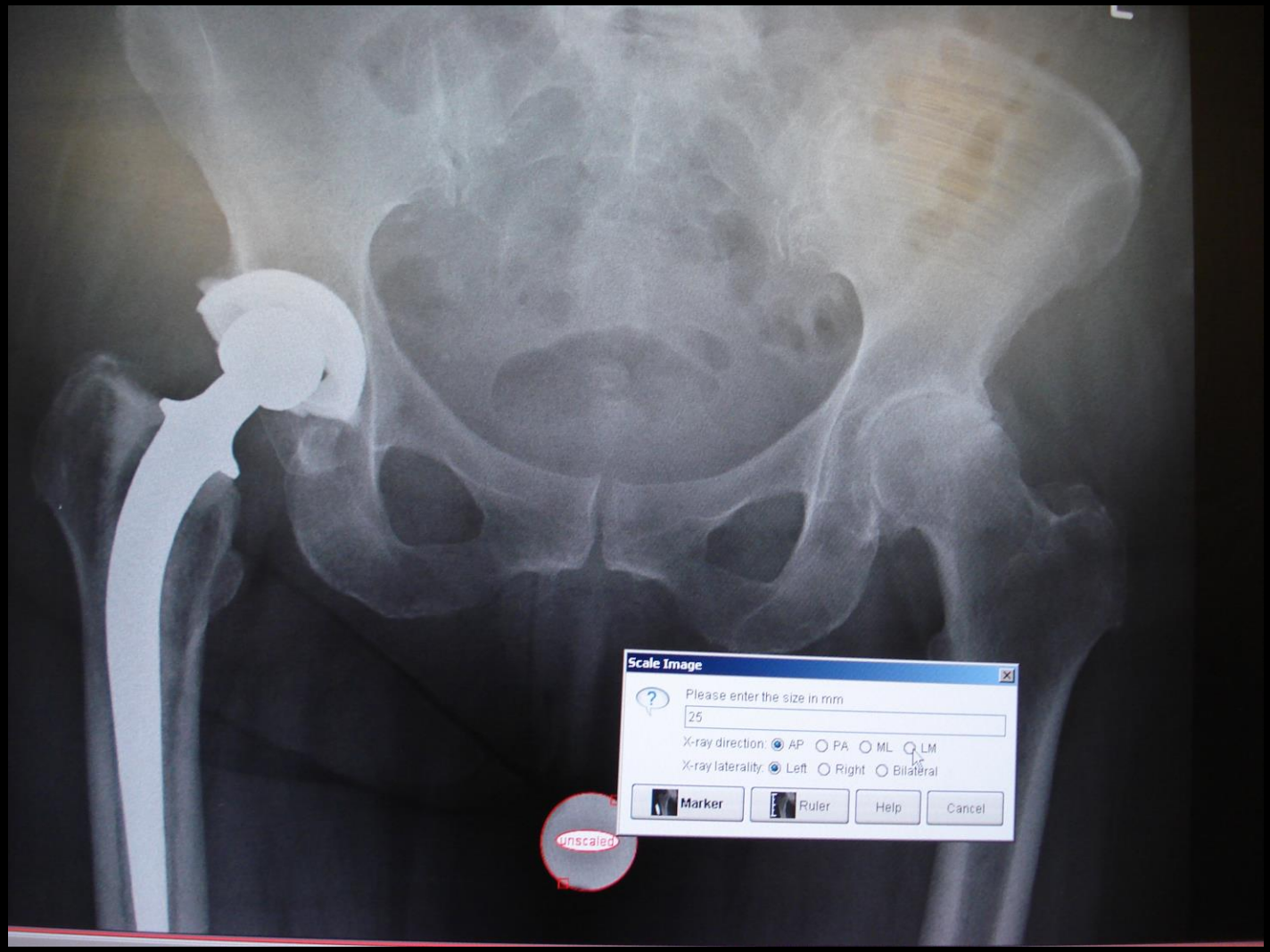


C

S.KUTTY- PAH- ROYAL LONDON TEACHING- 19/11/2013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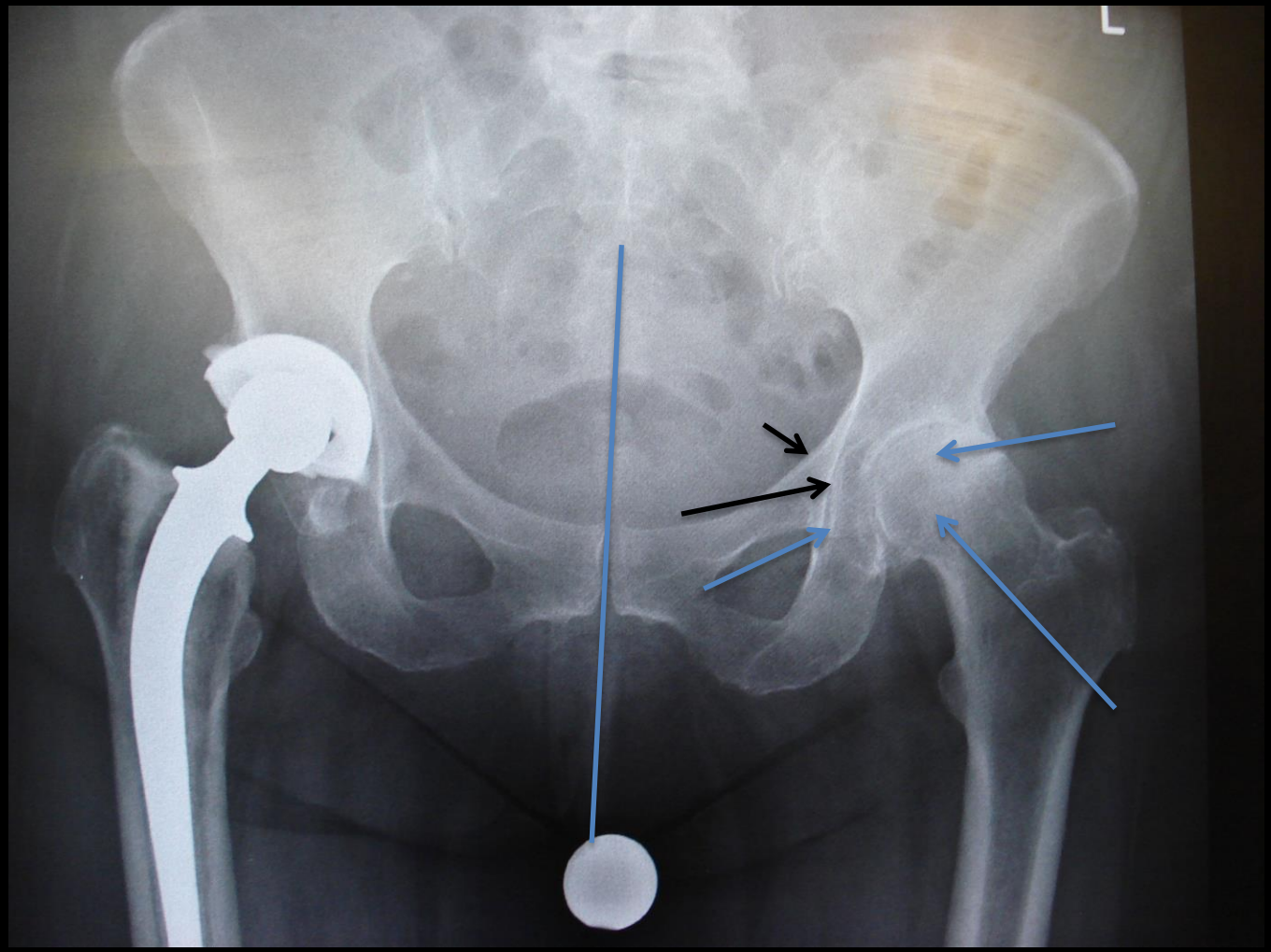
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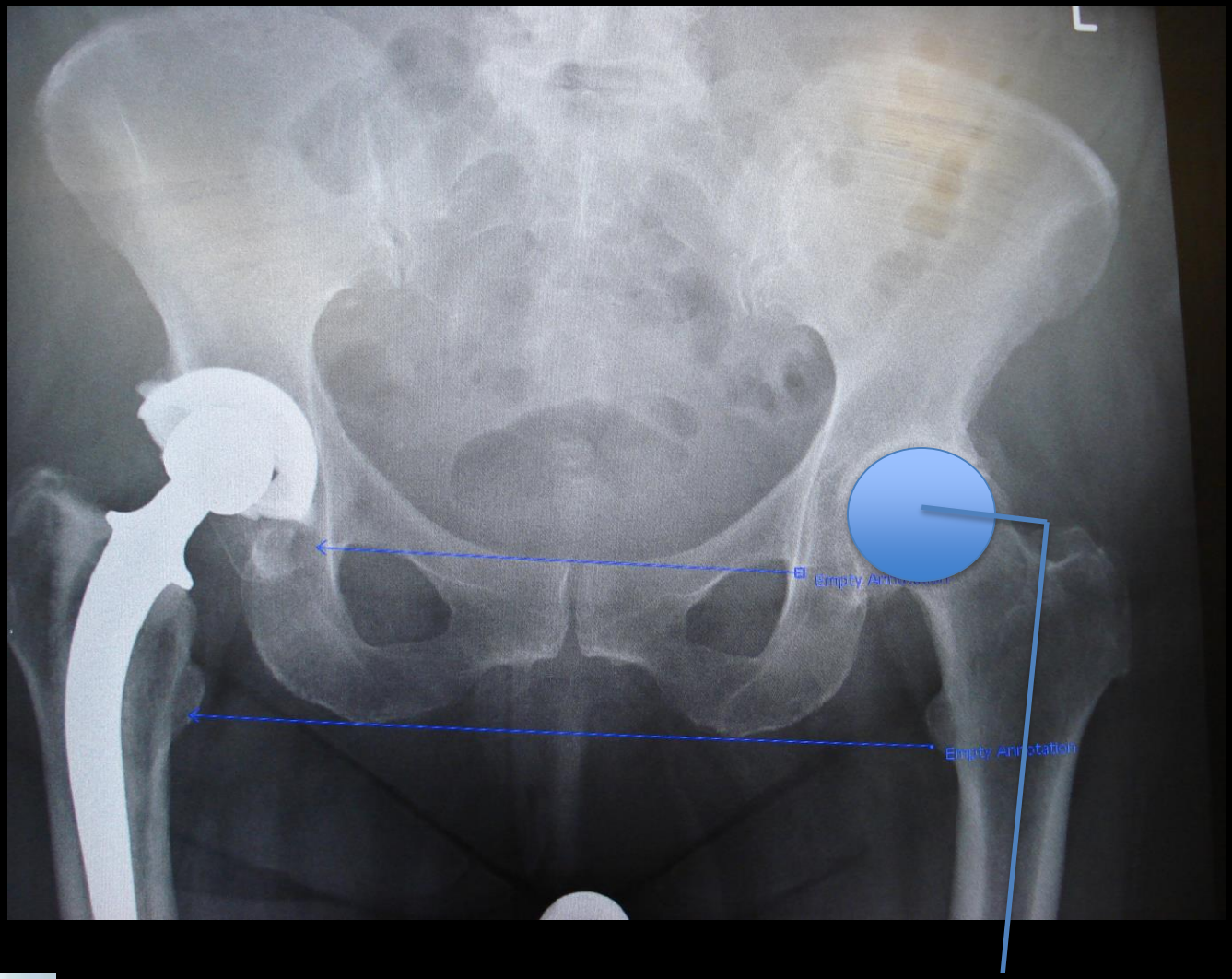
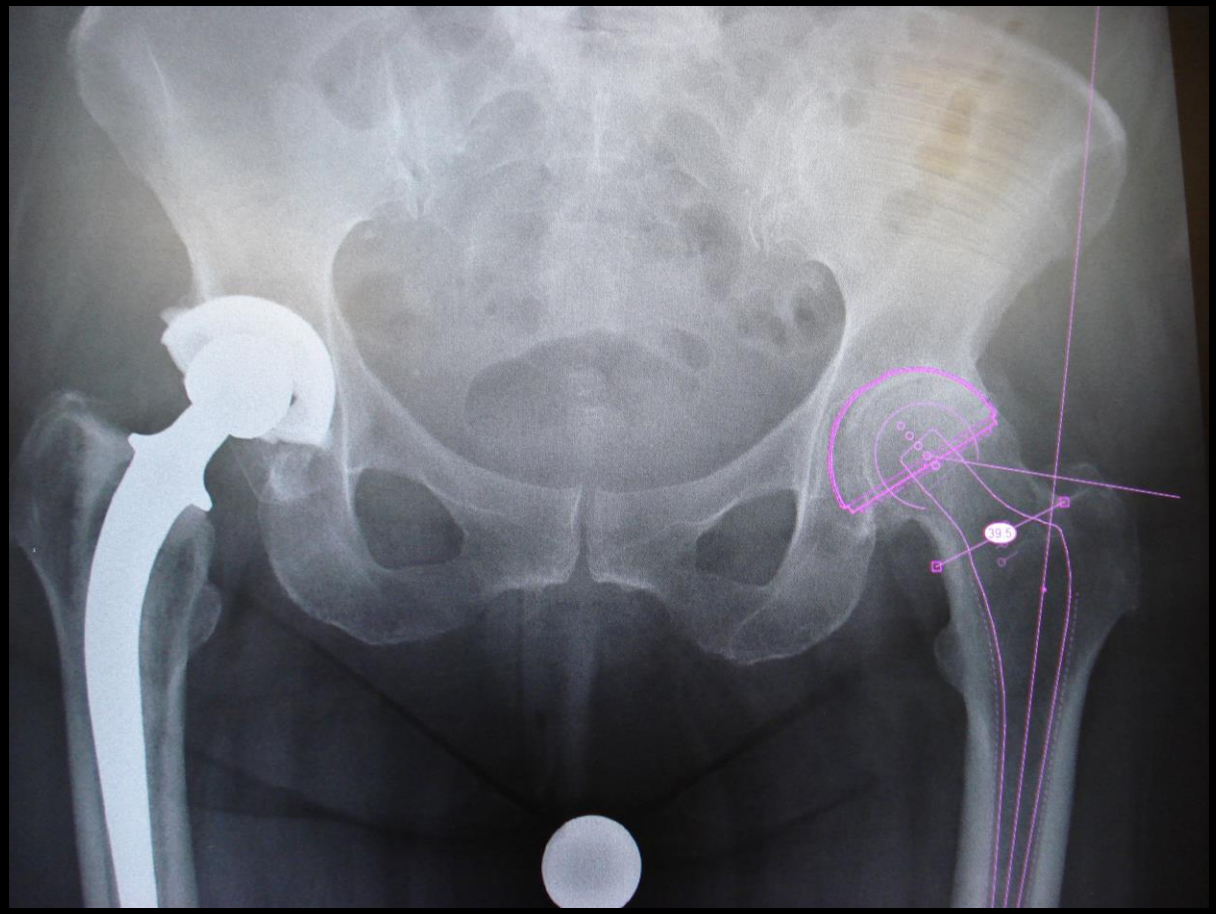
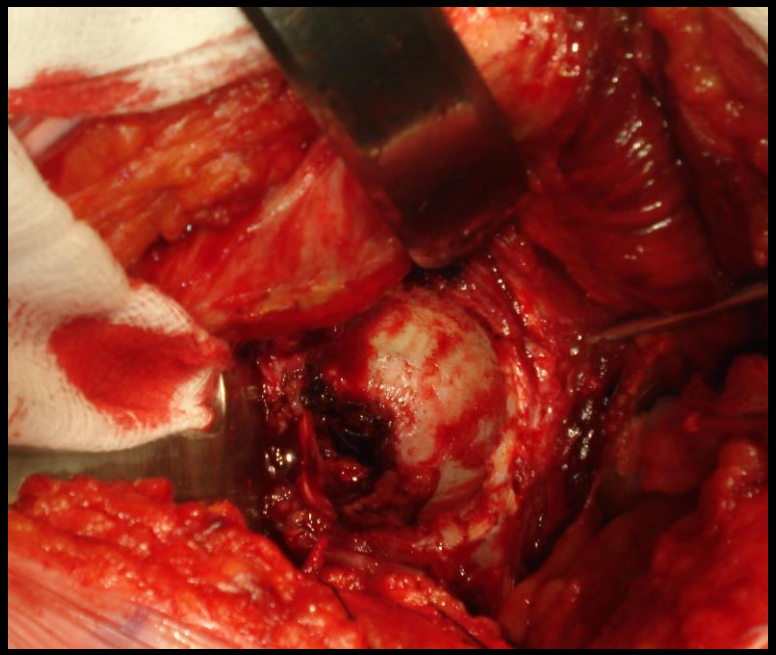
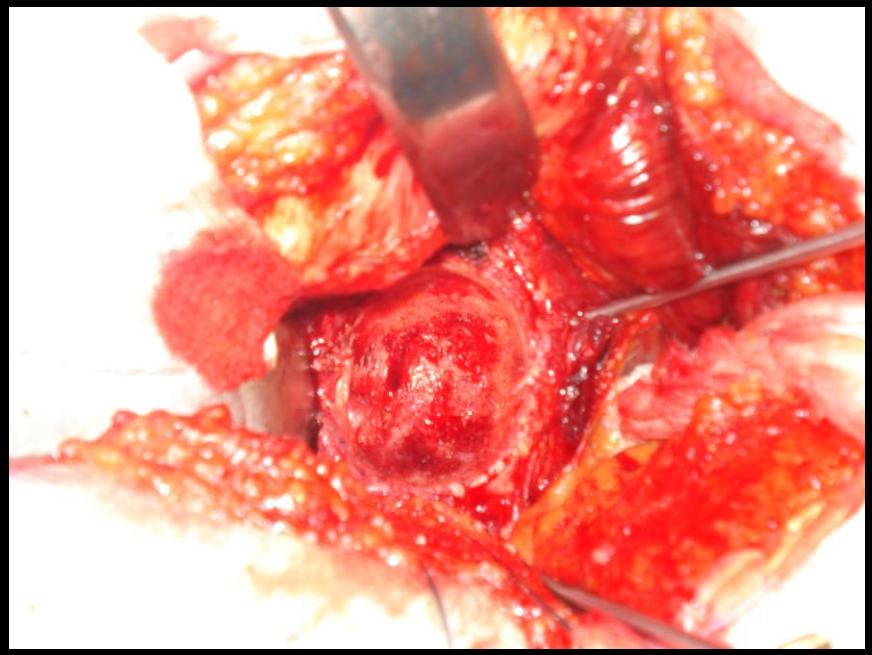
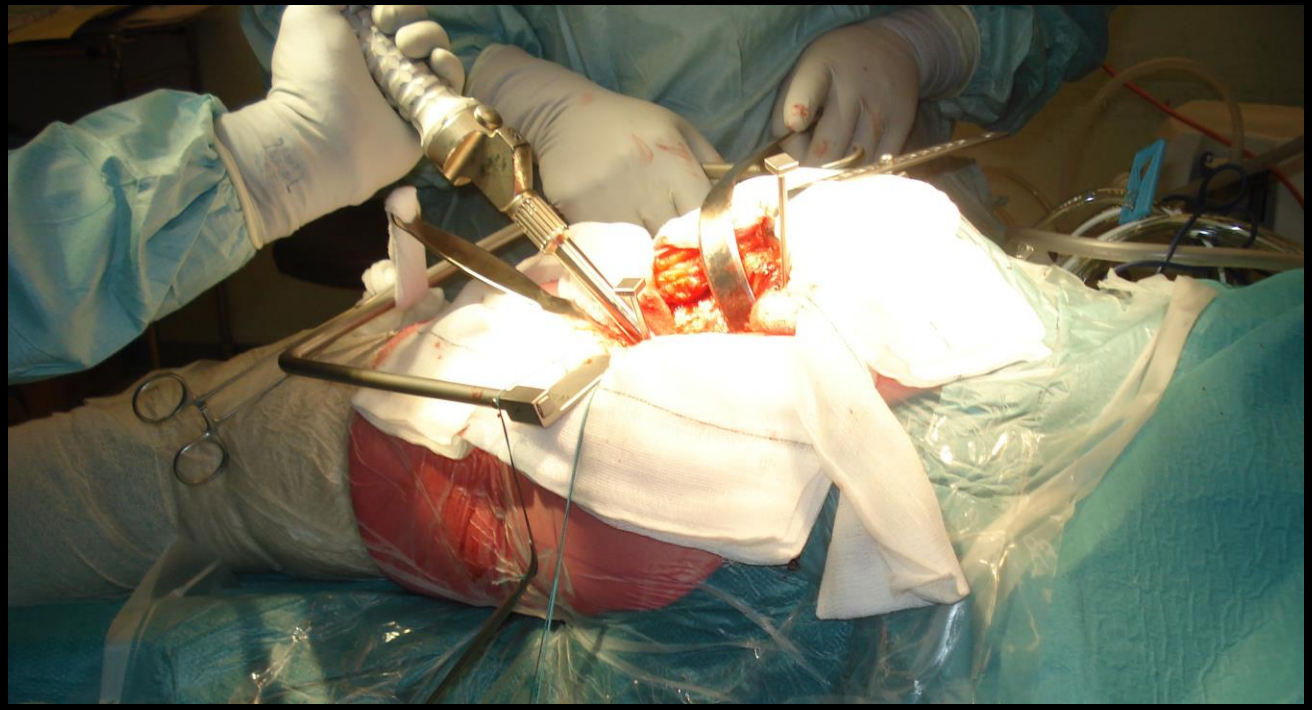


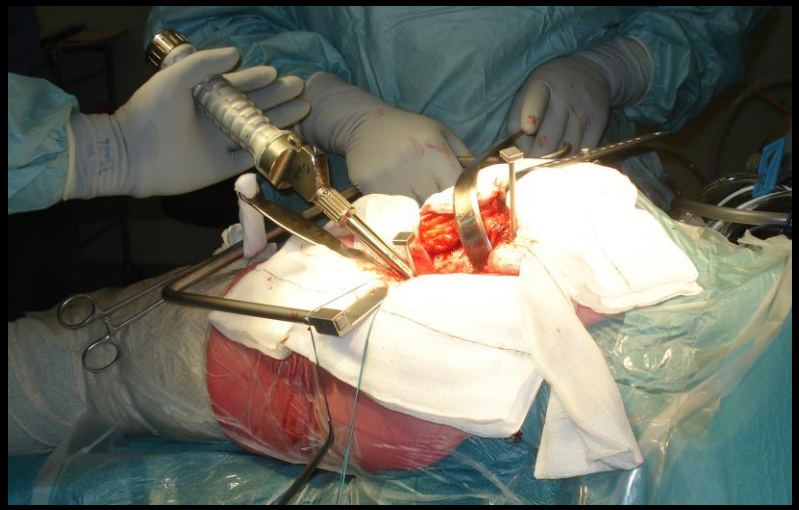
LEG LENGTH AN OFFSET

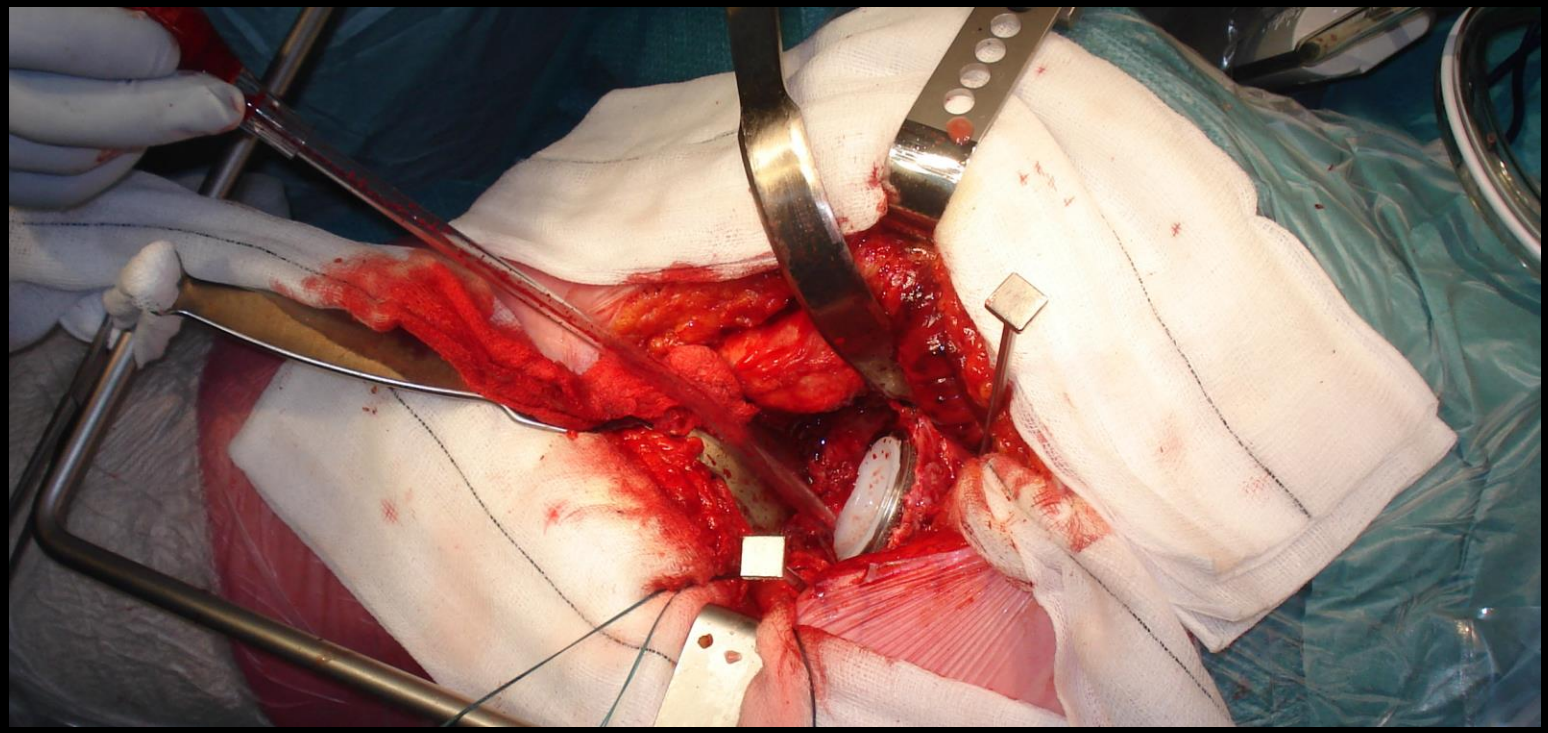


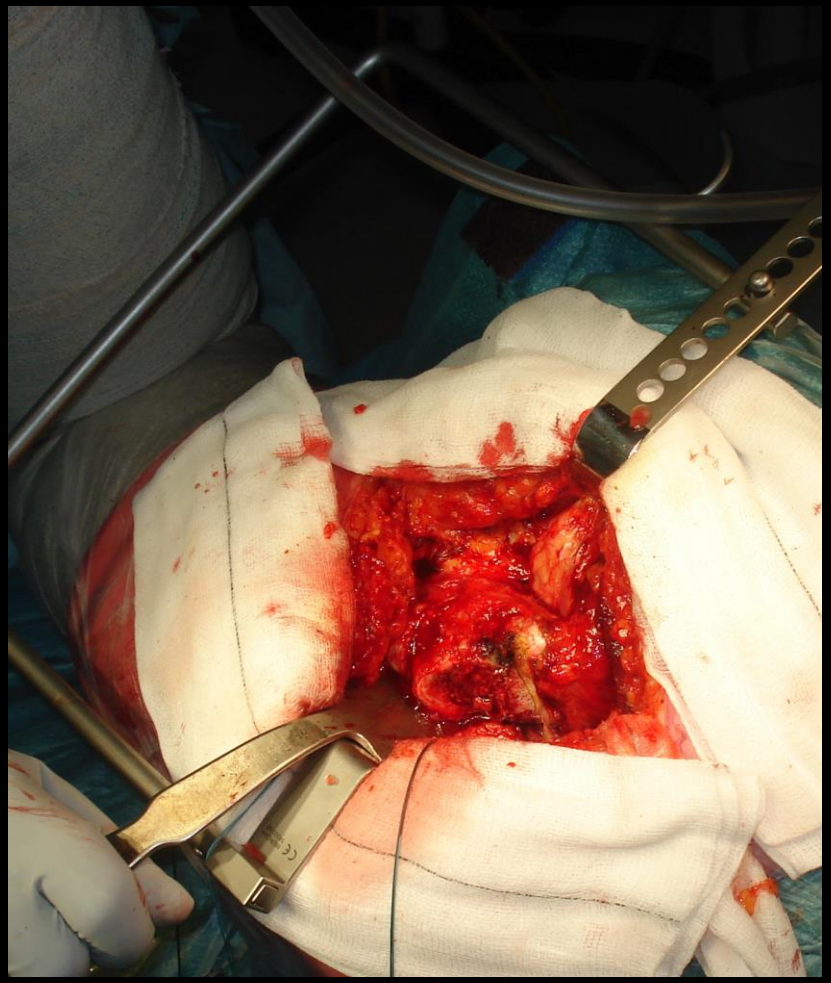


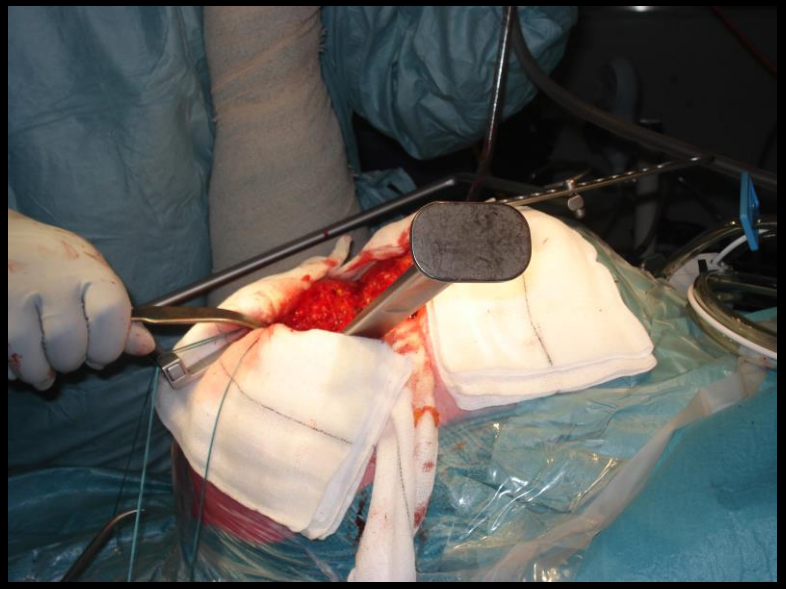


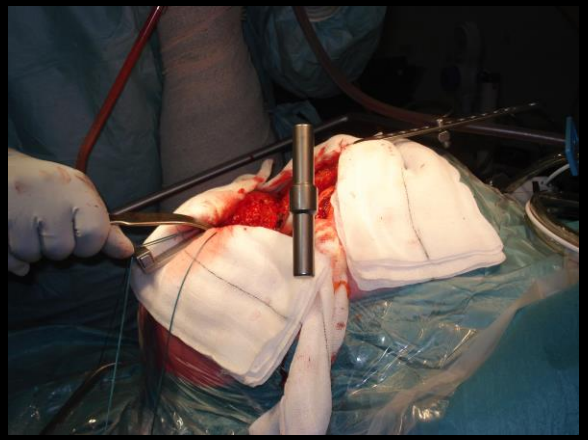


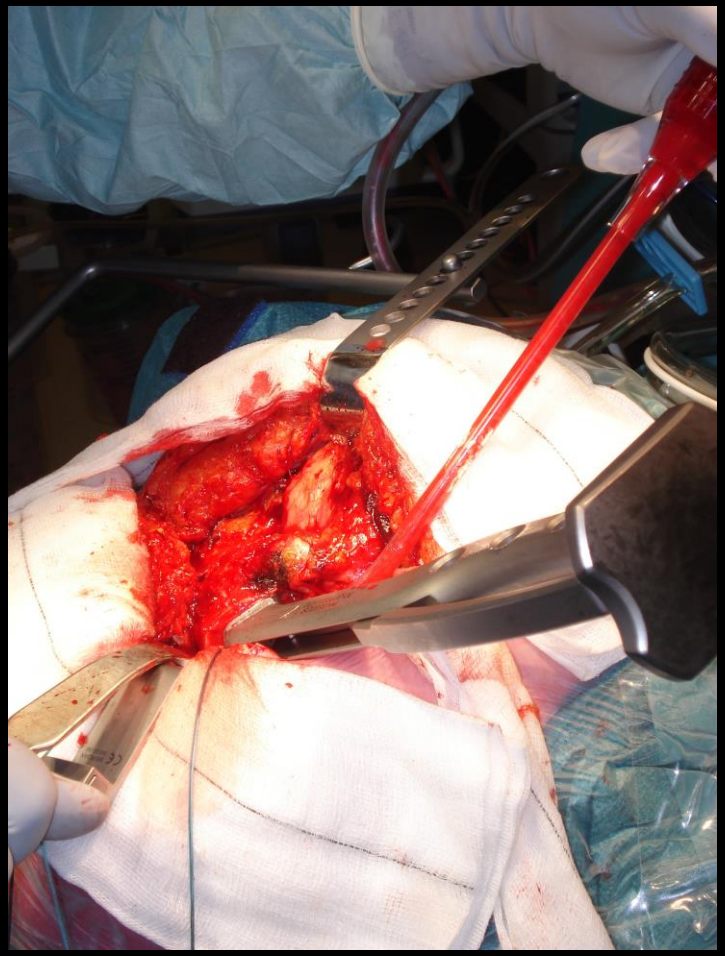


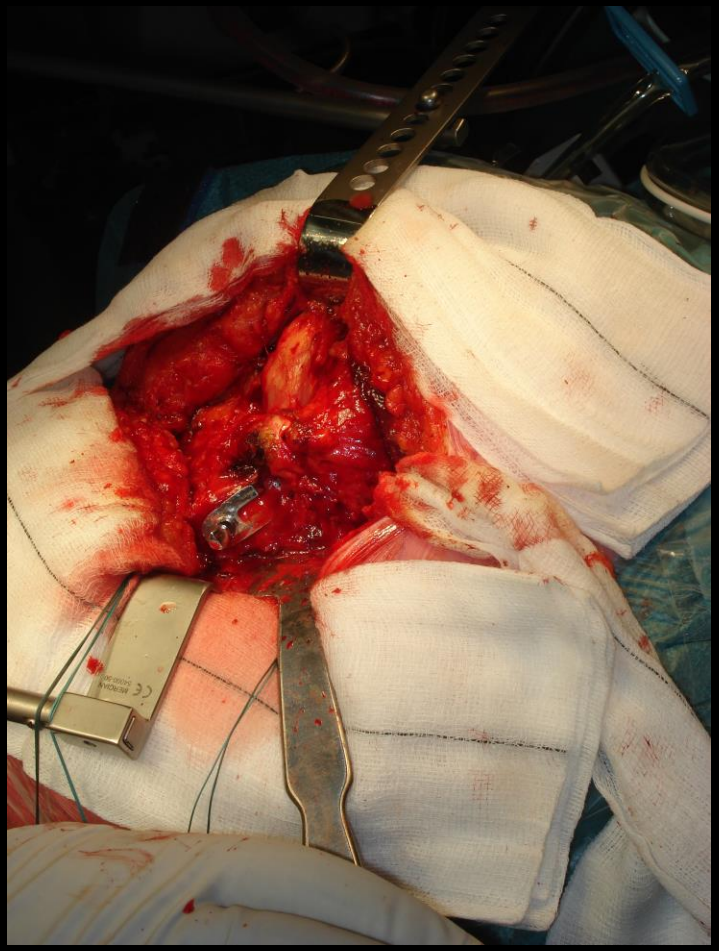


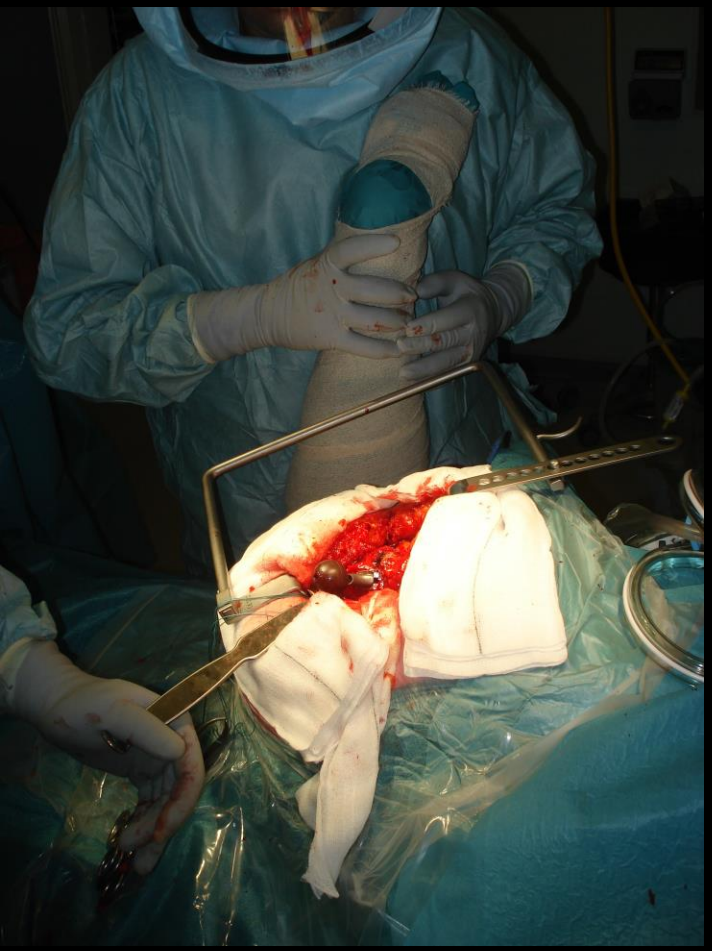


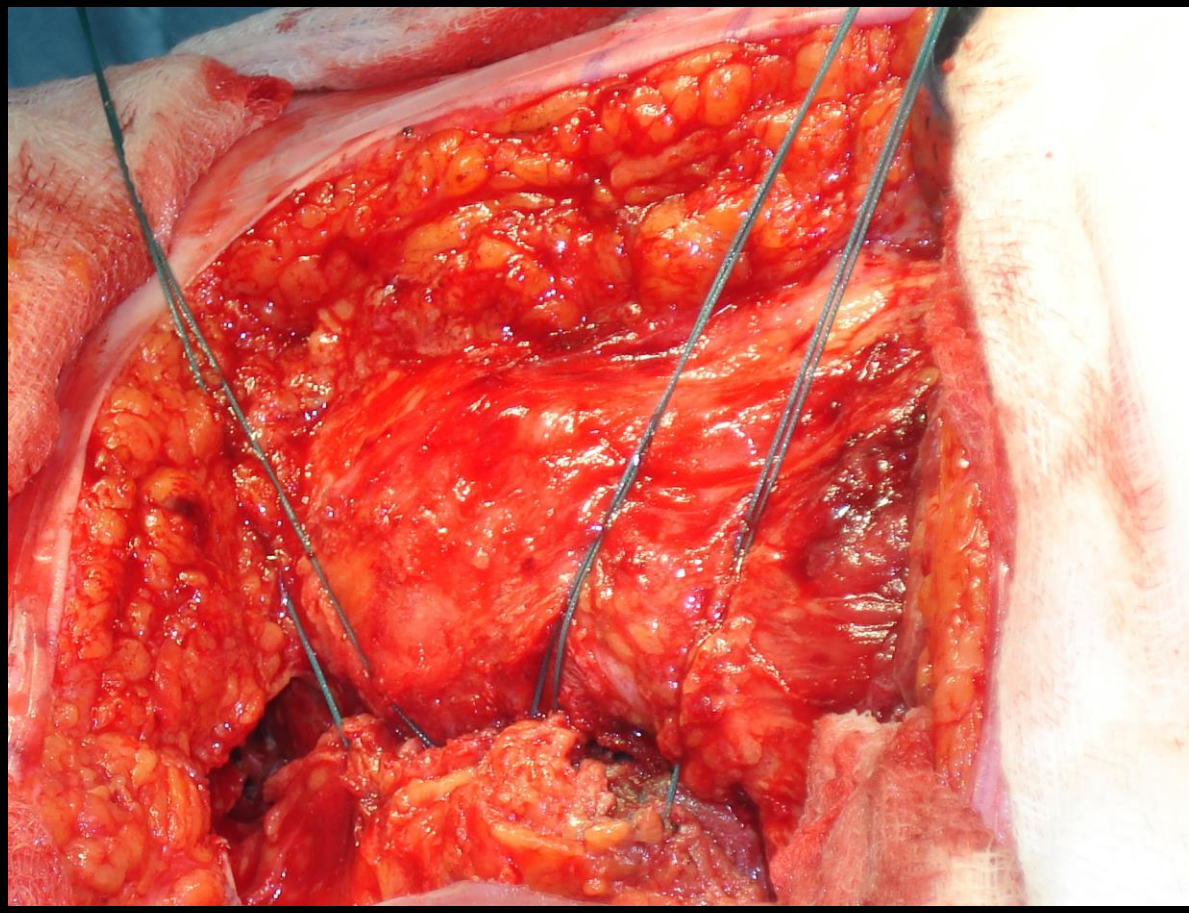






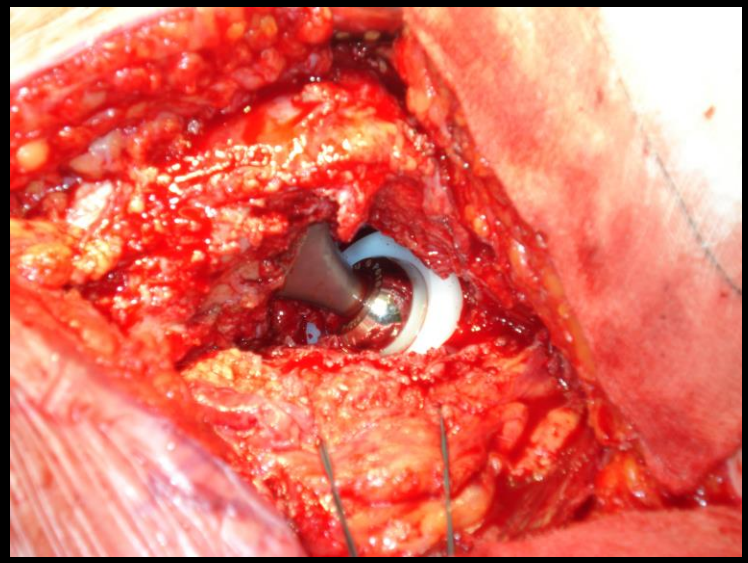


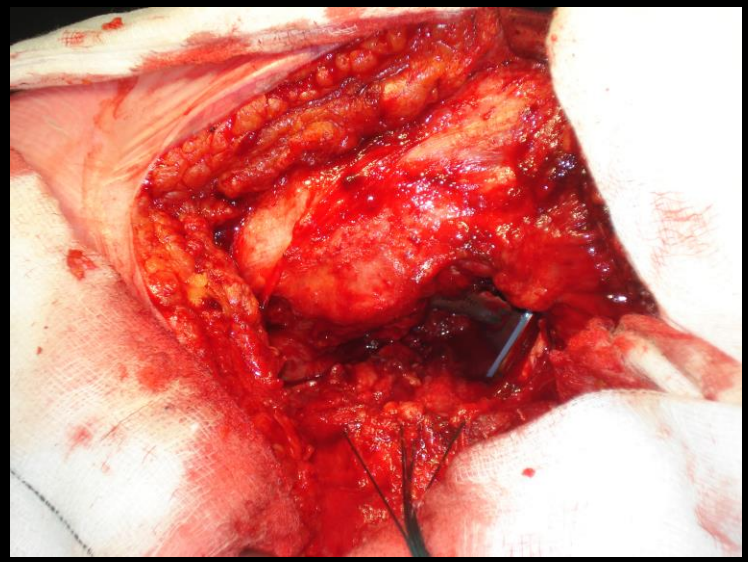






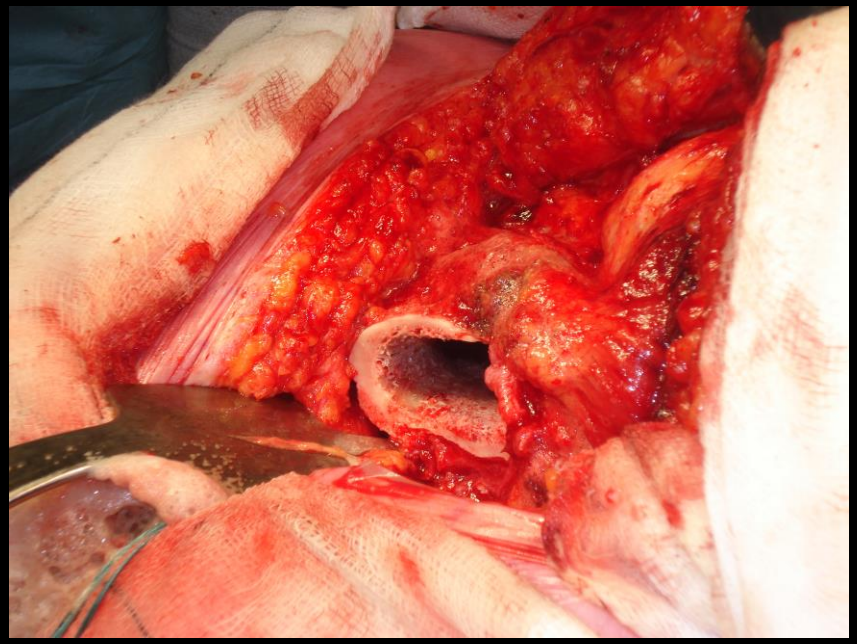


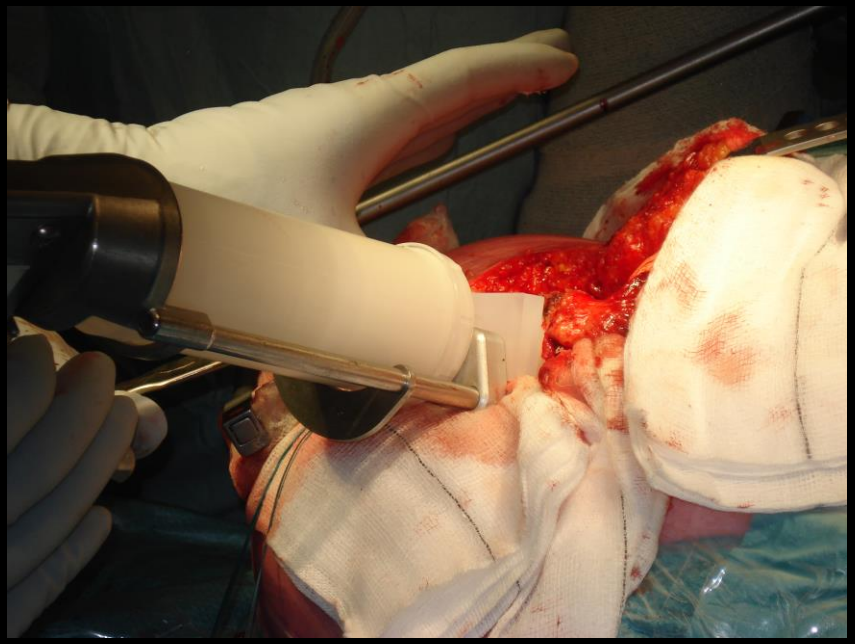



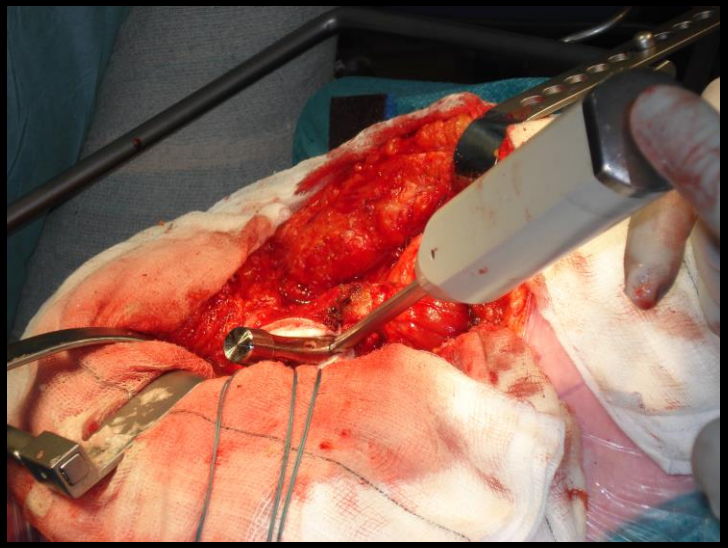


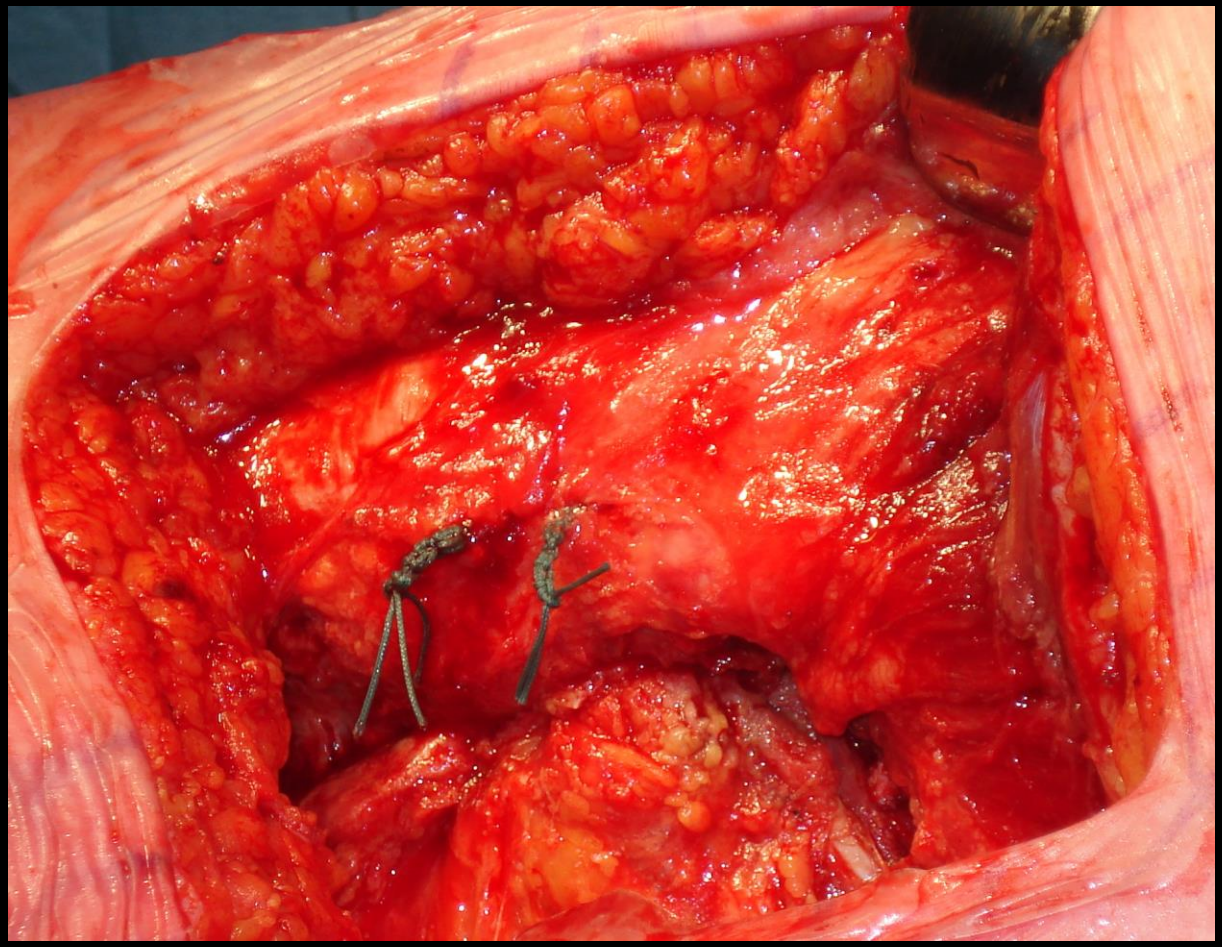
COMBINED ANTEVERSION

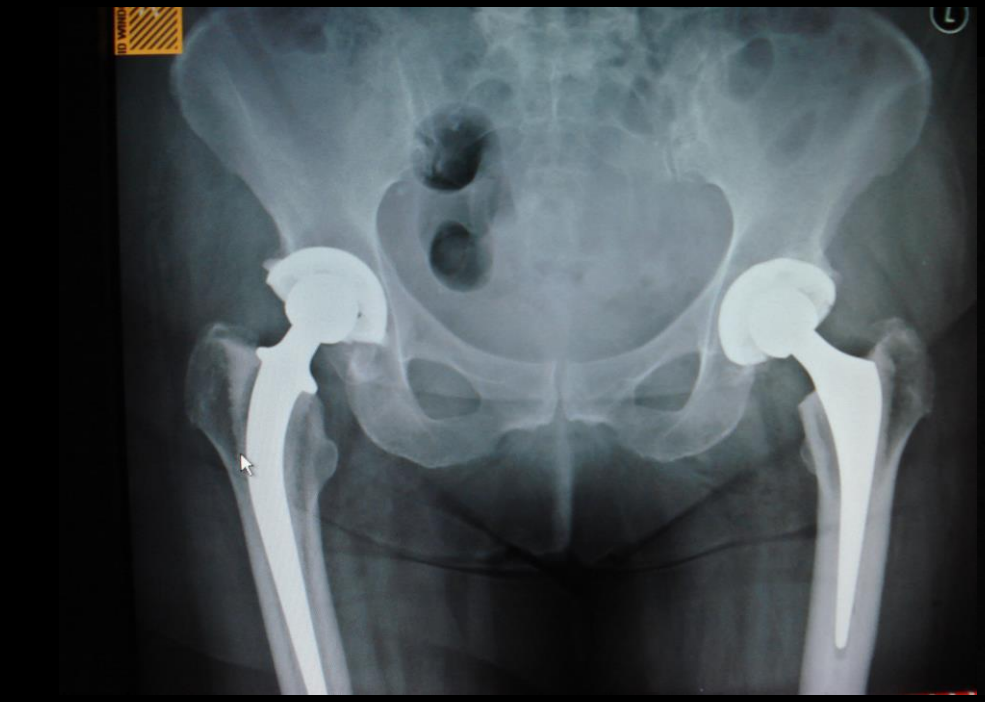
20 DEG-30DEG MEN
30DEG -45 DEG WOMEN

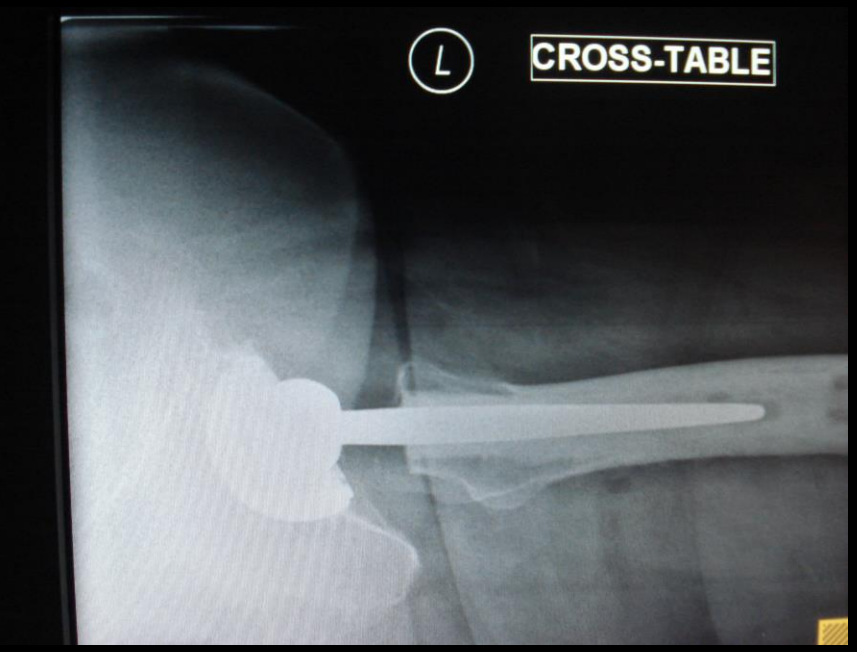








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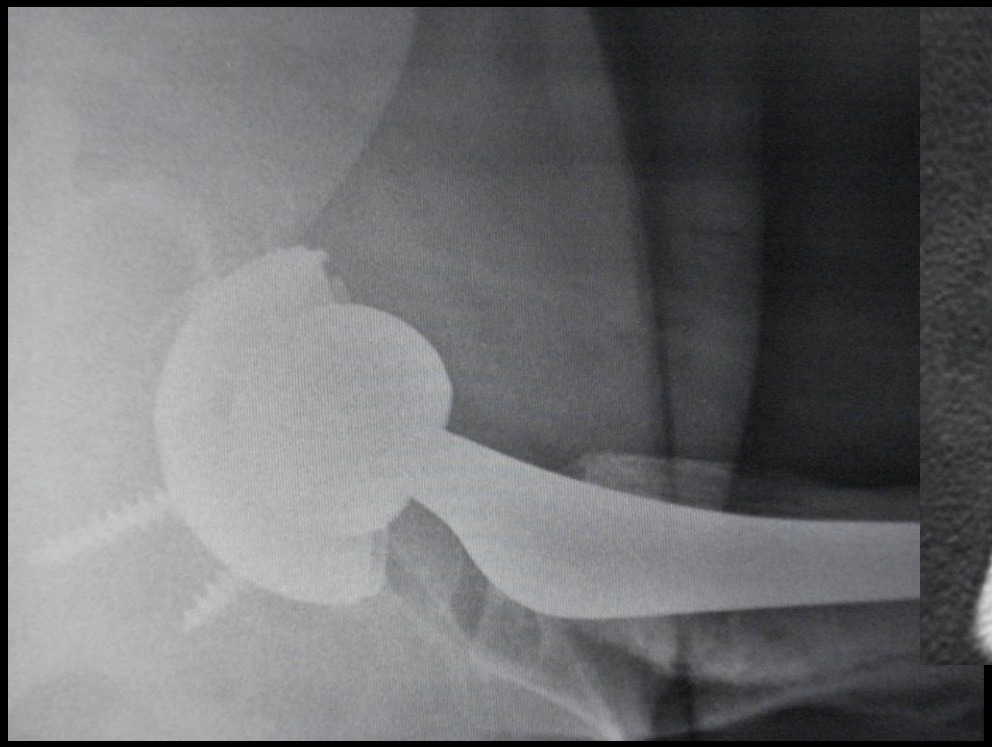
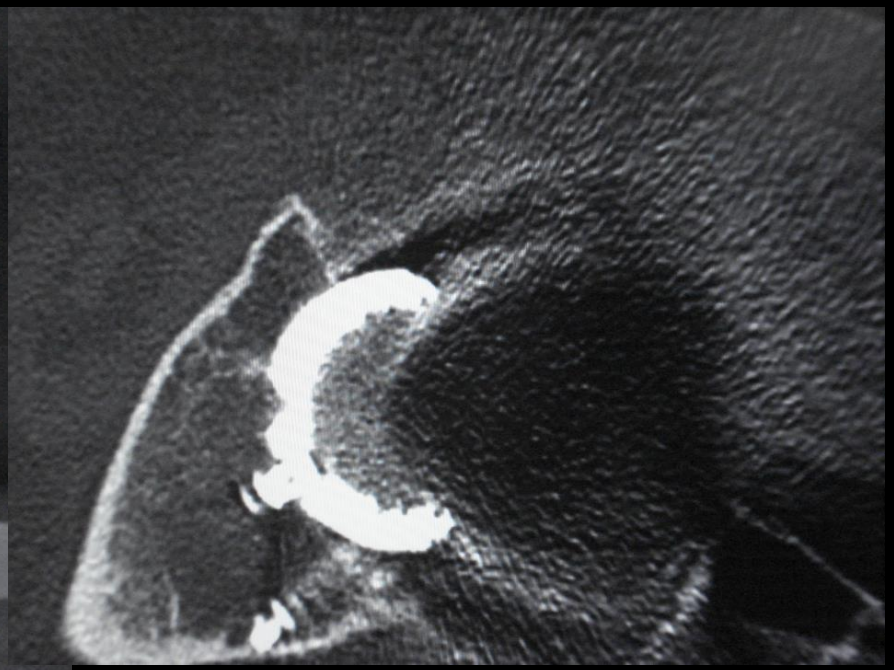
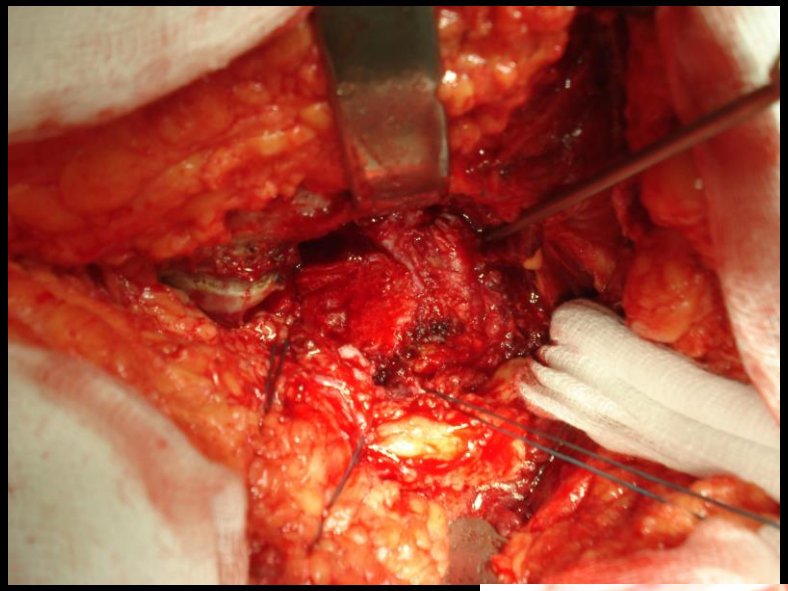
CROSS-TABLE

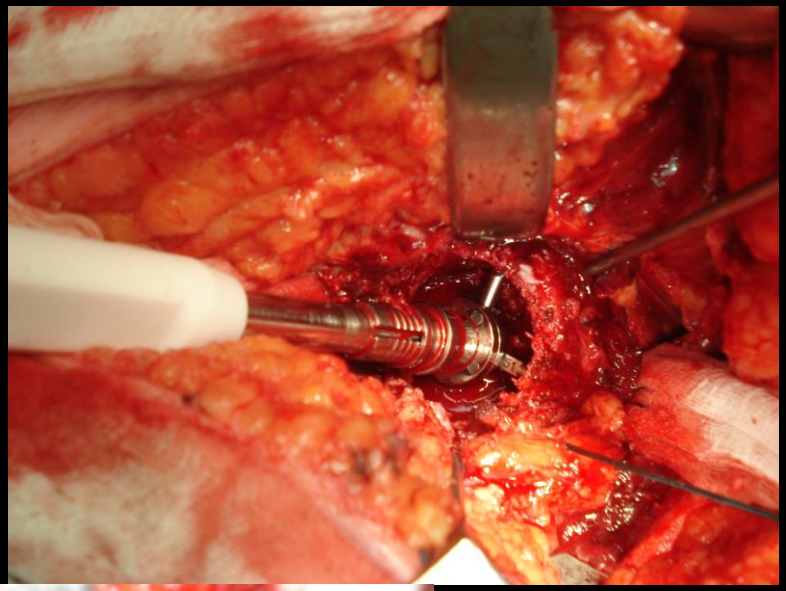


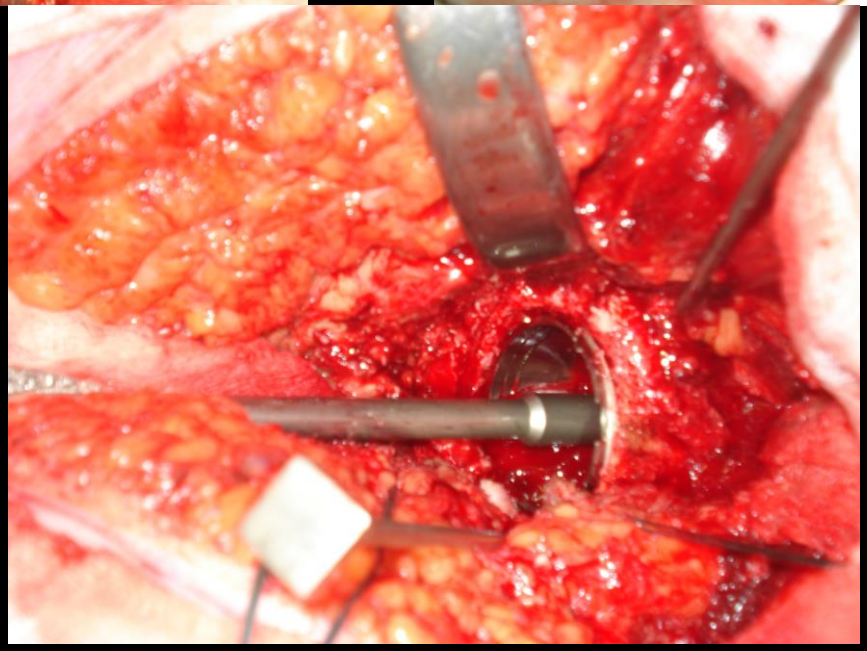


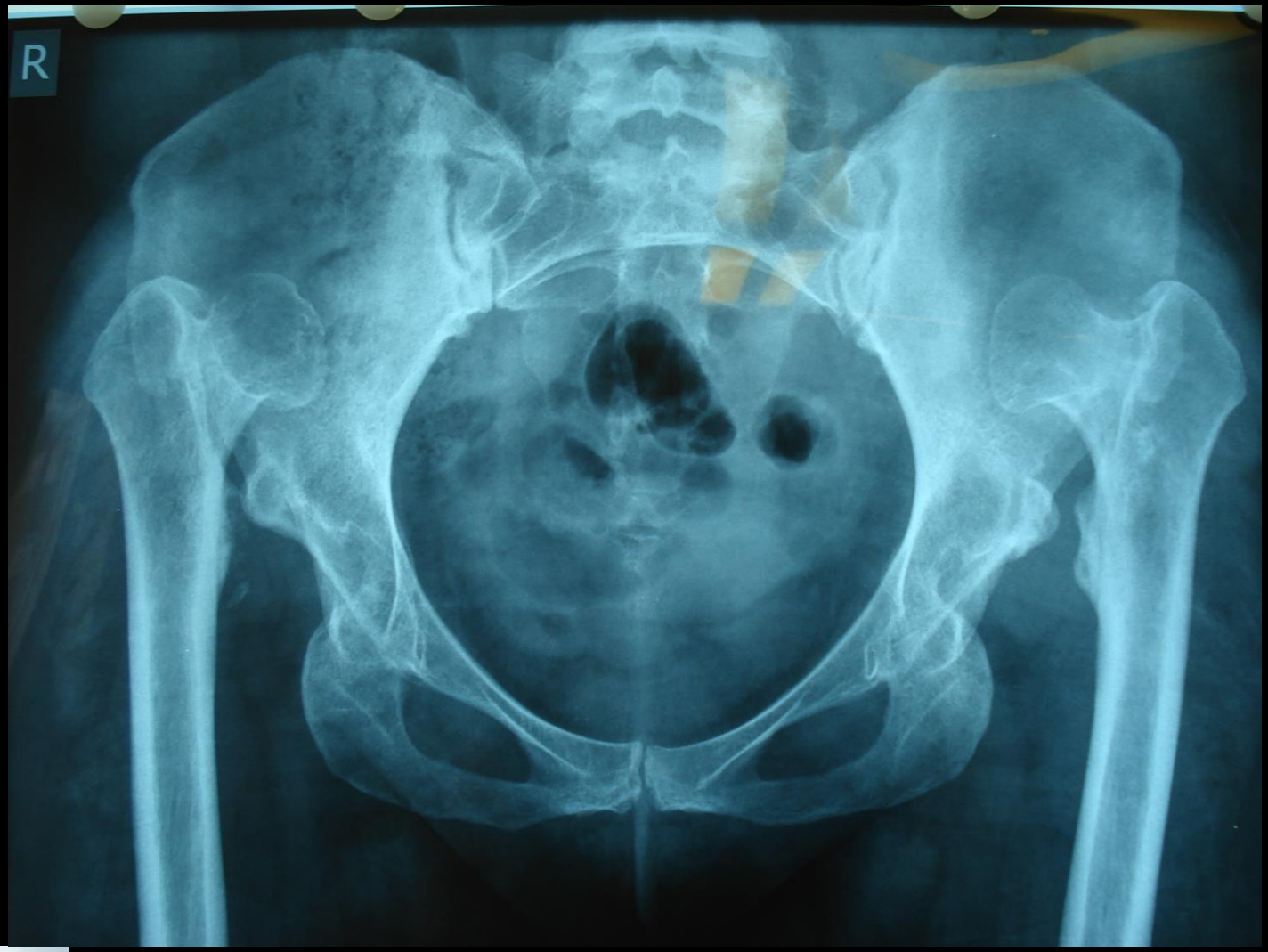
COMPLEX PRIMARY TOTAL HIP REPLACMENT


Dose=238





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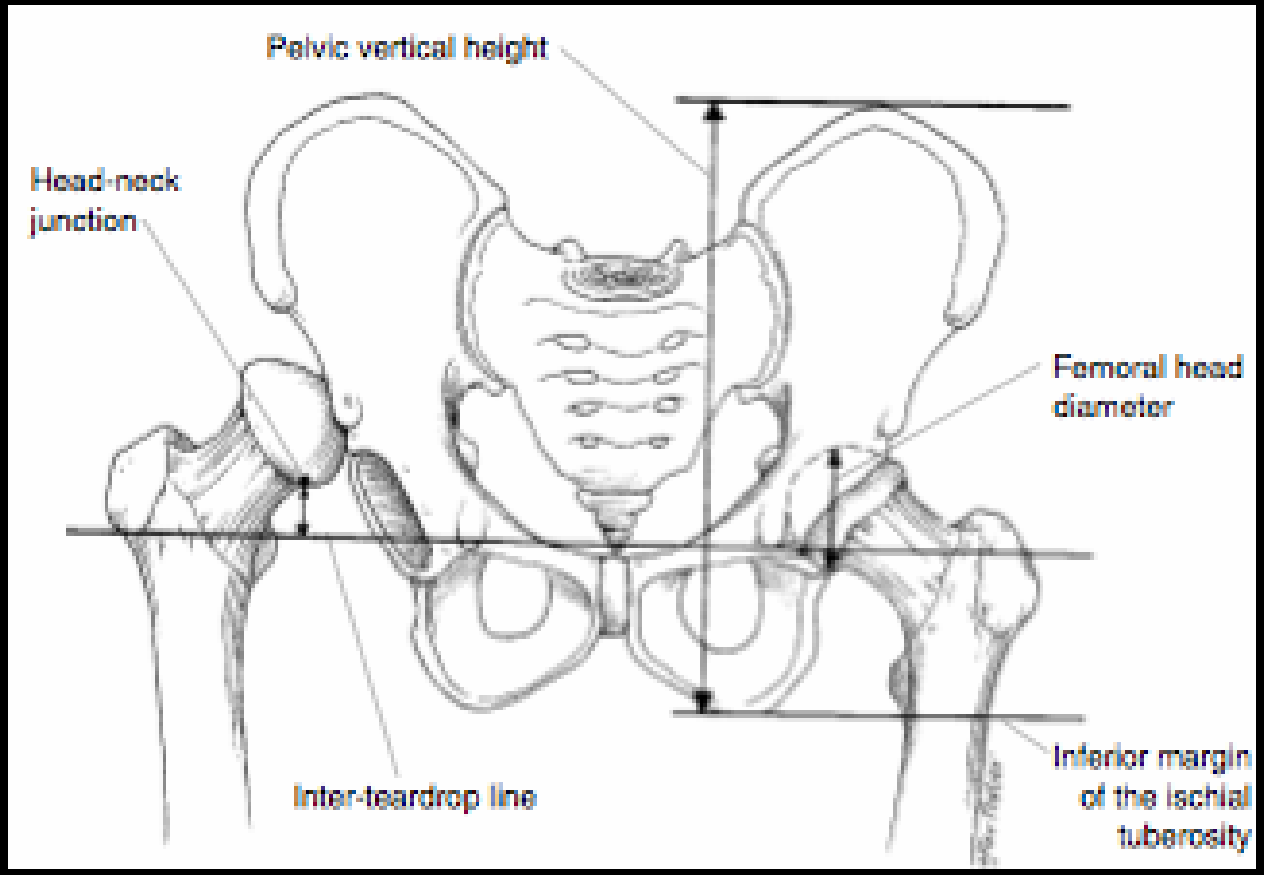
Crowe classification

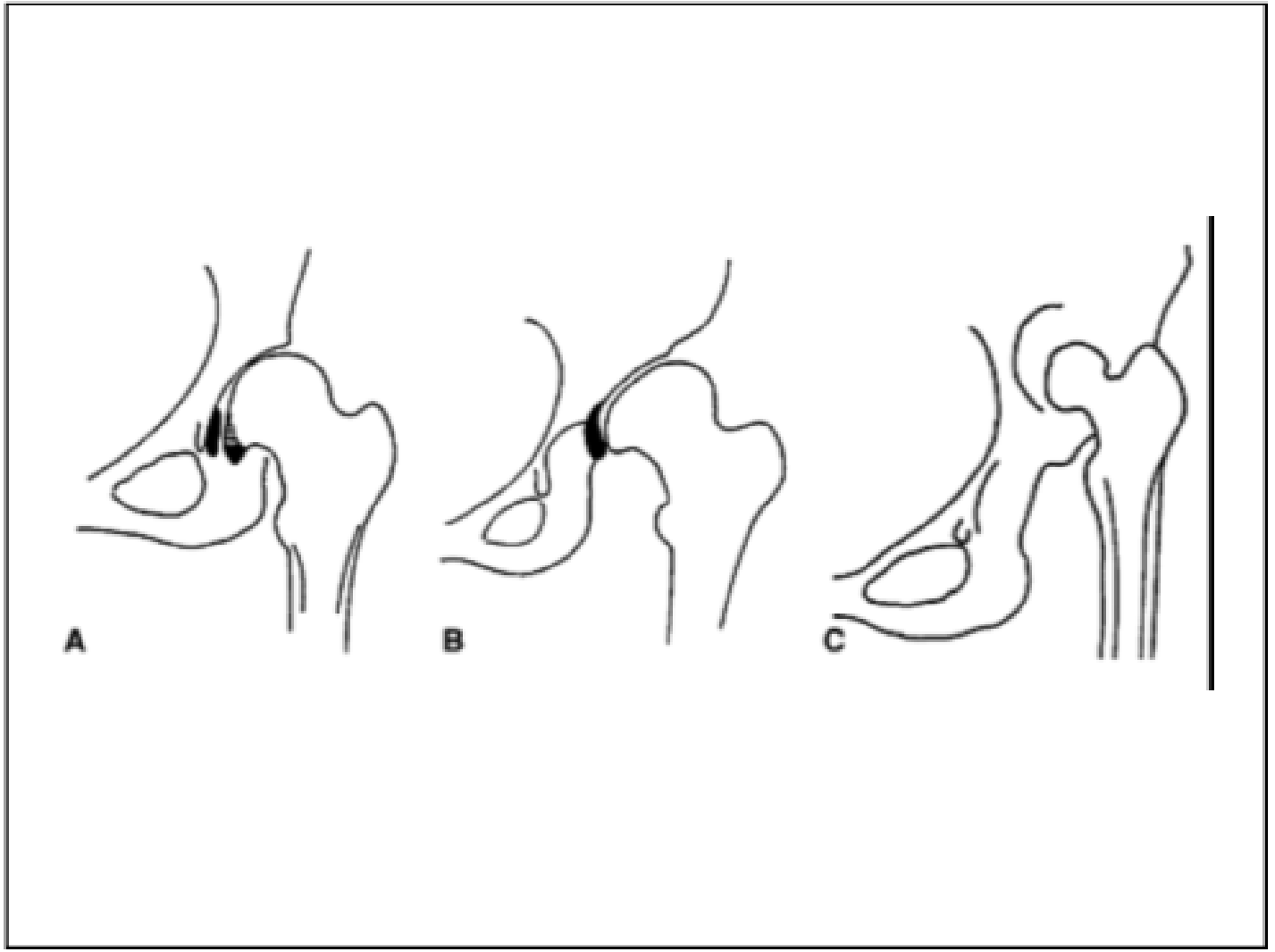
Measurement of proximal migration from the inter-tear drop line

Crowe I Proximal subluxation of <50% of the height of the femoral head
Crowe II 50-75% subluxation
Crowe III 75-100% subluxation
Crowe IV >100 % subluxation


Pelvic vertical height
Head-neck junction
Femoral head diameter
Inter-teardrop line
Inferior margin of the ischial tuberosity

Hartofilakidis classification

- **Dysplasia** – Femoral head subluxated but still contained in the original acetabulum
- **Low** – Femoral head articulates with the false acetabulum that partially overlaps the true acetabulum
- **High** – Femoral head articulates with a hollow in the acetabular wing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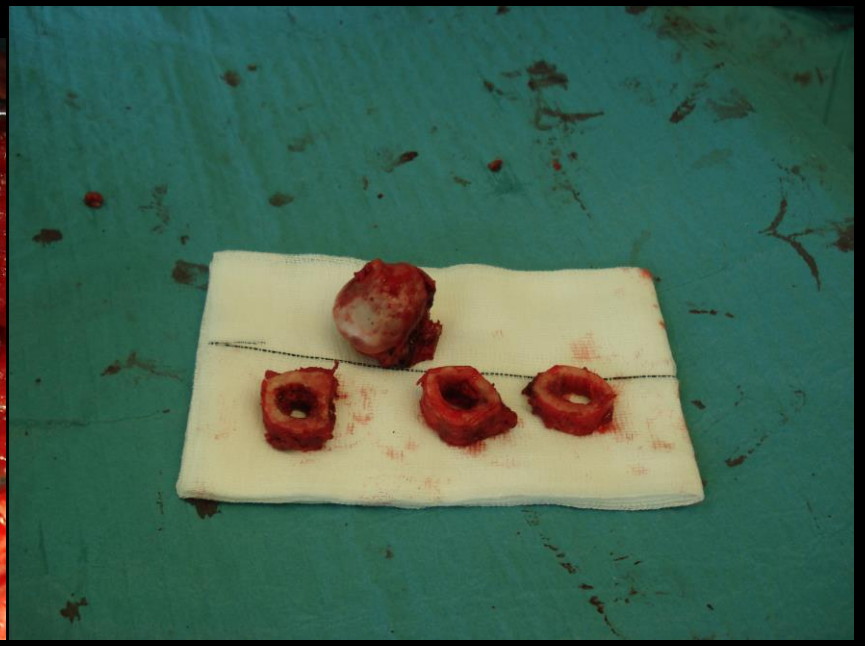

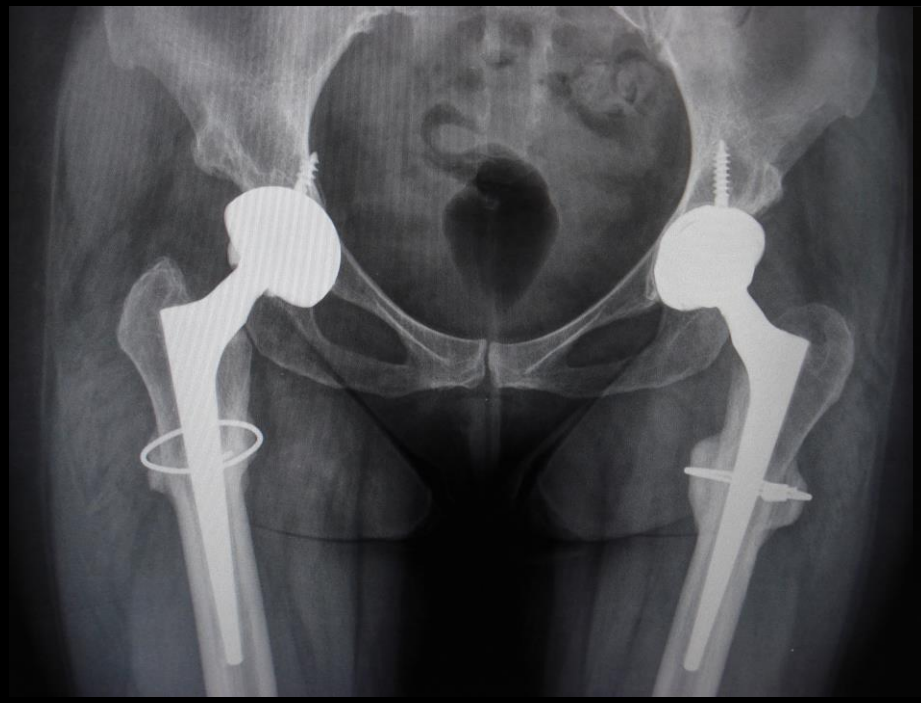

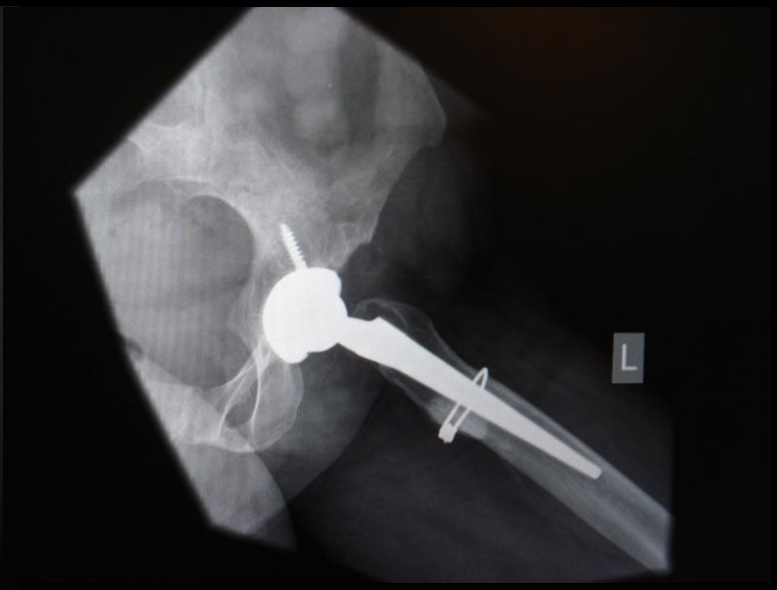
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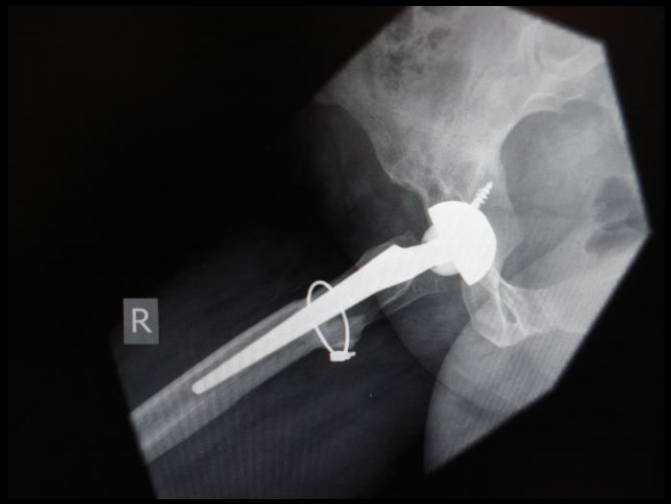
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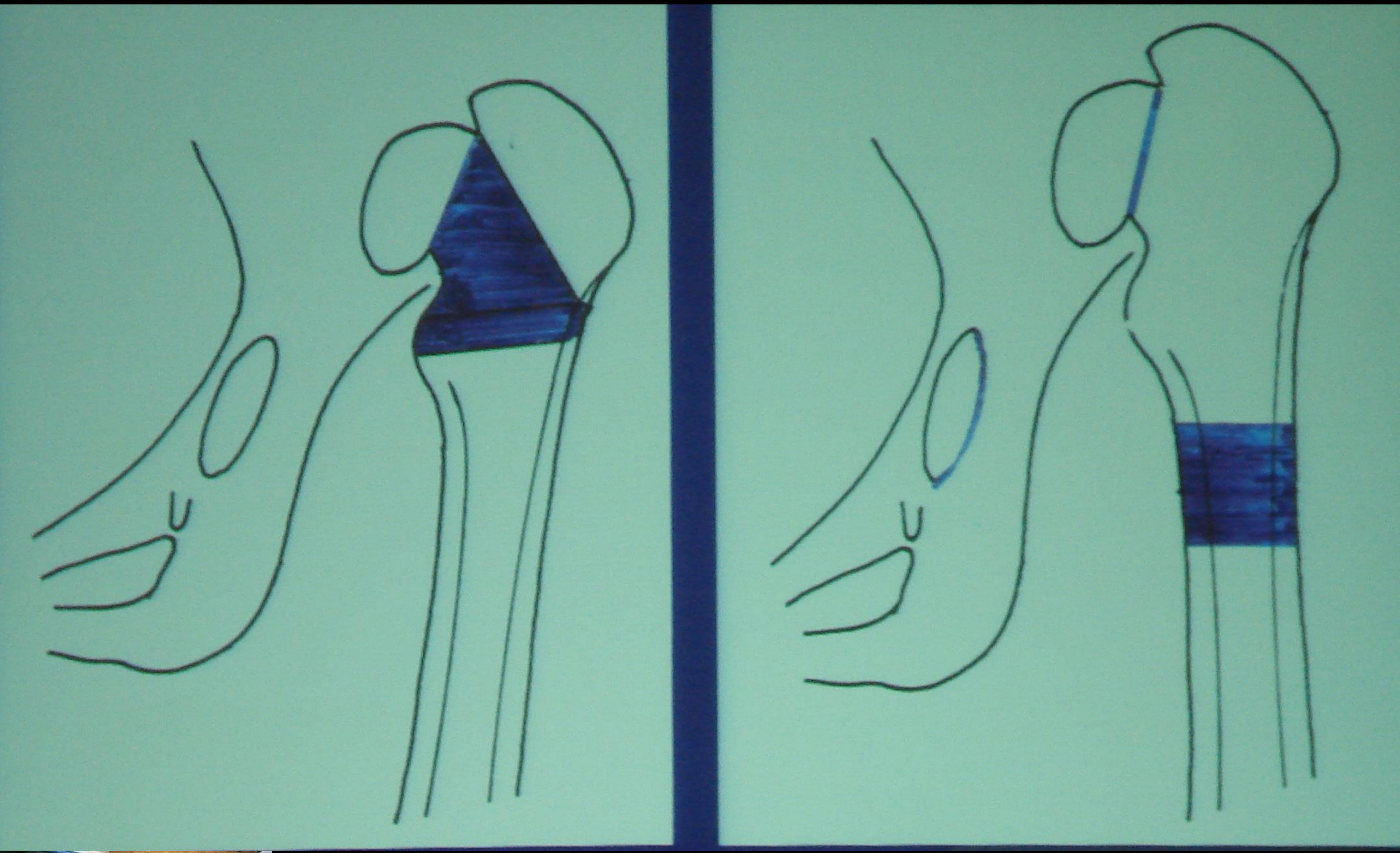

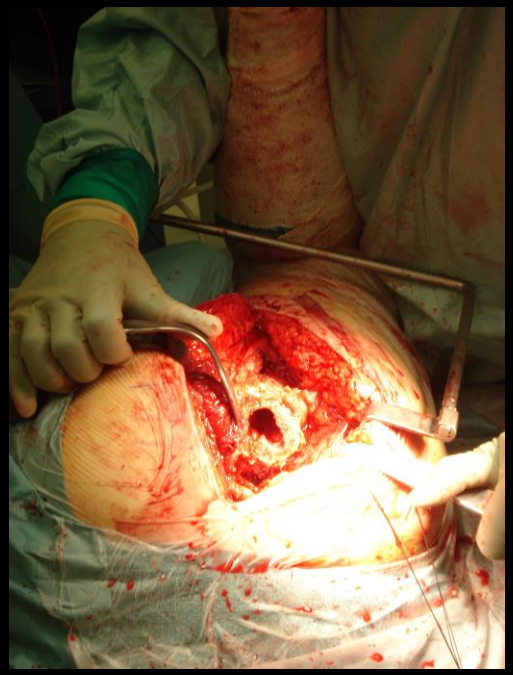

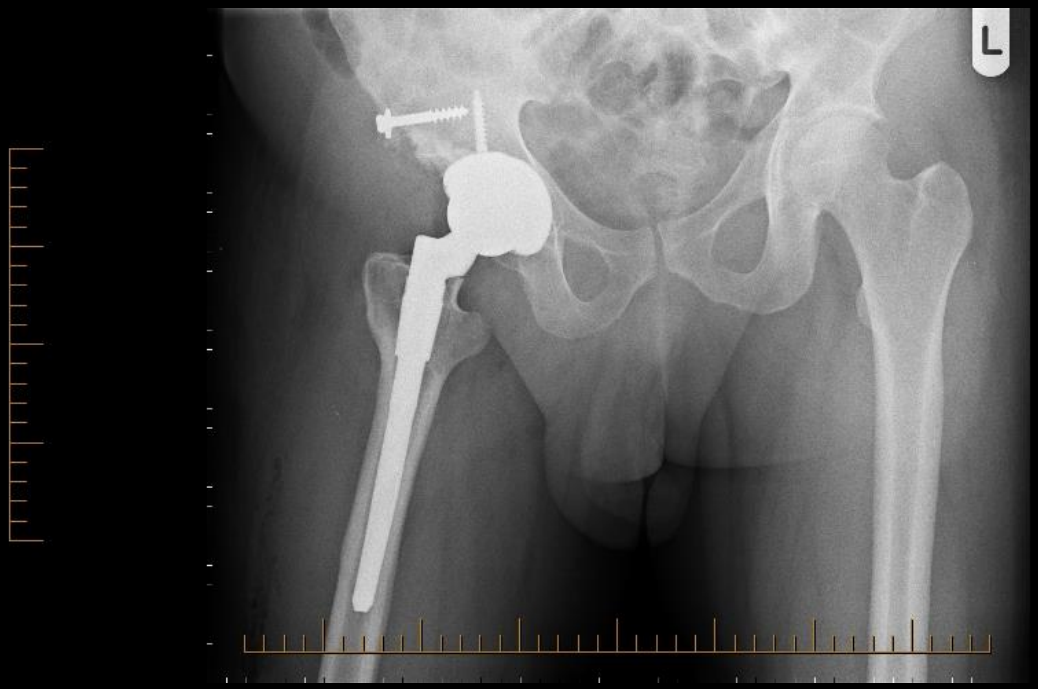
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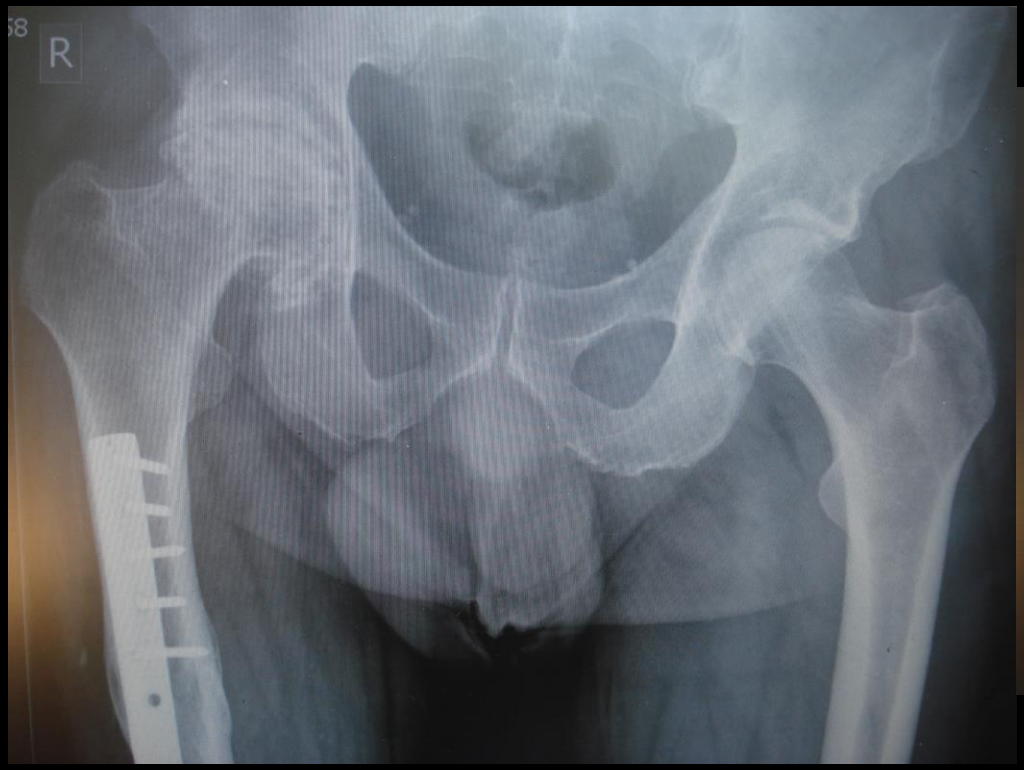
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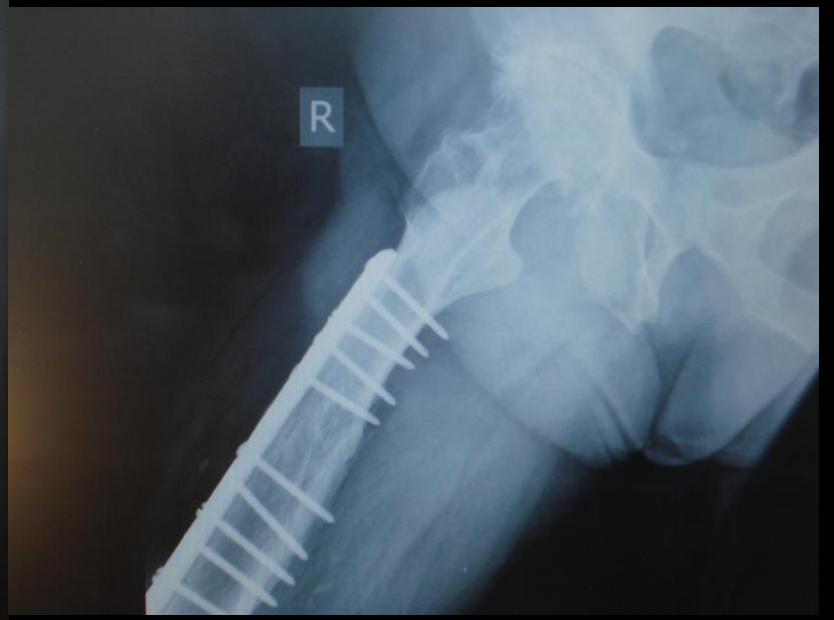
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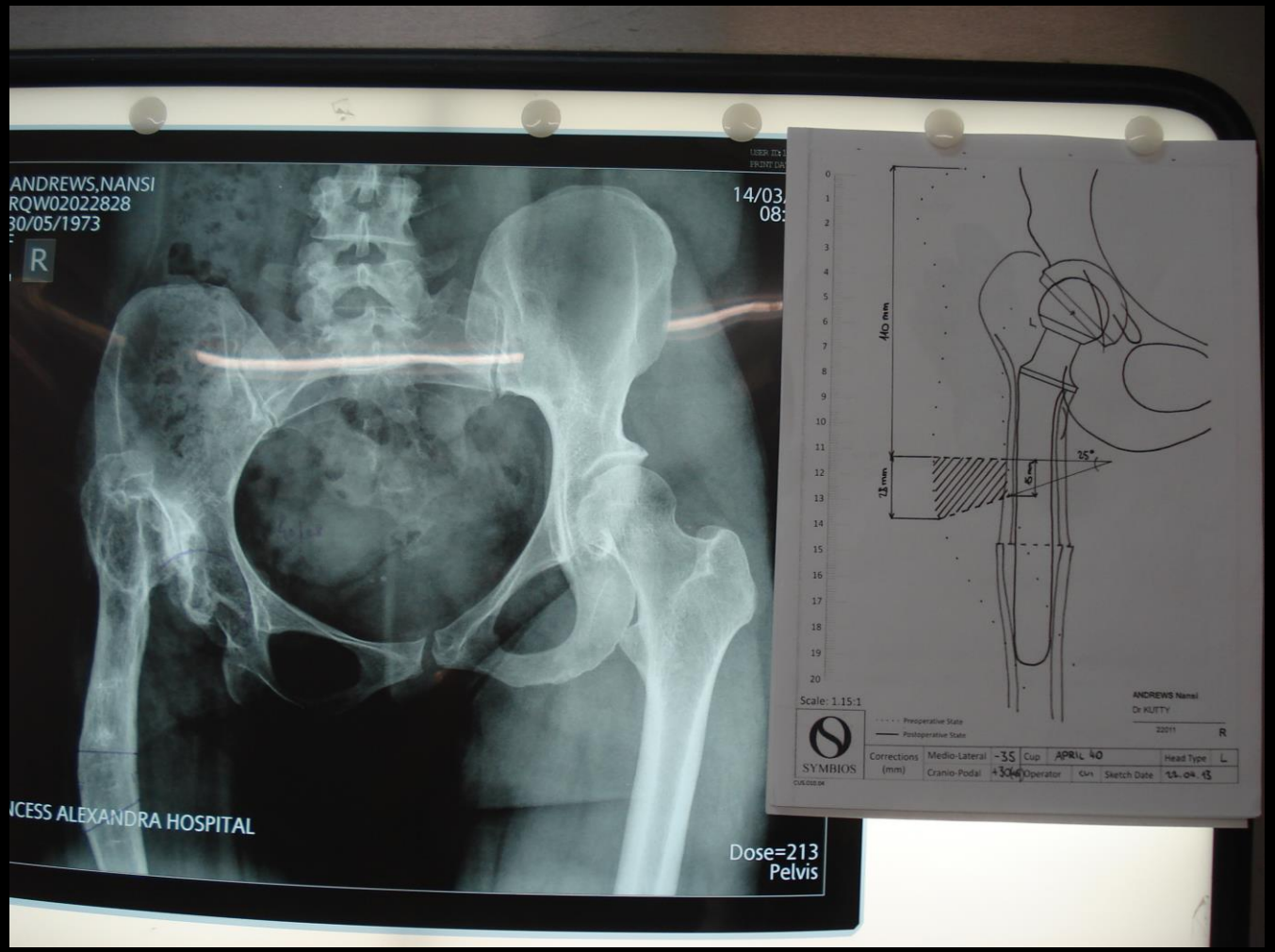
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14/03/
08:
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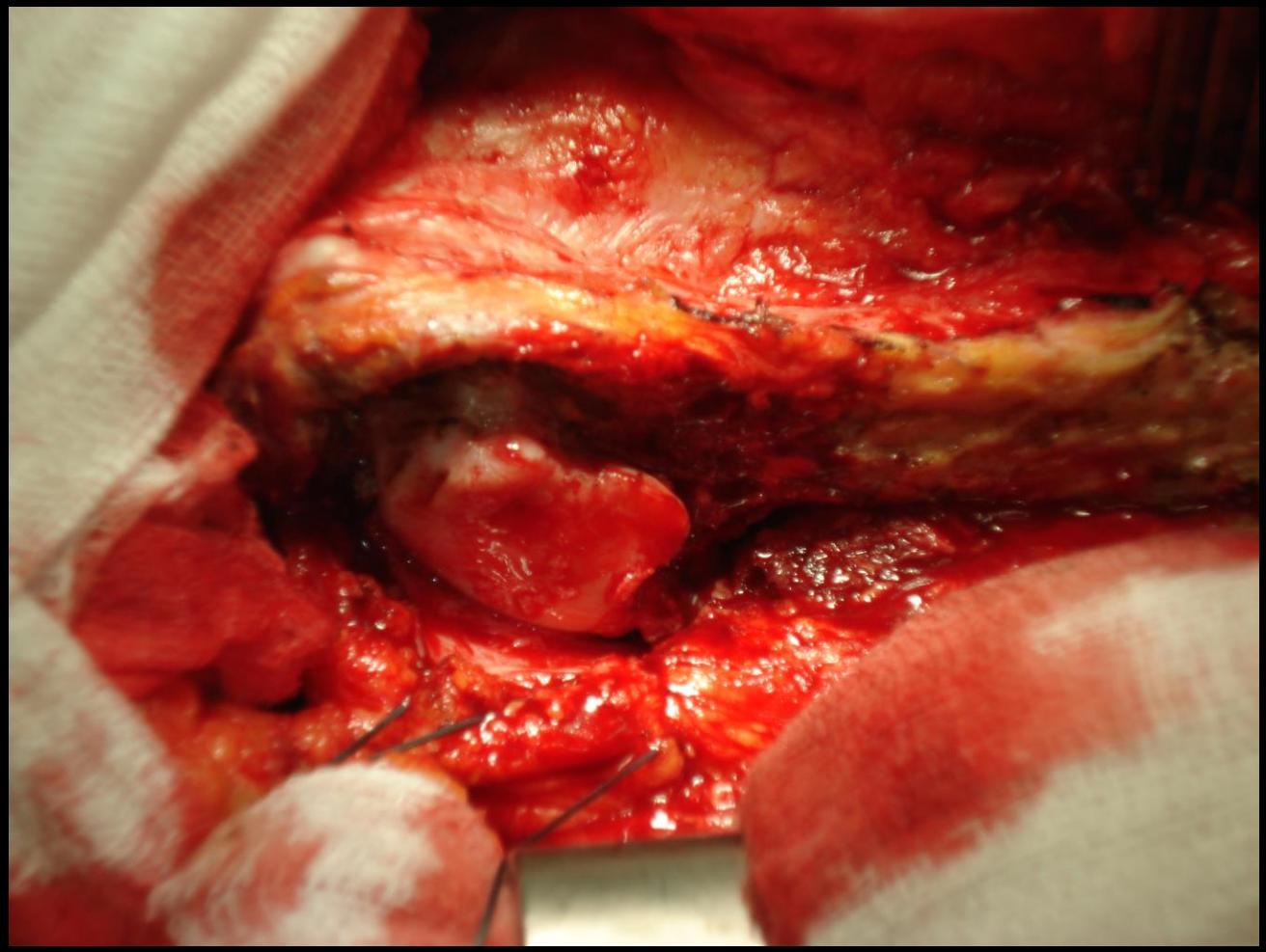
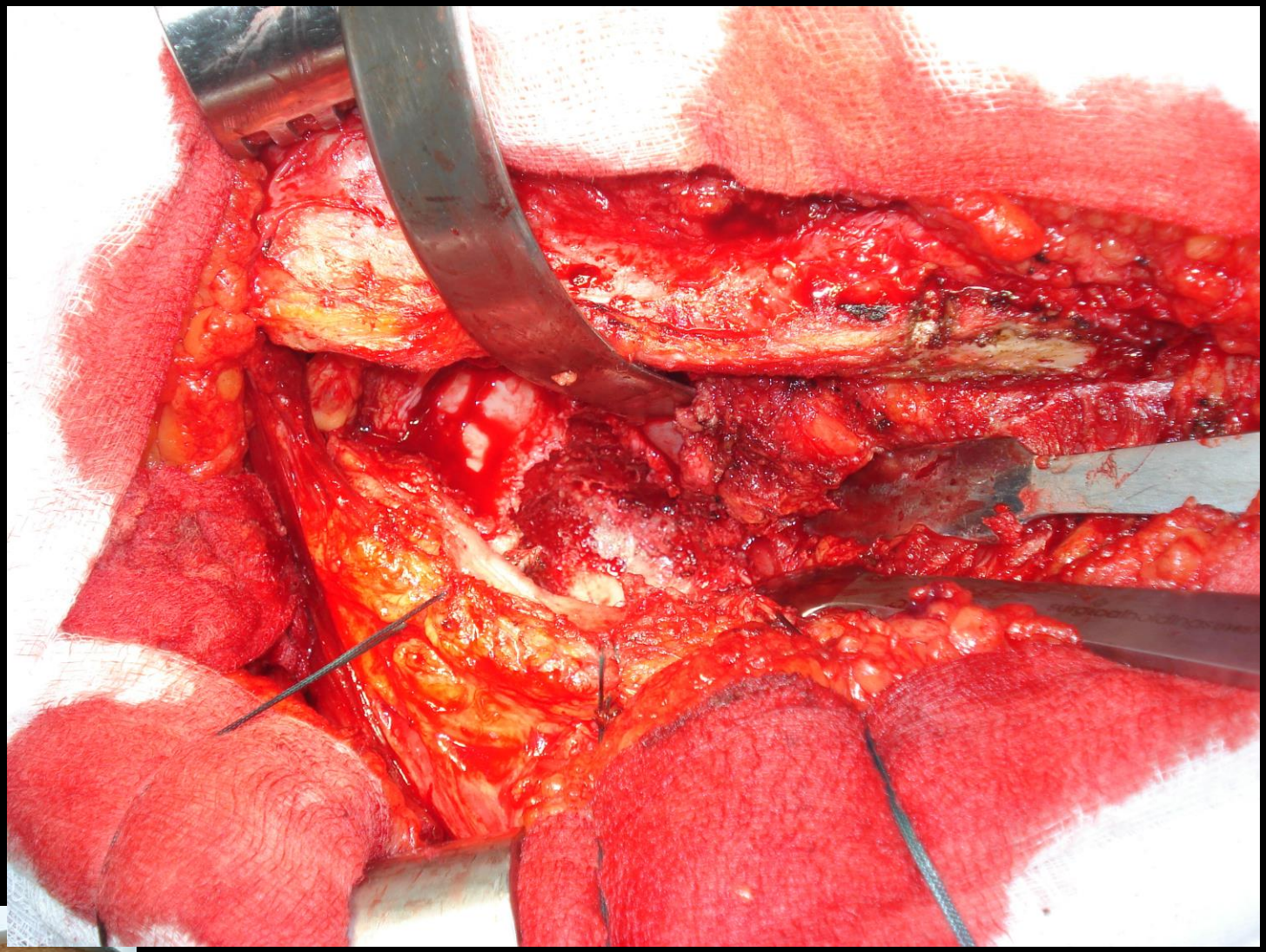
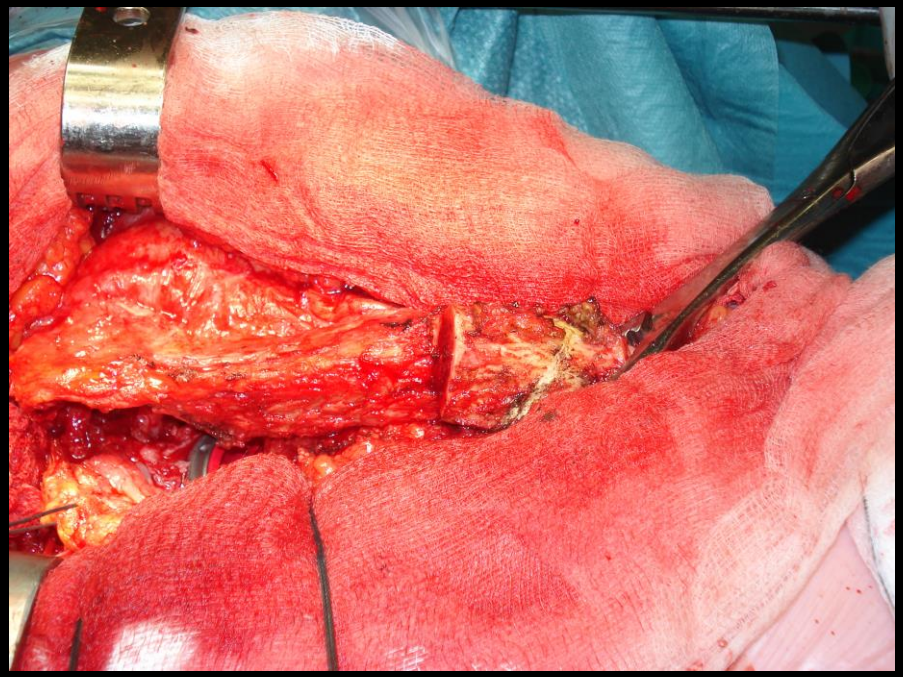
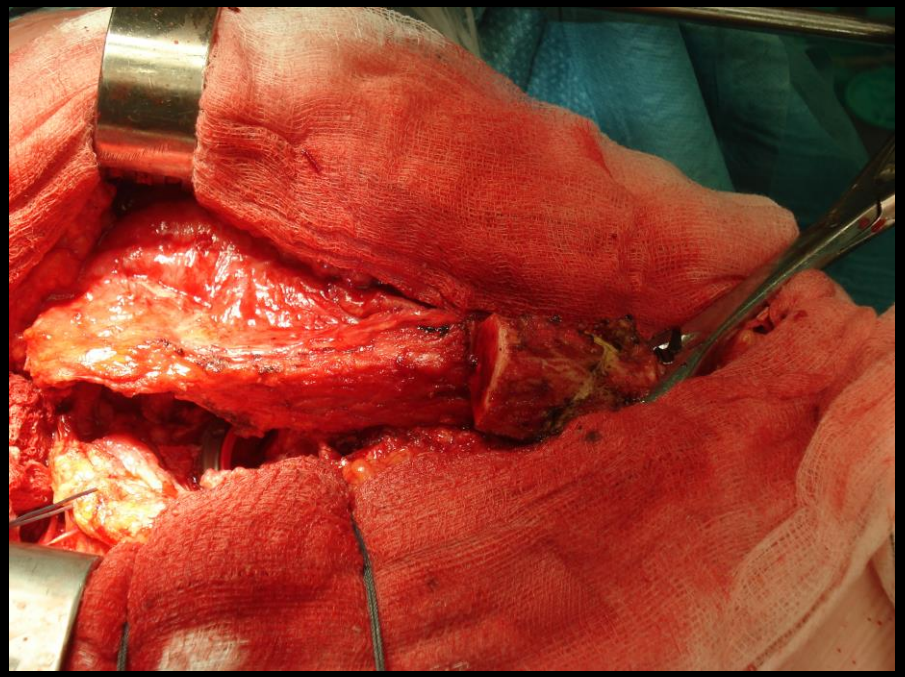
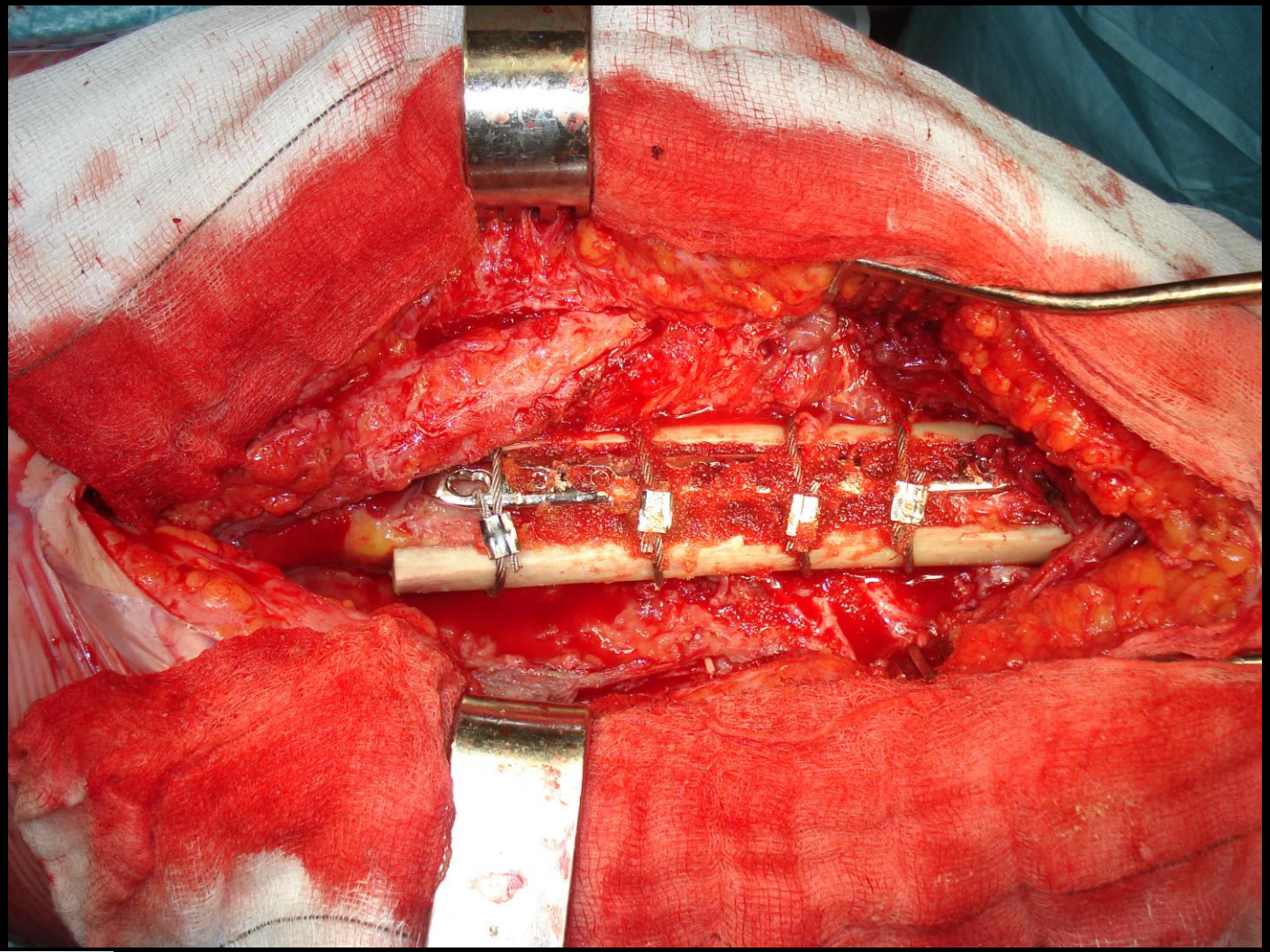
25°
13 mm
6 mm
Scale: 1.15:1
ANDREWS Nansi
Dr KUTTY
22011
R
SYMBIOS
Preoperative State
Postoperative State
Corrections (mm)
Medio-Lateral -3S
Cranio-Podal +3CM
Cup APRIL 40
Operator
Head Type L
Sketch Date 14.04.13

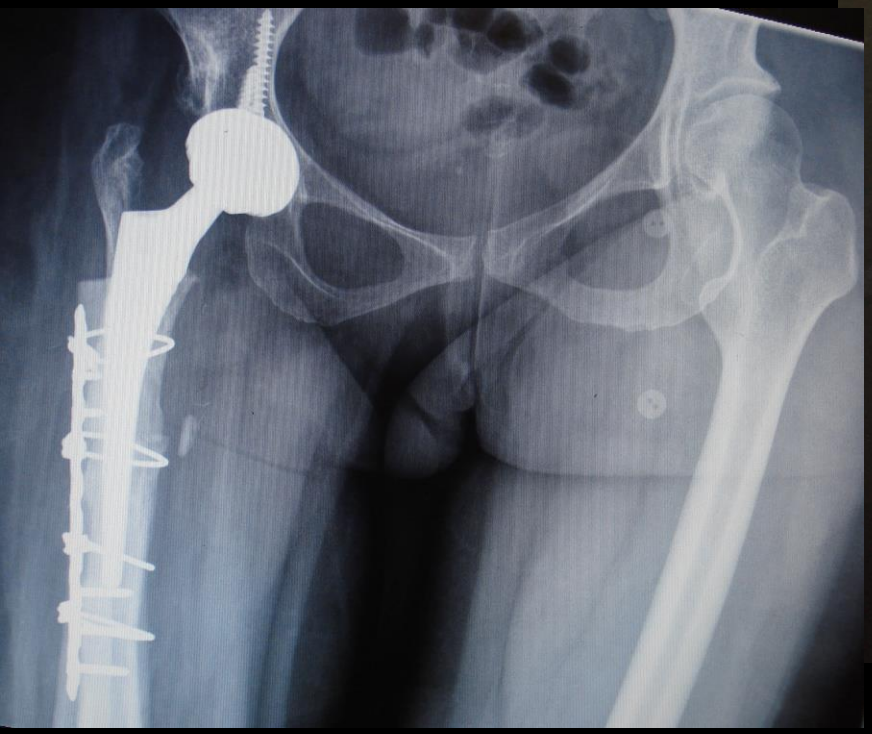


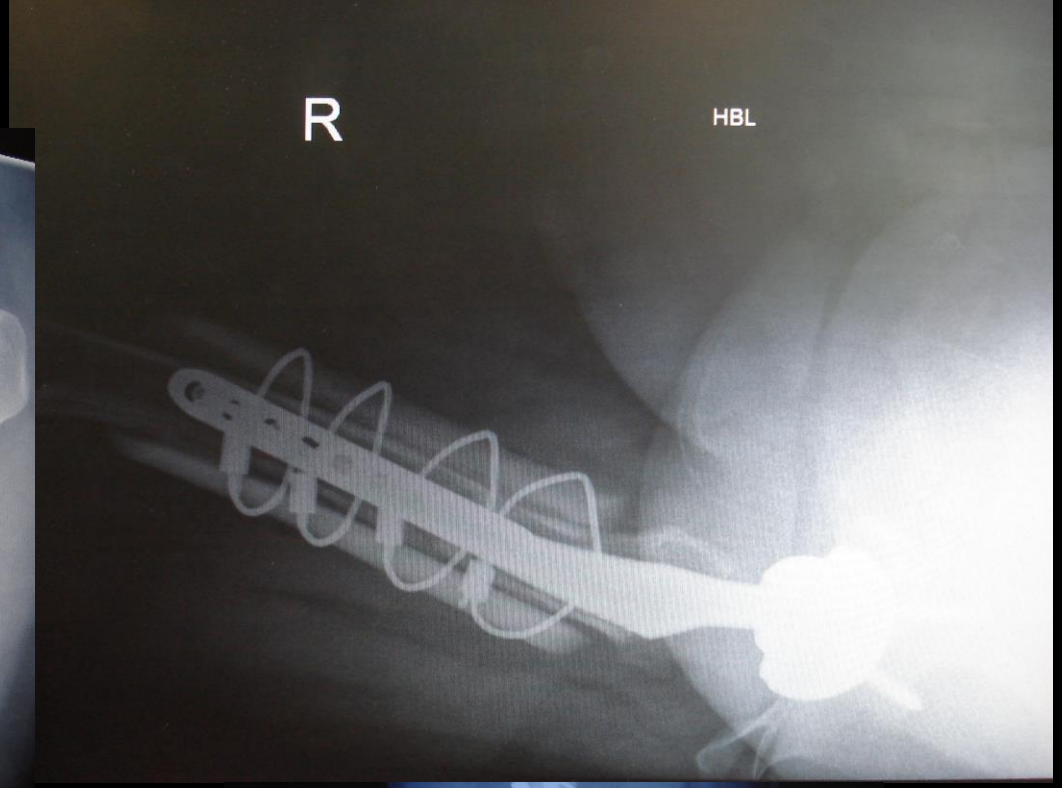








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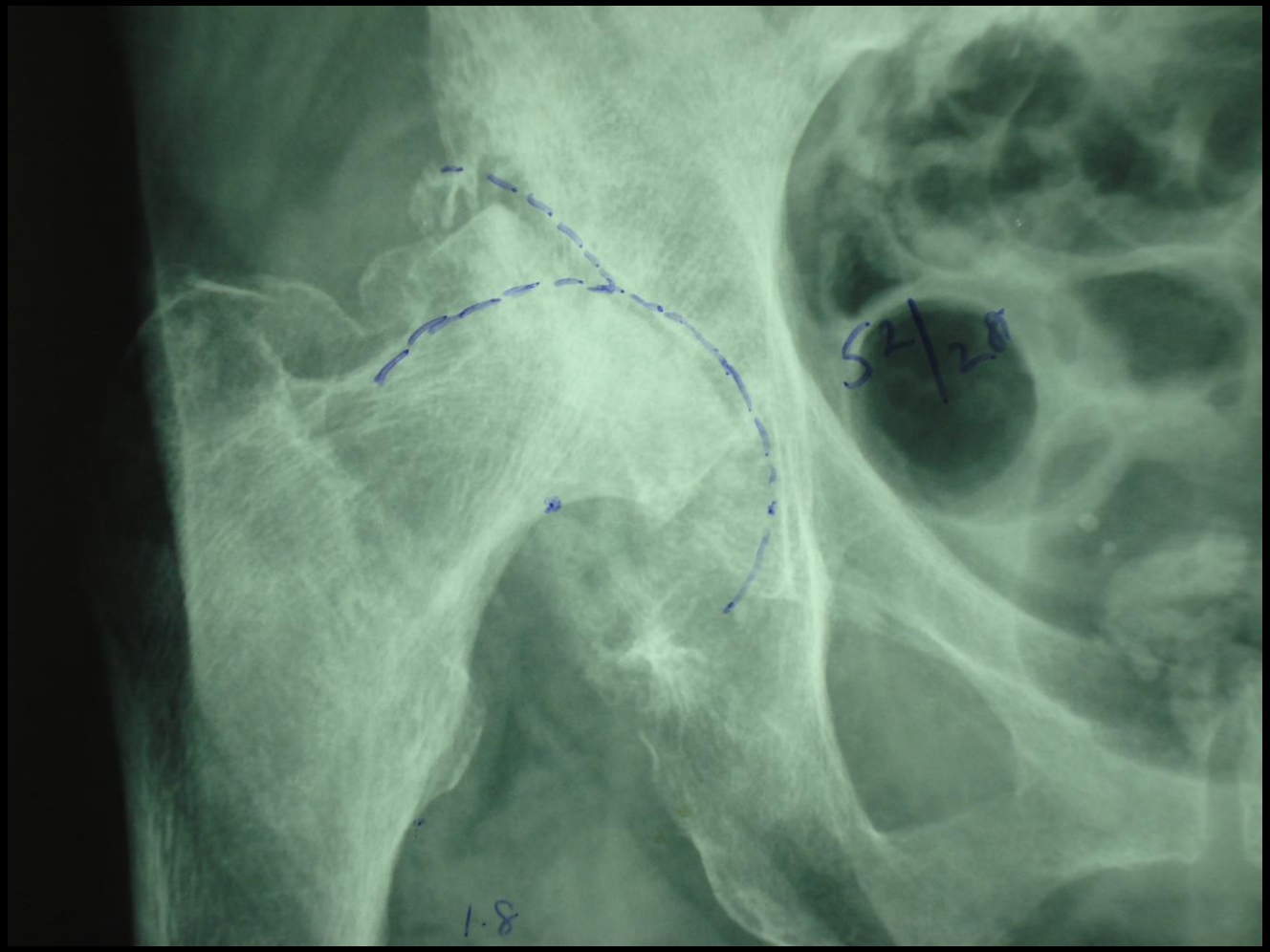
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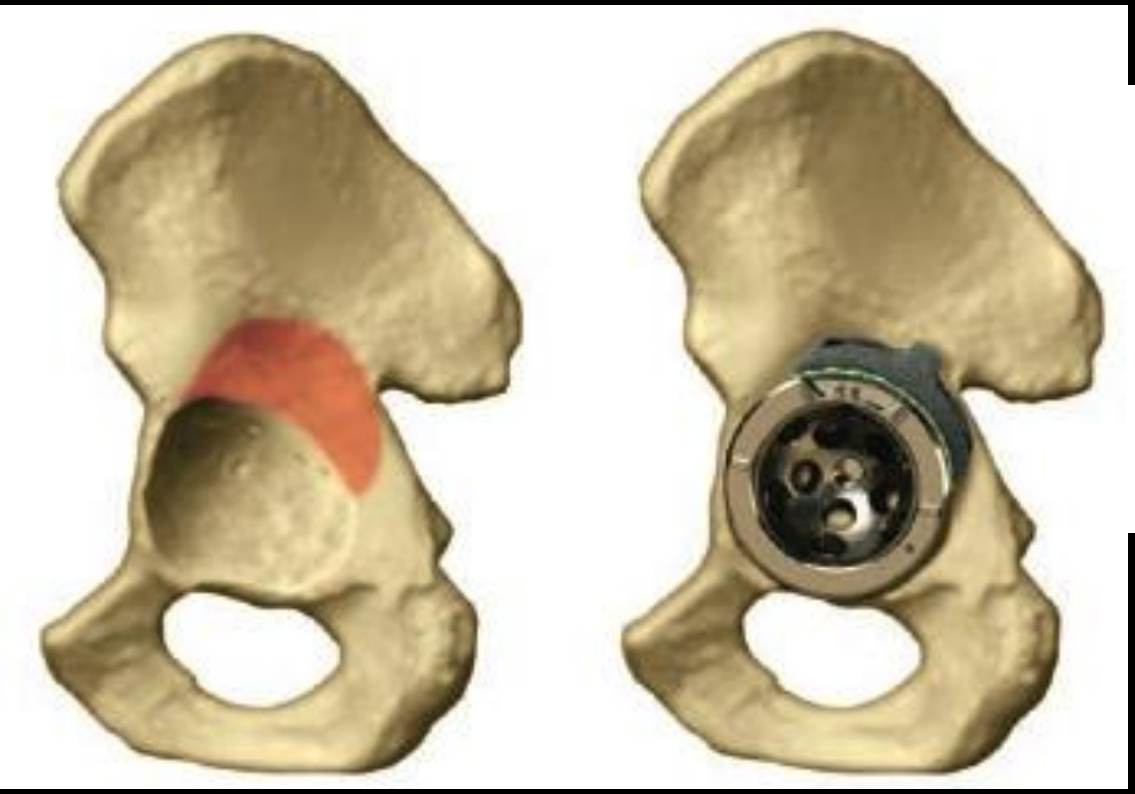
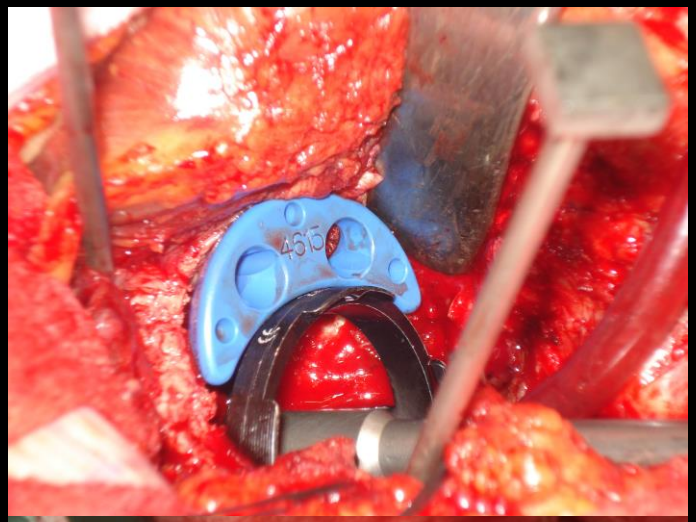
IIIA – Segmental Defect – " Flying Buttress Postion"

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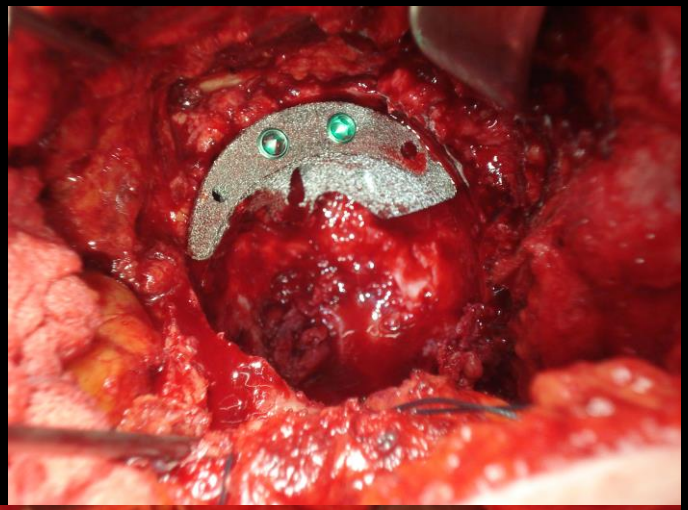

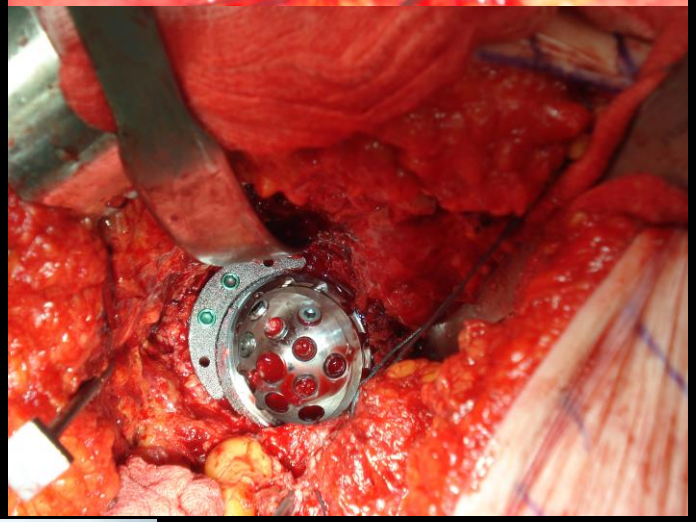

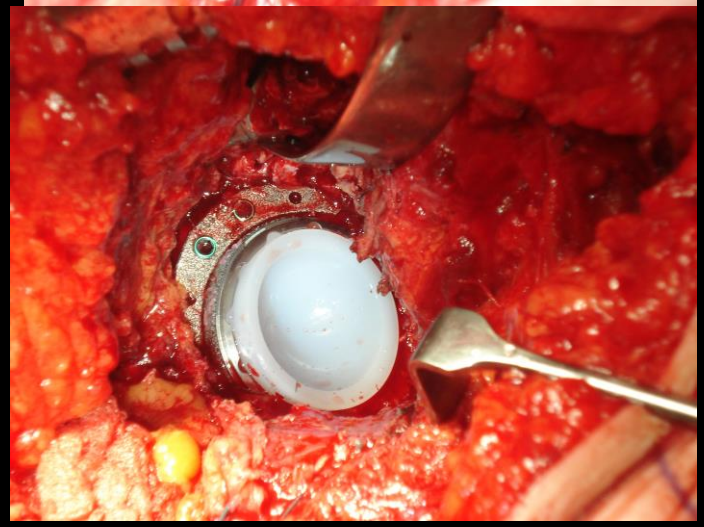

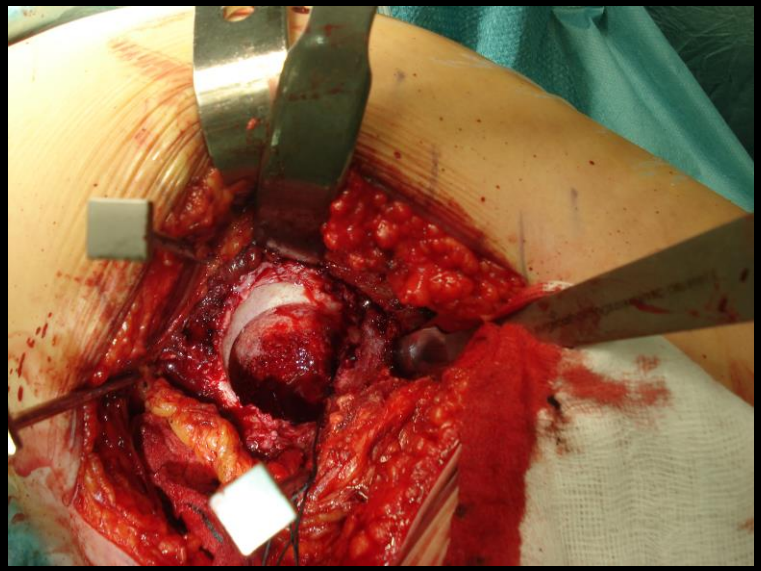

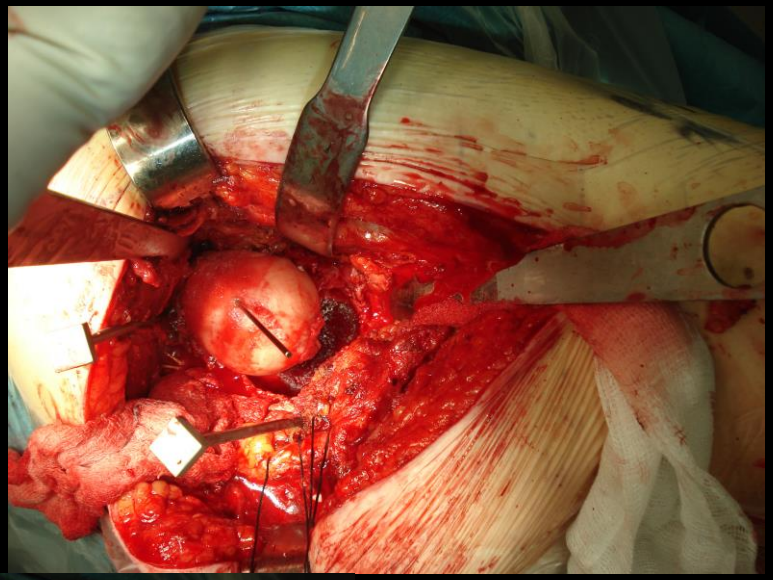

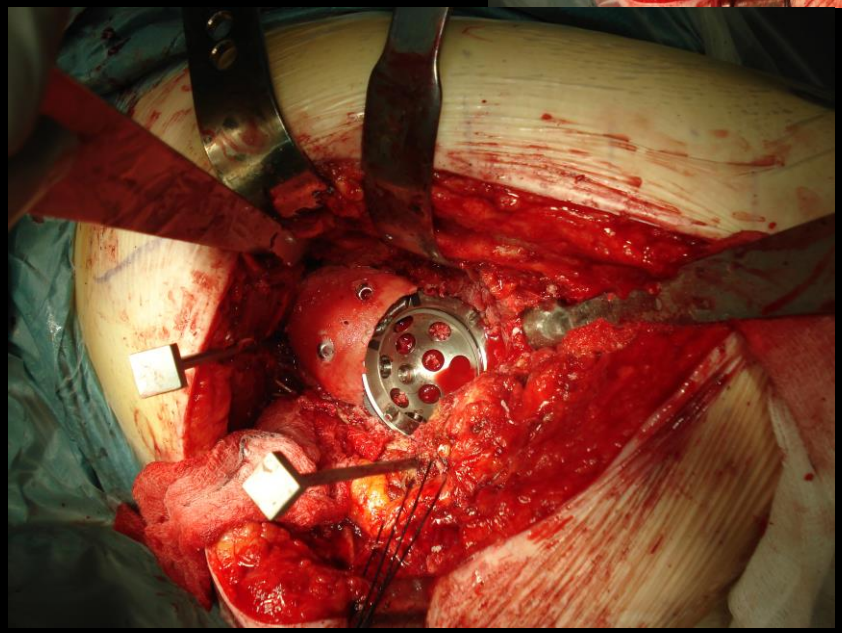

S.KUTTY- PAH- ROYAL LONDON TEACHING- 19/11/2013


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11/08/1929
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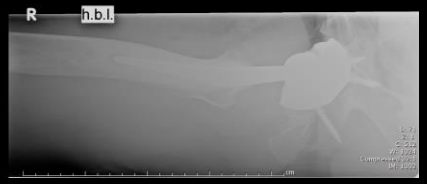
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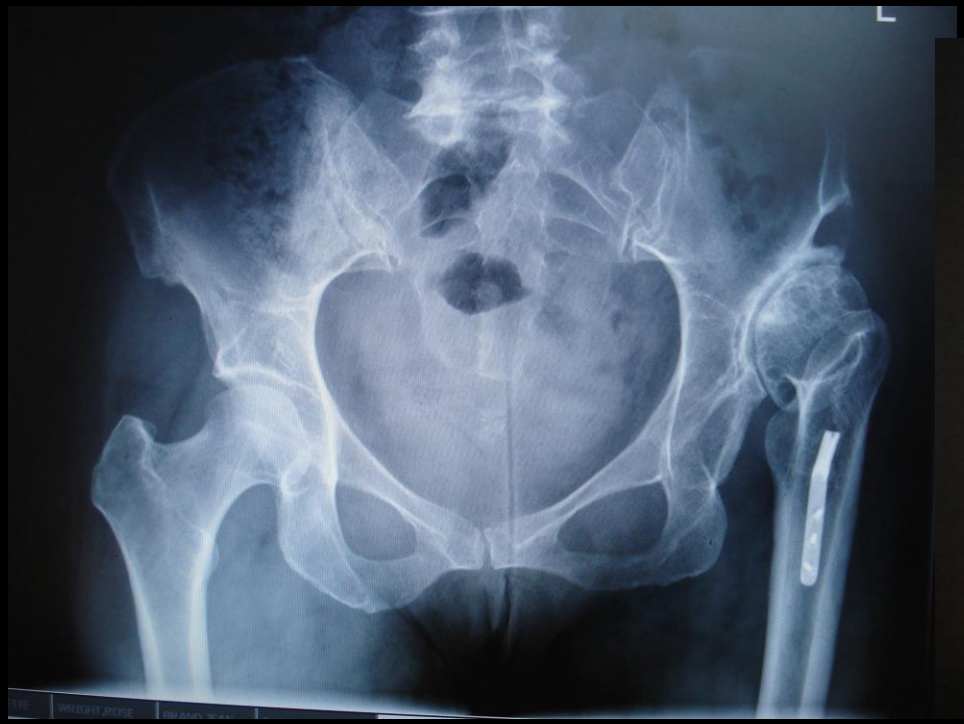
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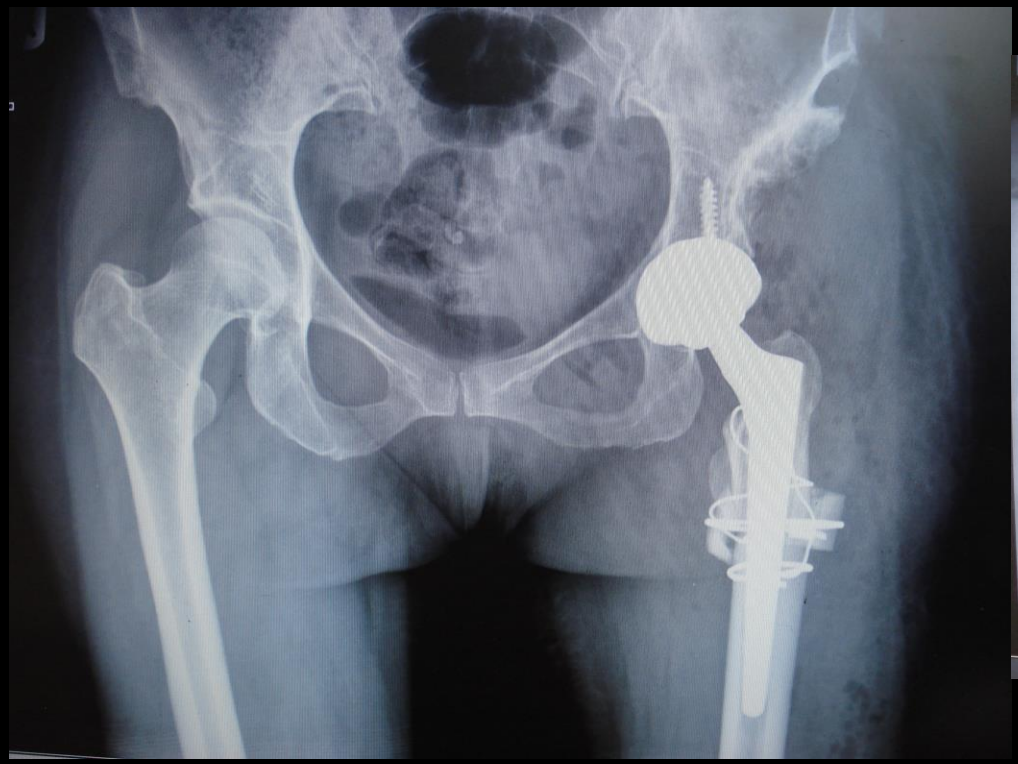

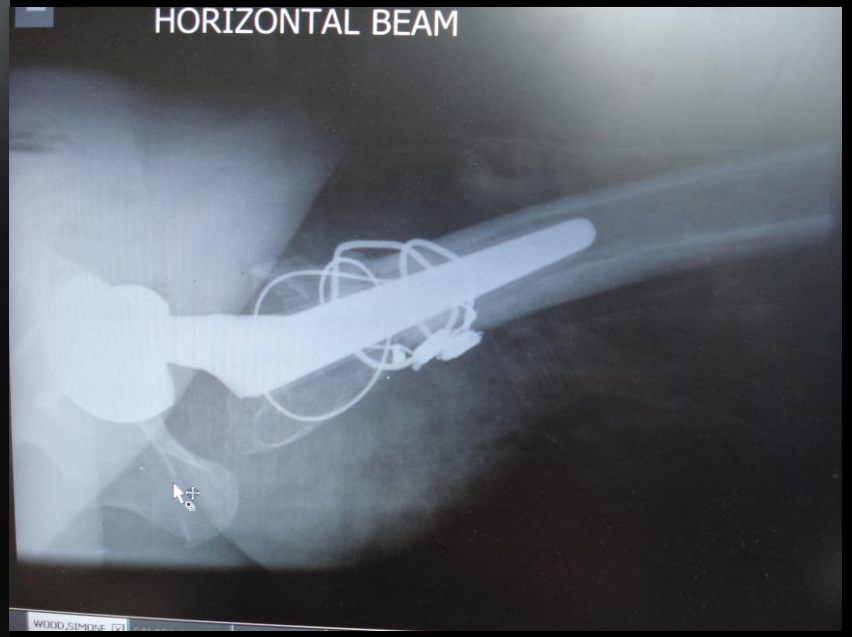
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