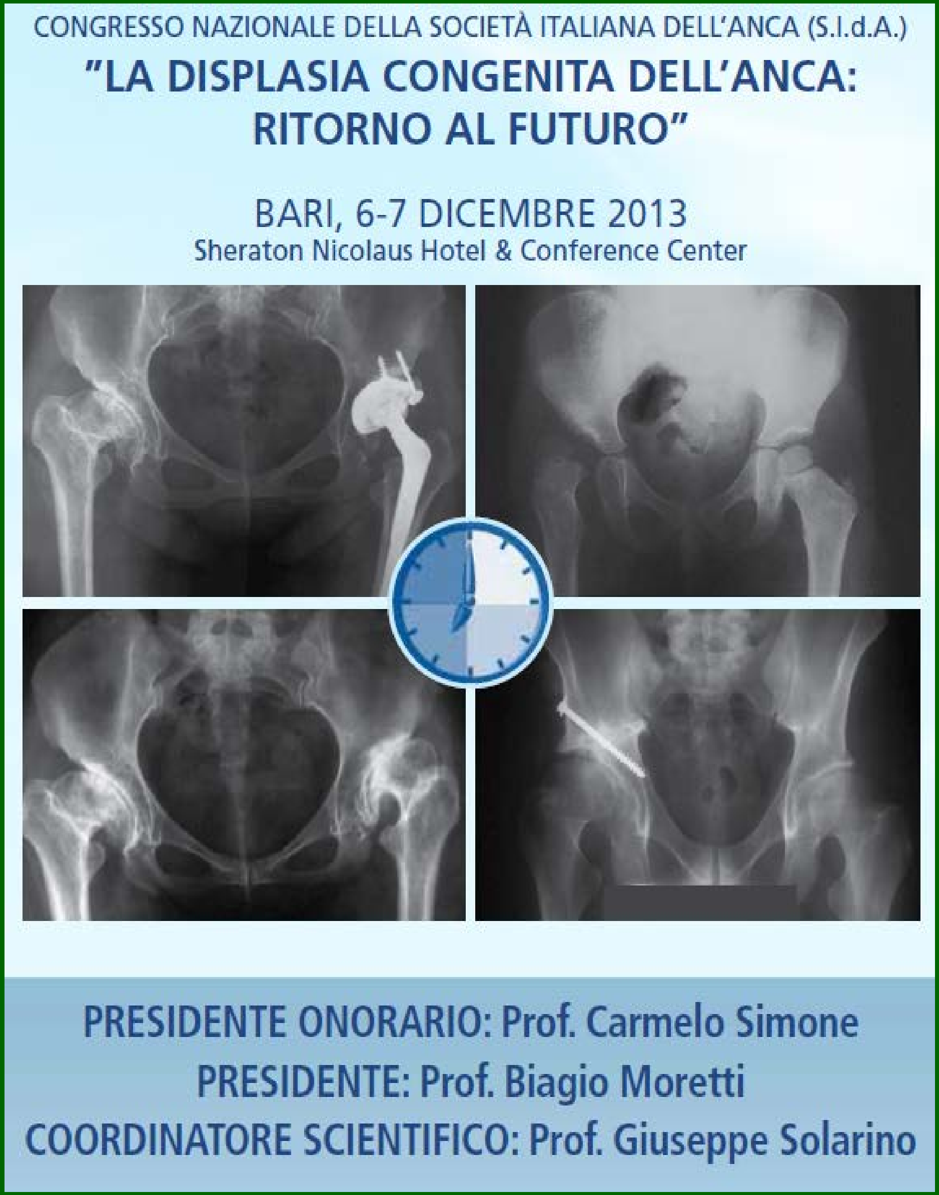
V Sessione:

La revisione protesica

'La cultura della revisione'

Paolo Rossi
Simone Spolaore
Davide Bonasia
Gianluca Collo



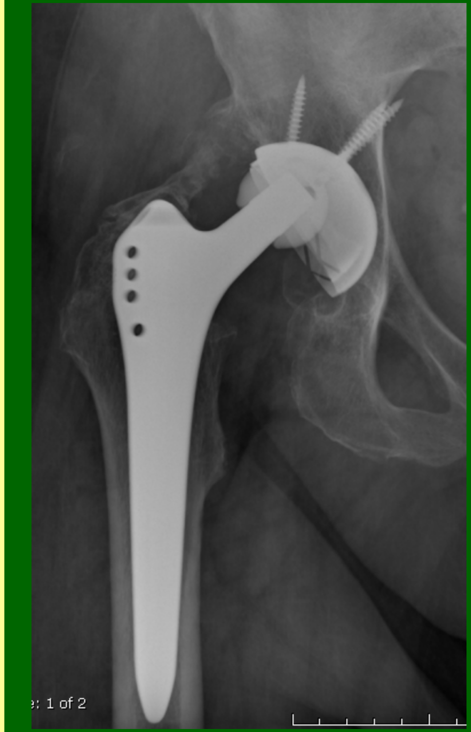
CONGRESSO NAZIONALE DELLA SOCIETÀ ITALIANA DELL'ANCA (S.I.d.A.)
"LA DISPLASIA CONGENITA DELL'ANCA: RITORNO AL FUTURO"

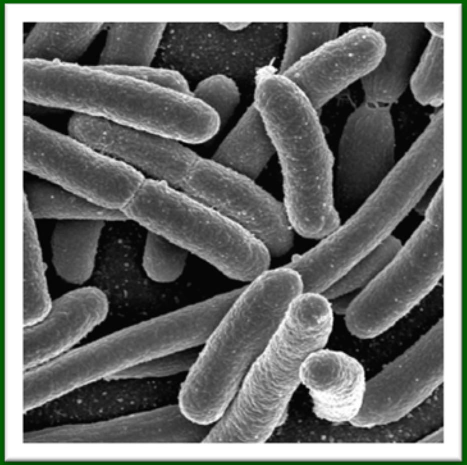
BARI, 6-7 DICEMBRE 2013
Sheraton Nicolaus Hotel & Conference Center

PRESIDENTE ONORARIO: Prof. Carmelo Simone
PRESIDENTE: Prof. Biagio Moretti
COORDINATORE SCIENTIFICO: Prof. Giuseppe Solarino

CHIRURGIA DI REVISIONE

- ✓ Alterata anatomia
- ✓ Scarsa qualità ossea
- ✓ Perdita di bone stock
- ✓ Fissazione difficoltosa
- ✓ Migrazione degli impianti
- ✓ Debridement accurato
- ✓ Management infezione





ALTO TASSO DIFFICOLTA'

SCOPO DEL TRATTAMENTO

- ✓ ELIMINARE O RIDURRE IL DOLORE
- ✓ RECUPERARE IL BONE STOCK
- ✓ RIPRISTINARE LA FUNZIONALITA' DELL'ARTO (centro di rotazione)
- ✓ FORNIRE STABILITÀ ALL'IMPIANTO

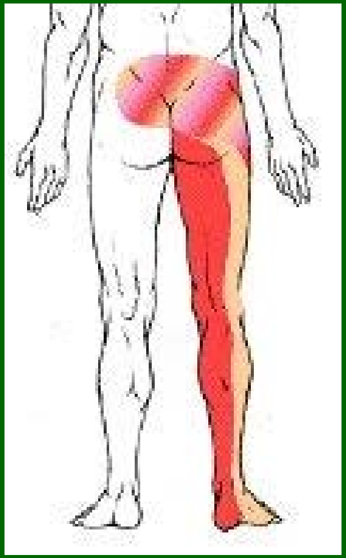
Ove presenti:

- ✓ ARRESTARE IL PROCESSO INFETTIVO
- ✓ RIDURRE LA FRATTURA

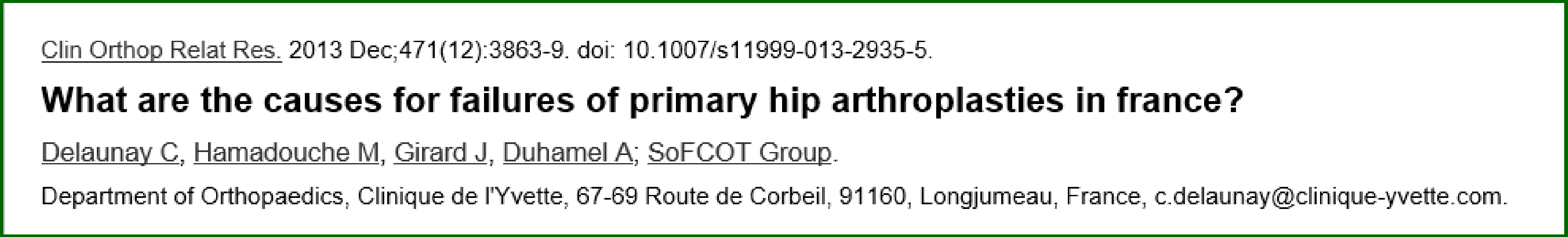
PROTESI DOLOROSA: EZIOPATOGENESI

Cause estrinseche

- ✓Radicolopatie lombari
- ✓Neuropatie periferiche
- ✓Lesioni vasculo-nervose
- ✓Tromboembolismo
- ✓Borsiti trocanteriche
- ✓Tendinosi/ tendiniti
- ✓Ernie inguinali
- ✓Neoplasie



Cause intrinseche



Clin Orthop Relat Res. 2013 Dec;471(12):3863-9. doi: 10.1007/s11999-013-2935-5.

What are the causes for failures of primary hip arthroplasties in france?

Delaunay C, Hamadouche M, Girard J, Duhamel A; SoFCOT Group.

Department of Orthopaedics, Clinique de l'Yvette, 67-69 Route de Corbeil, 91160, Longjumeau, France, c.delaunay@clinique-yvette.com.

1. Scollamento NON INFETTIVO –asettico- **(42%)**
2. Scollamento INFETTIVO –settico- (11%)
3. Usura delle componenti protesiche (11%)
4. Fratture periprotesiche (11%)
5. Lussazione dell'impianto (10%)
6. Errori di tecnica (6%)
7. Rottura dell'impianto (3%)

Revisione TUTTE le componenti nel 49% casi

N
E
W

ANAMNESI E PLANNING PRE-OPERATORIO

FONDAMENTALE

ESAME OBIETTIVO

CARTELLA CLINICA INTERVENTO PRECEDENTE
(tipo di impianto utilizzato)

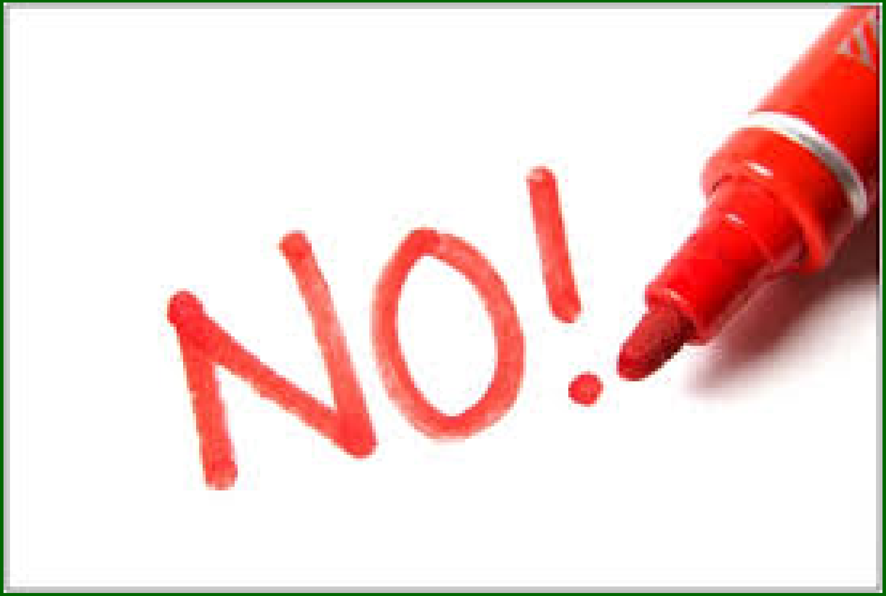
PRECEDENTE DOCUMENTAZIONE RADIOGRAFICA

INFORMARE IL PAZIENTE CHE LA DECISIONE DI REVISIONARE PARZIALMENTE O TOTALMENTE L'IMPIANTO PROTESICO PUO' ESSERE PRESA INTRAOPERATORIAMENTE

Un consenso “davvero” informato

La revisione.. perché?

..non siamo stati abbastanza bravi?



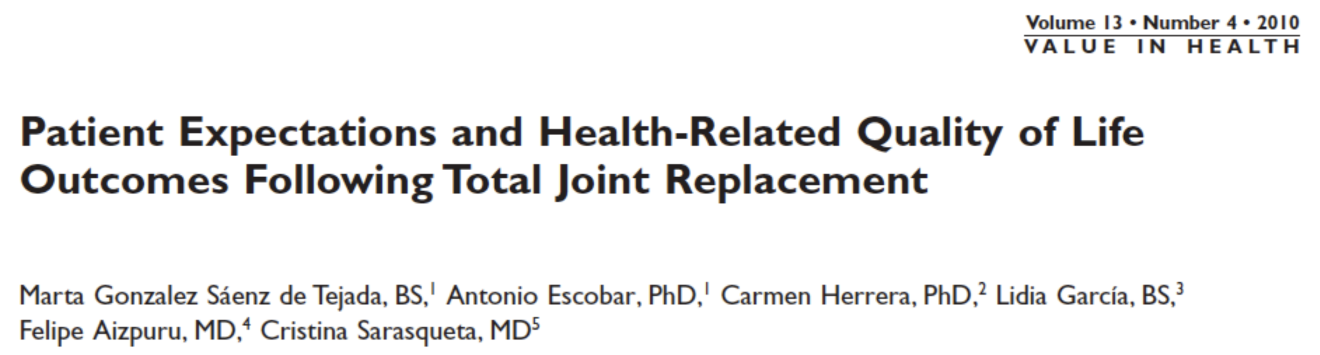
Le protesi possono fallire..

- Aumenta la durata della vita
- Cambiano le aspettative dei pazienti

> numero di primi impianti

Aspettative del paziente

✓ Recupero precoce
✓ Non problematiche post operatorie
✓ Non complicazioni
✓ Scomparsa del dolore
✓ Incremento della mobilita' articolare e funzionalità
✓ Durata nel tempo dell'impianto protesico
✓ Assenza di limitazioni funzionali post operatorie

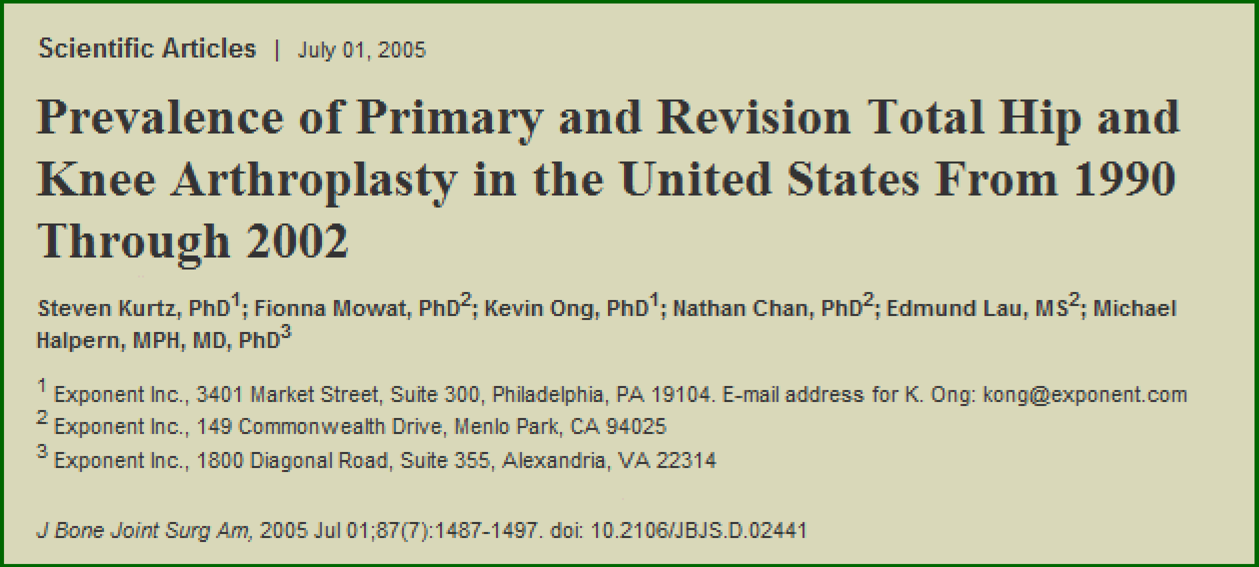


Volume 13 • Number 4 • 2010
VALUE IN HEALTH

Patient Expectations and Health-Related Quality of Life Outcomes Following Total Joint Replacement

Marta Gonzalez Sáenz de Tejada, BS,[1] Antonio Escobar, PhD,[1] Carmen Herrera, PhD,[2] Lidia García, BS,[3] Felipe Aizpuru, MD,[4] Cristina Sarasqueta, MD[5]

I numeri lo confermano



Scientific Articles | July 01, 2005

Prevalence of Primary and Revision Total Hip and Knee Arthroplasty in the United States From 1990 Through 2002

Steven Kurtz, PhD[1]; Fionna Mowat, PhD[2]; Kevin Ong, PhD[1]; Nathan Chan, PhD[2]; Edmund Lau, MS[2]; Michael Halpern, MPH, MD, PhD[3]

[1] Exponent Inc., 3401 Market Street, Suite 300, Philadelphia, PA 19104. E-mail address for K. Ong: kong@exponent.com
[2] Exponent Inc., 149 Commonwealth Drive, Menlo Park, CA 94025
[3] Exponent Inc., 1800 Diagonal Road, Suite 355, Alexandria, VA 22314

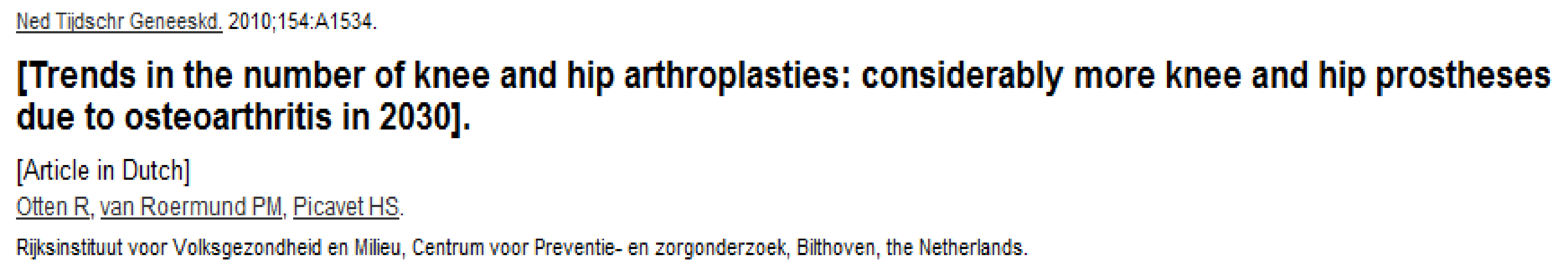
J Bone Joint Surg Am, 2005 Jul 01;87(7):1487-1497. doi: 10.2106/JBJS.D.02441

dreamstime.com

Dal 1990 al 2002 in USA: PTA + 50% / 100.000 abitanti

REVISIONI: + 3.7 % PTA */100.000 per 10aa*

(media di revisione > rispetto alle PTG, 17.5% VS 8.2%)



Ned Tijdschr Geneeskd. 2010;154:A1534.

[Trends in the number of knee and hip arthroplasties: considerably more knee and hip prostheses due to osteoarthritis in 2030].

[Article in Dutch]

Otten R, van Roermund PM, Picavet HS.

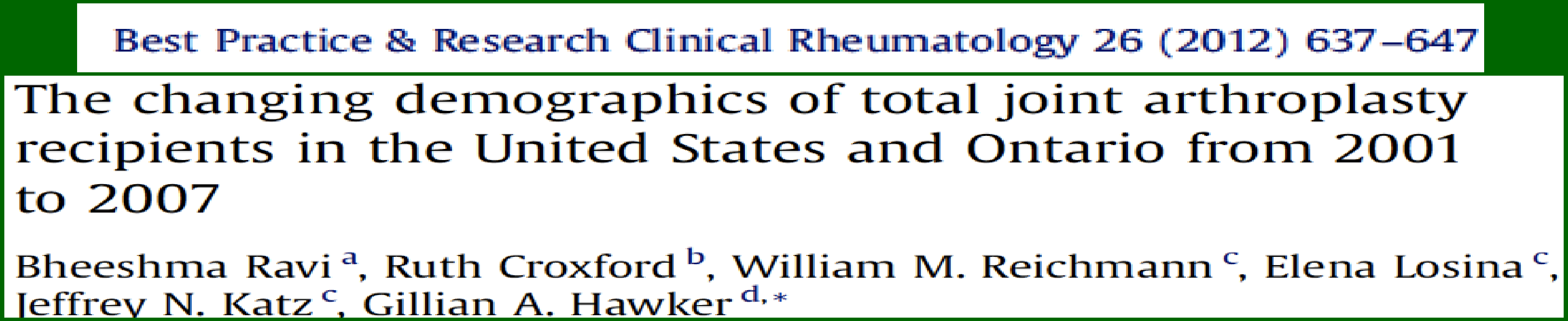
Rijksinstituut voor Volksgezondheid en Milieu, Centrum voor Preventie- en zorgonderzoek, Bilthoven, the Netherlands.

Dal 1995 al 2005 (Paesi bassi) : + 50% PTA

Previsione al 2030: + 149% PTA

Incremento costante nei prossimi 30 anni:

- *età avanzata*
- *“more active lifestyle”*

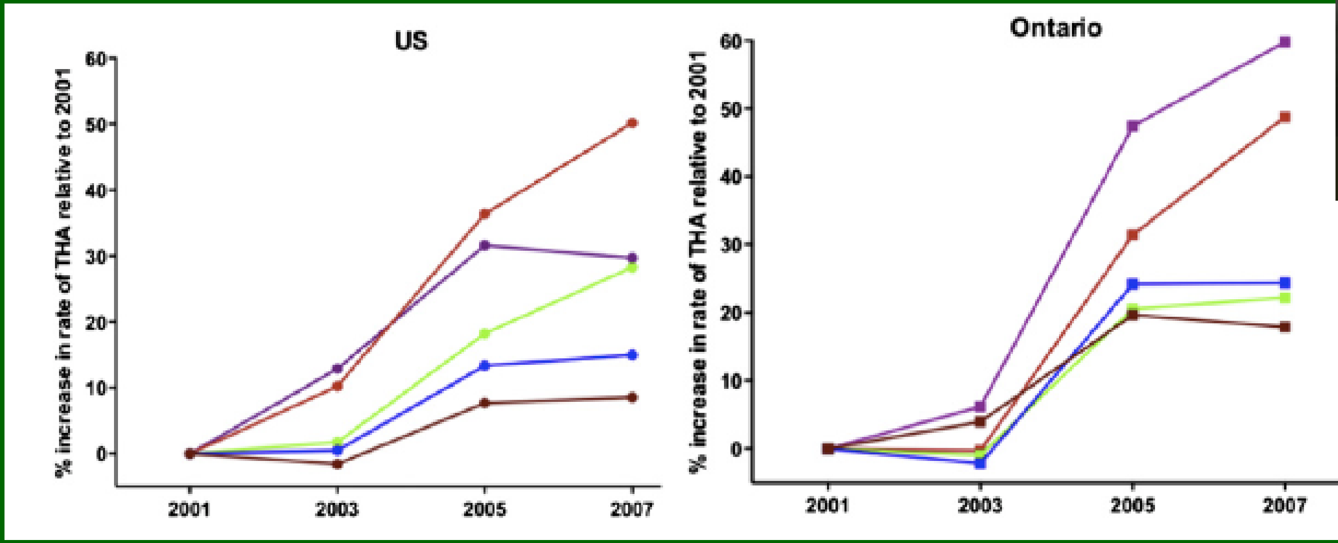


Best Practice & Research Clinical Rheumatology 26 (2012) 637–647

The changing demographics of total joint arthroplasty recipients in the United States and Ontario from 2001 to 2007

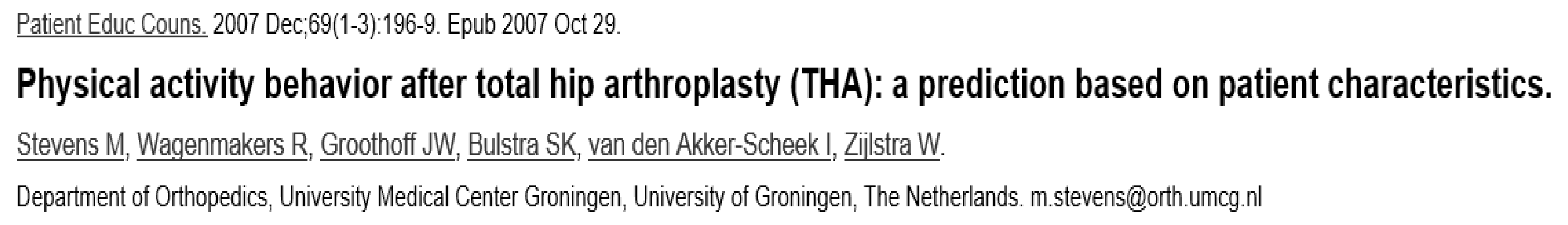
Bheeshma Ravi [a], Ruth Croxford [b], William M. Reichmann [c], Elena Losina [c], Jeffrey N. Katz [c], Gillian A. Hawker [d,*]

Netto incremento di primi impianti in Pz. giovani



I pazienti spesso sottostimano i possibili problemi

- depressione
- ipomobiltà
- ..dolore (componente psicologica)



Patient Educ Couns. 2007 Dec;69(1-3):196-9. Epub 2007 Oct 29.

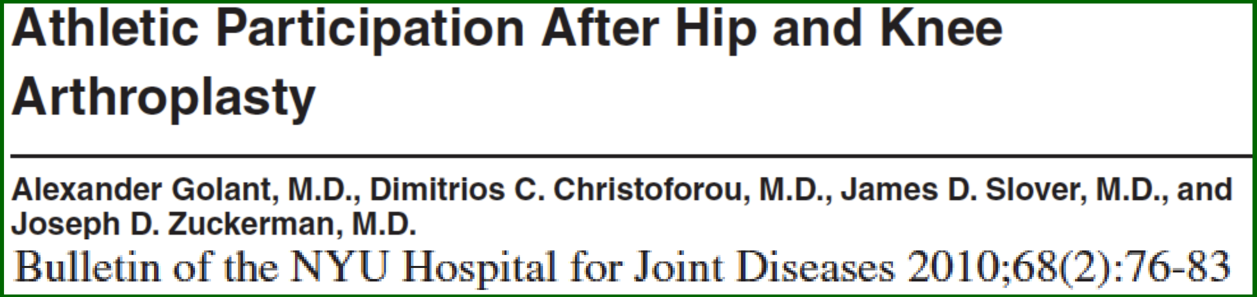
Physical activity behavior after total hip arthroplasty (THA): a prediction based on patient characteristics.

Stevens M, Wagenmakers R, Groothoff JW, Bulstra SK, van den Akker-Scheek I, Zijlstra W.

Department of Orthopedics, University Medical Center Groningen, University of Groningen, The Netherlands. m.stevens@orth.umcg.nl

372 pz.
- Età avanzata
- Livello culturale medio-basso
- Vivere da soli

INSODDISFAZIONE ED INATTIVITA’



Athletic Participation After Hip and Knee Arthroplasty

Alexander Golant, M.D., Dimitrios C. Christoforou, M.D., James D. Slover, M.D., and Joseph D. Zuckerman, M.D.

Bulletin of the NYU Hospital for Joint Diseases 2010;68(2):76-83

Meglio sport a basso-impatto (camminata, golf, bowling)
Minori fallimenti in pazienti attivi vs sedentari

QUALI BENEFICI?

- biointegrazione
- coordinazione
- forza muscolare
- propiocezione

→ contrastano l'usura

Alcuni studi però confermano peggior sopravvivenza e aumento delle fratture periprotesiche in soggetti giovani con alte richieste funzionali

OVERUSE (> nel Pz. Giovane con alte richieste)

…fallita la protesi

La prima domanda da porsi non è:

✗ ***COSA FARE***

ma..

✓ ***COME AFFRONTARE IL PROBLEMA***

MIND
YOUR
HEAD

E' NECESSARIO PRIMA FARE DIAGNOSI!

PERCORSO DIAGNOSTICO

I LIVELLO

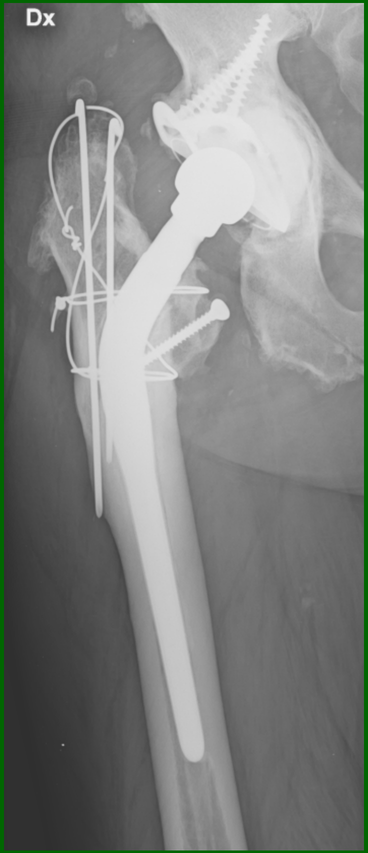
Rx
Ematochimici

II LIVELLO

TC
RMN se interessamento tessuti molli
Scintigrafia con Tc99
Scintigrafia con leucociti marcati

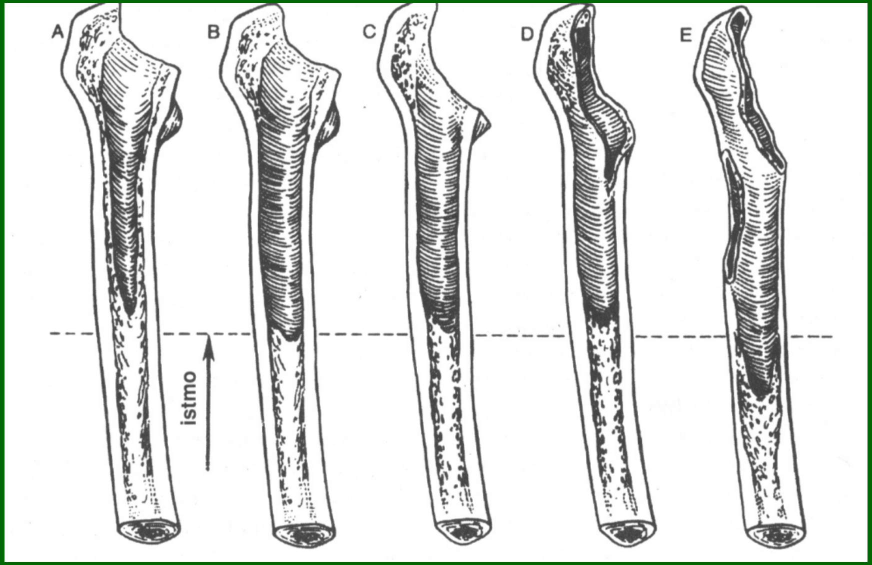
III LIVELLO

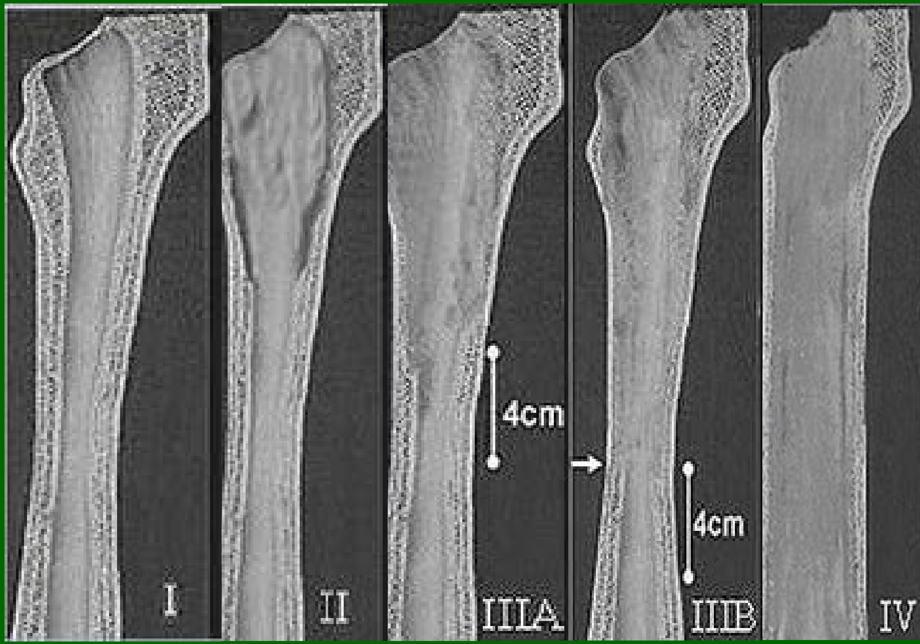
PET
SPECT/TC
(biopsia e prelievo intrarticolare)

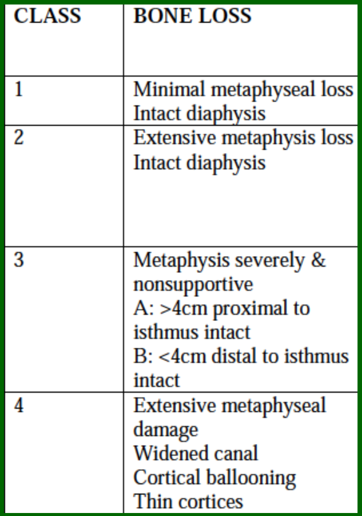


VALUTAZIONE DEFICIT BONE STOCK

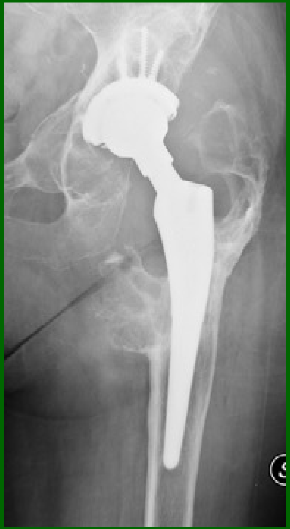
Classificazione del GIR
(Gruppo Italiano Riprotesizzazione)





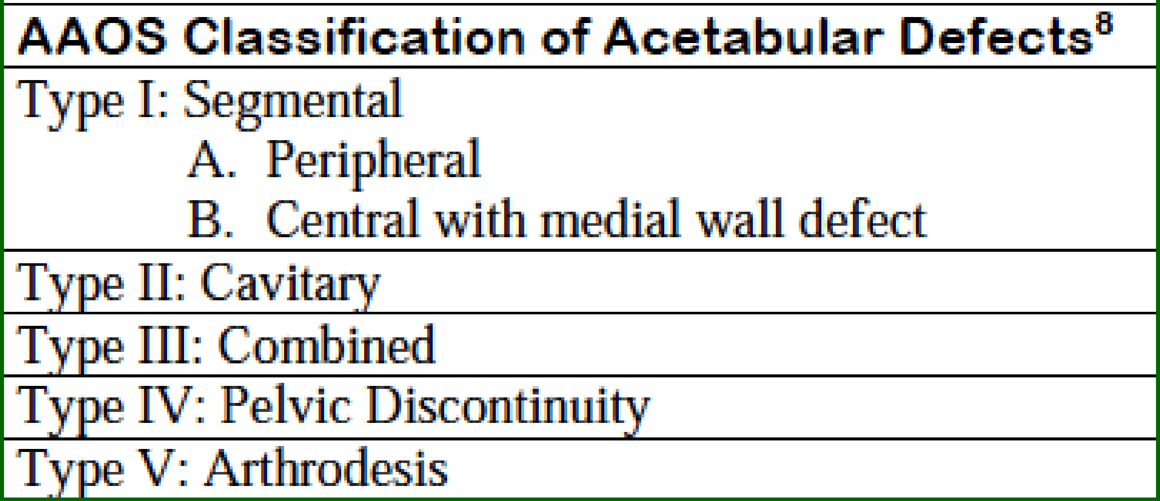


CLASS	BONE LOSS
1	Minimal metaphyseal loss Intact diaphysis
2	Extensive metaphysis loss Intact diaphysis
3	Metaphysis severely & nonsupportive A: >4cm proximal to isthmus intact B: <4cm distal to isthmus intact
4	Extensive metaphyseal damage Widened canal Cortical ballooning Thin cortices

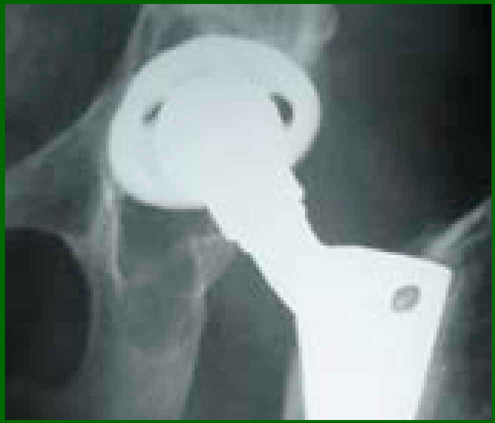


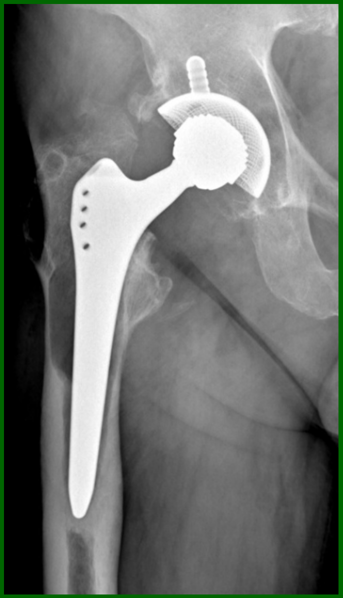
Paprosky Classification

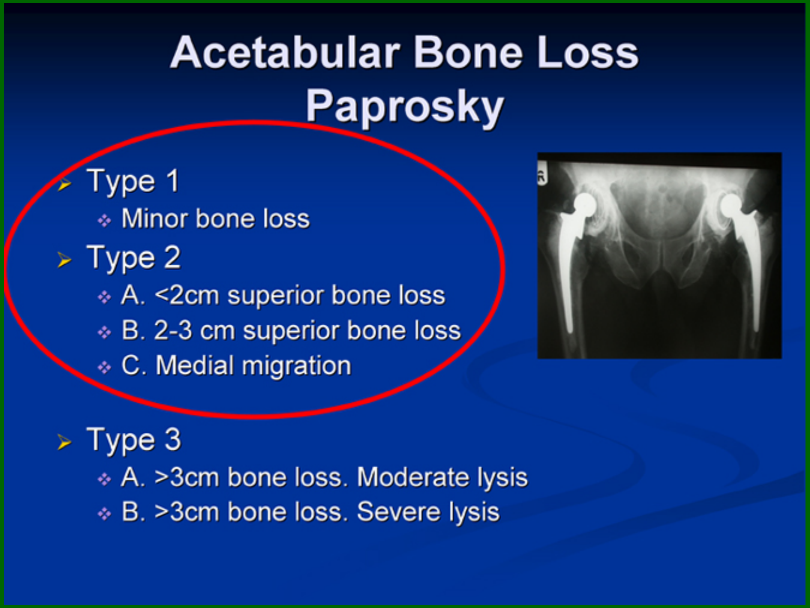
VALUTAZIONE DEFICIT BONE STOCK



AAOS Classification of Acetabular Defects[8]
Type I: Segmental A. Peripheral B. Central with medial wall defect
Type II: Cavitary
Type III: Combined
Type IV: Pelvic Discontinuity
Type V: Arthrodesis







Acetabular Bone Loss
Paprosky

- Type 1
  - Minor bone loss
- Type 2
  - A. <2cm superior bone loss
  - B. 2-3 cm superior bone loss
  - C. Medial migration
- Type 3
  - A. >3cm bone loss. Moderate lysis
  - B. >3cm bone loss. Severe lysis

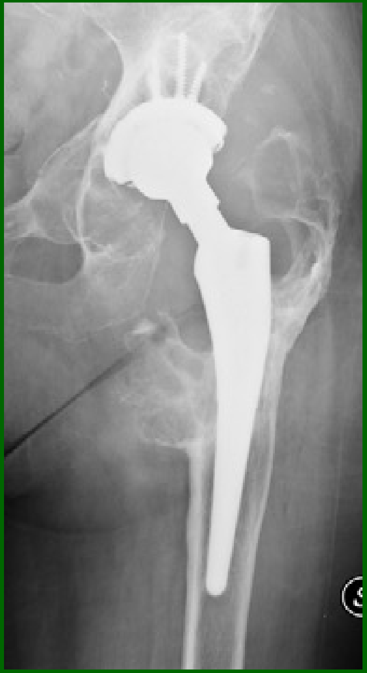
VALUTAZIONE RADIOGRAFICA STELO FEMORALE

CEMENTATO:

- SCOLLAMENTO COMPLETO (OSTEOLISI CIRCONFERENZIALE)
- SCOLLAMENTO PROBABILE (ZONA RADIOLUCENZA COMPLETA IN ALMENO UNA PROIEZIONE)
- SCOLLAMENTO POSSIBILE (ZONA RADIOLUCENZA IN INTERFACCIA OSSO-CEMENTO COMPRESA FRA 50% E 100%)

NON CEMENTATO:

- OSTEOLISI TERZO MEDIO-DISTALE LINEARE



Osteolysis. Medical and Surgical Approaches. K.J. Saleh et al. Clinical orthopaedics and related research. 427:138–147. 2004

VALUTAZIONE RADIOGRAFICA COPPA ACETABOLARE

CEMENTATA:

- OSTEOLISI LINEARE (EVOLVE IN CIRCONFERENZIALE)
- MOBILIZZAZIONE PIU’ SPESSO A LIVELLO INTERFACCIA OSSO-CEMENTO RISPETTO CHE A PROTESI-CEMENTO

NON CEMENTATA:

- OSTEOLISI DIFFUSA
- PUO’ CONTRIBUIRE LA PRESENZA DI FORI PER LE VITI
- SPESSO ACCOMPAGNATA DA ROTTURA DELLE VITI, ROTTURA DELLA CUP METALLICA, ESTESE PERDITE OSSEE

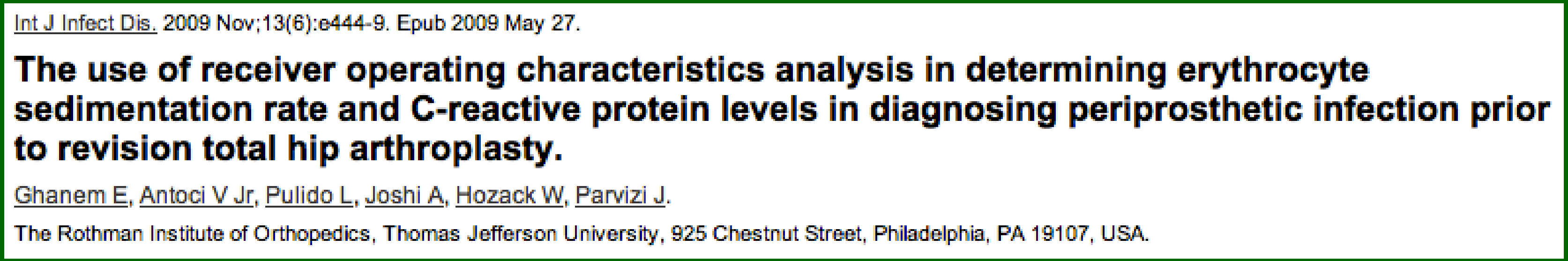
Osteolysis. Medical and Surgical Approaches. K.J. Saleh et al. Clinical orthopaedics and related research. 427:138–147. 2004

Esami di 1° livello

Posizione di sicurezza

- Emocromo con formula
- fibrinogeno
- VES
- PCR
- IL-6

- Rx



Int J Infect Dis. 2009 Nov;13(6):e444-9. Epub 2009 May 27.

The use of receiver operating characteristics analysis in determining erythrocyte sedimentation rate and C-reactive protein levels in diagnosing periprosthetic infection prior to revision total hip arthroplasty.

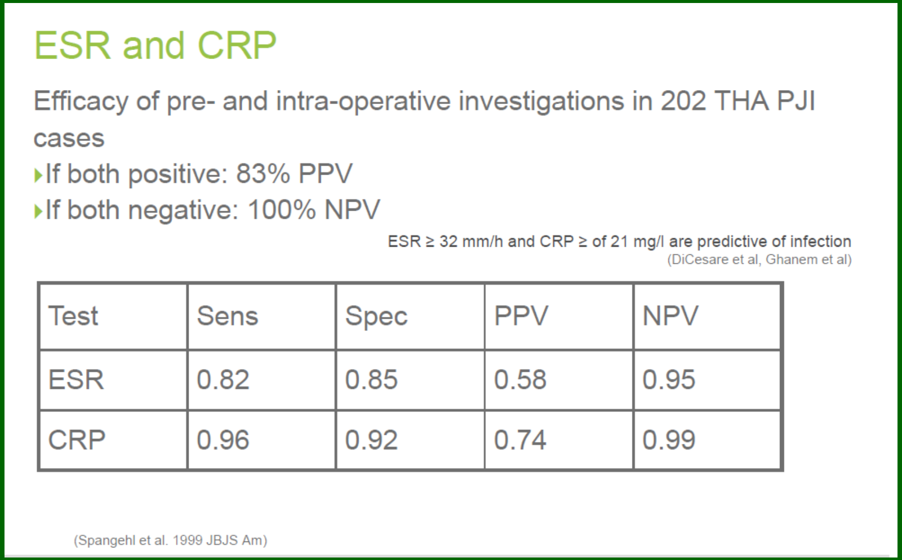
Ghanem E, Antoci V Jr, Pulido L, Joshi A, Hozack W, Parvizi J.

The Rothman Institute of Orthopedics, Thomas Jefferson University, 925 Chestnut Street, Philadelphia, PA 19107, USA.

VES > 32 mm/sec

PCR > 21 mg/L

Predittivi per infezione periprotesica



ESR and CRP

Efficacy of pre- and intra-operative investigations in 202 THA PJI cases

- If both positive: 83% PPV
- If both negative: 100% NPV

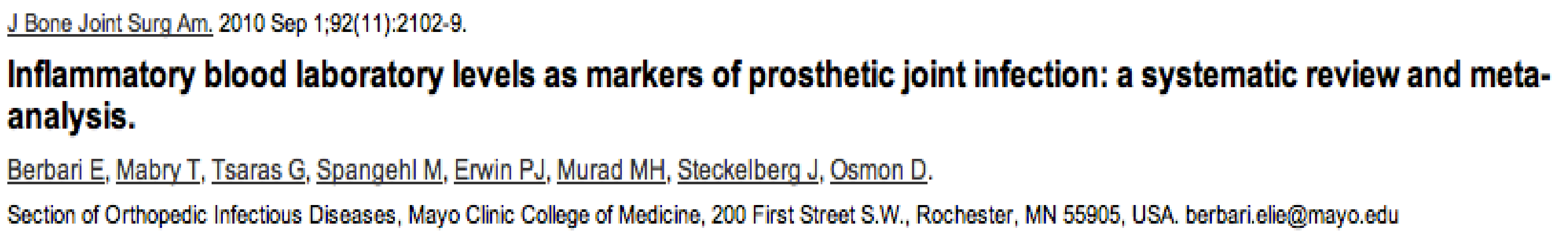
ESR ≥ 32 mm/h and CRP ≥ of 21 mg/l are predictive of infection
(DiCesare et al, Ghanem et al)

Test	Sens	Spec	PPV	NPV
ESR	0.82	0.85	0.58	0.95
CRP	0.96	0.92	0.74	0.99

(Spangehl et al. 1999 JBJS Am)

VES rimane mossa a lungo, tende a normalizzarsi in 5 mesi dopo l'intervento.

PCR sale 48/72 ore dopo la chirurgia ed impiega 3-4 settimane a normalizzarsi

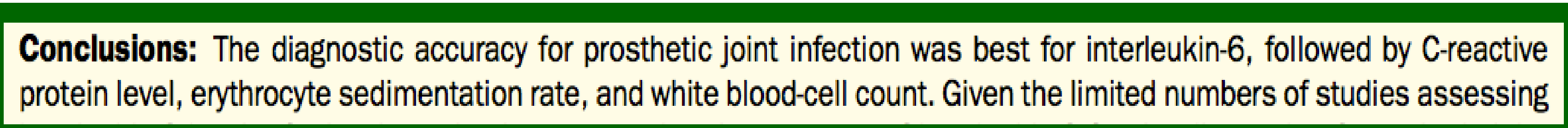


J Bone Joint Surg Am. 2010 Sep 1;92(11):2102-9.

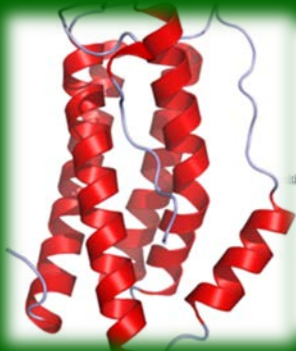
Inflammatory blood laboratory levels as markers of prosthetic joint infection: a systematic review and meta-analysis.

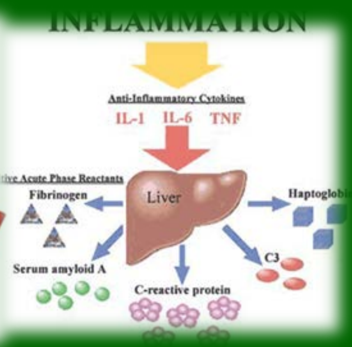
Berbari E, Mabry T, Tsaras G, Spangehl M, Erwin PJ, Murad MH, Steckelberg J, Osmon D.

Section of Orthopedic Infectious Diseases, Mayo Clinic College of Medicine, 200 First Street S.W., Rochester, MN 55905, USA. berbari.elie@mayo.edu

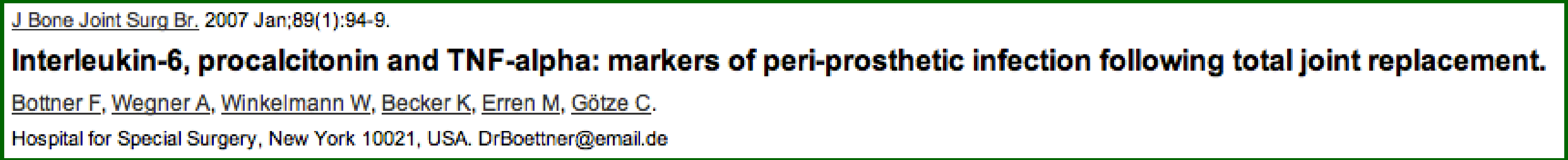


Conclusions: The diagnostic accuracy for prosthetic joint infection was best for interleukin-6, followed by C-reactive protein level, erythrocyte sedimentation rate, and white blood-cell count. Given the limited numbers of studies assessing




INFLAMMATION
Anti-Inflammatory Cytokines
IL-1 IL-6 TNF
ive Acute Phase Reactants
Fibrinogen
Liver
Haptoglobi
Serum amyloid A
C-reactive protein
C3

Torna in range
in 72 ore !



J Bone Joint Surg Br. 2007 Jan;89(1):94-9.

Interleukin-6, procalcitonin and TNF-alpha: markers of peri-prosthetic infection following total joint replacement.

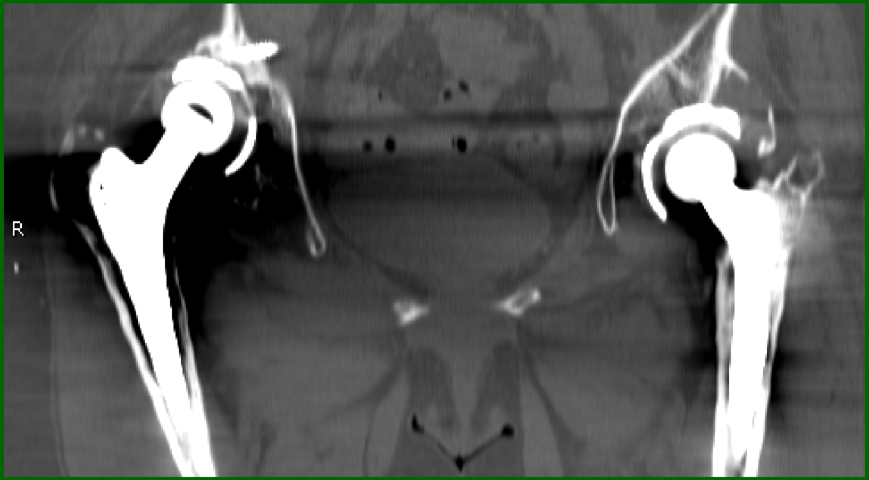
Bottner F, Wegner A, Winkelmann W, Becker K, Erren M, Götze C.

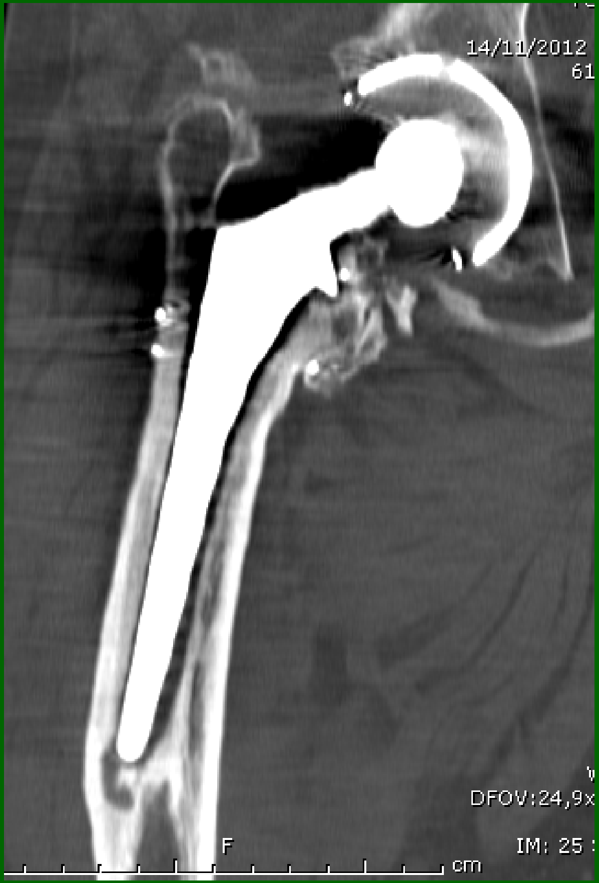
Hospital for Special Surgery, New York 10021, USA. DrBoettner@email.de

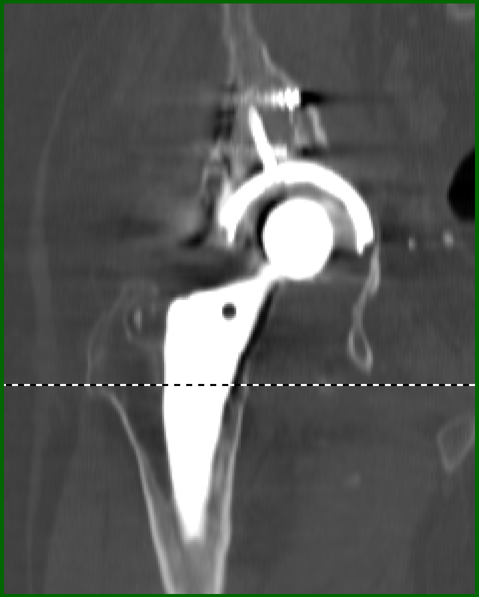
IL-6 > 12 pg/ml associata ad alti livelli di PCR dimostra altissima sensibilità per infezione periprotesica.

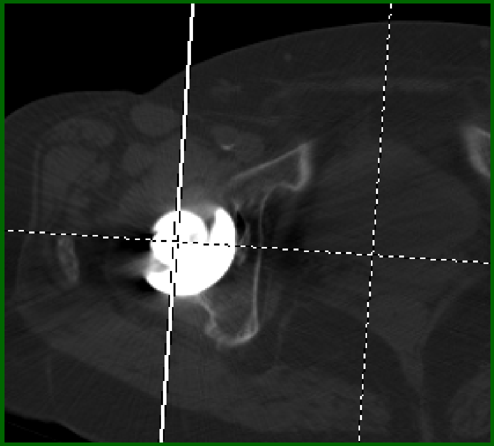
Esami di 2° livello ....TC

- ✓Mobilizzazione
- ✓Bone stock
- ✓Versione componenti



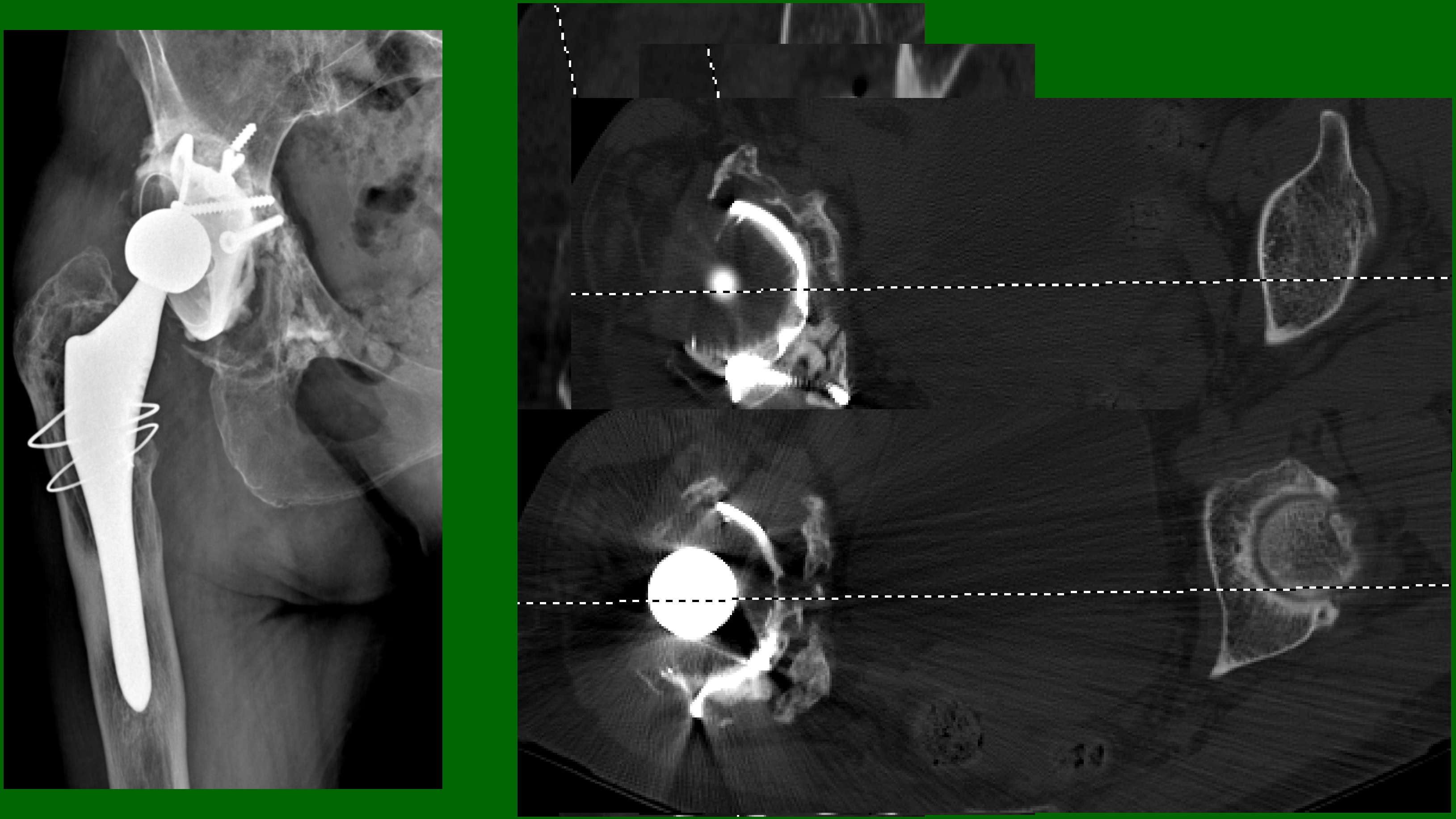

14/11/2012
61
DFOV:24,9x
F
IM: 25
cm



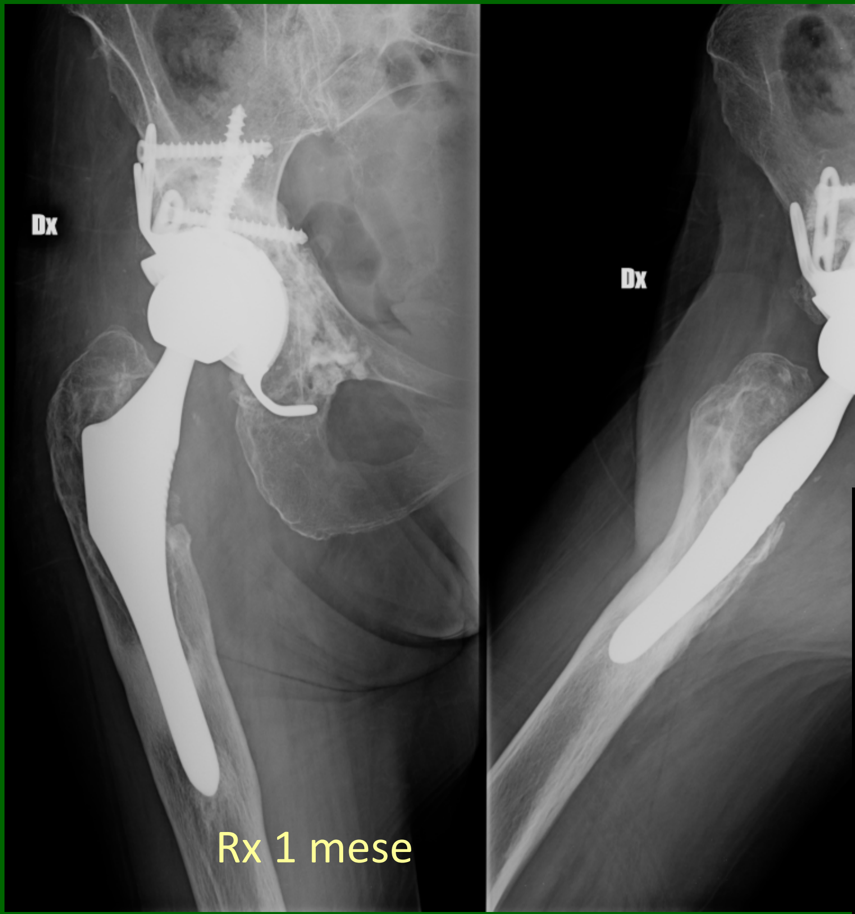


STUDIO TC bone stock

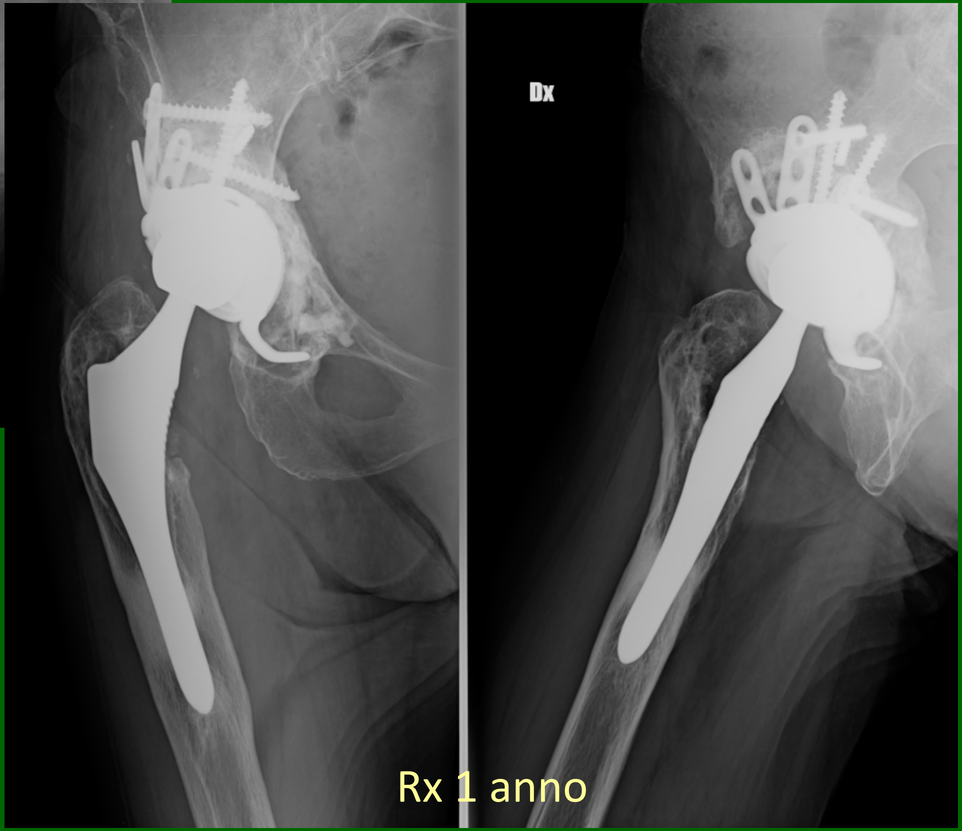
A.B. 71aa. Mobilizzazione cotile in esiti reimpianto PTA



Delta TT revision,
liner 10° ,
MoP32mm,
osso omologo

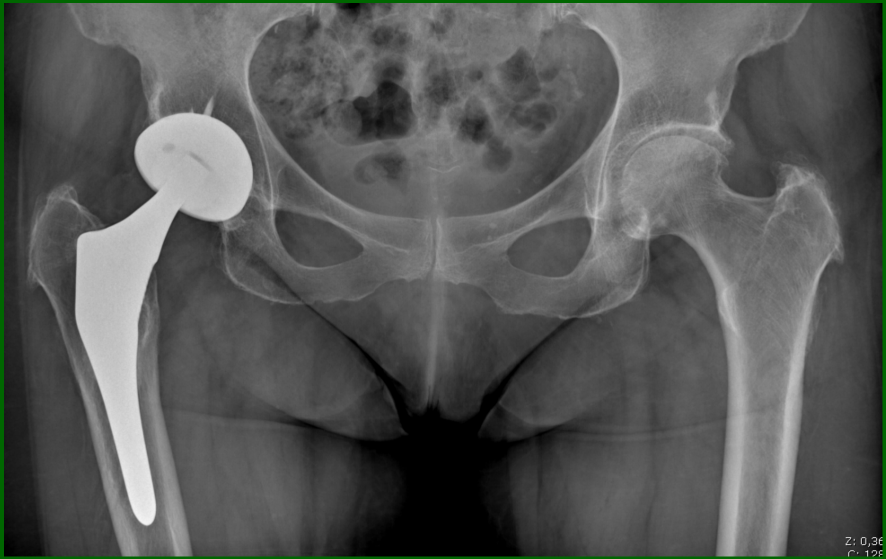


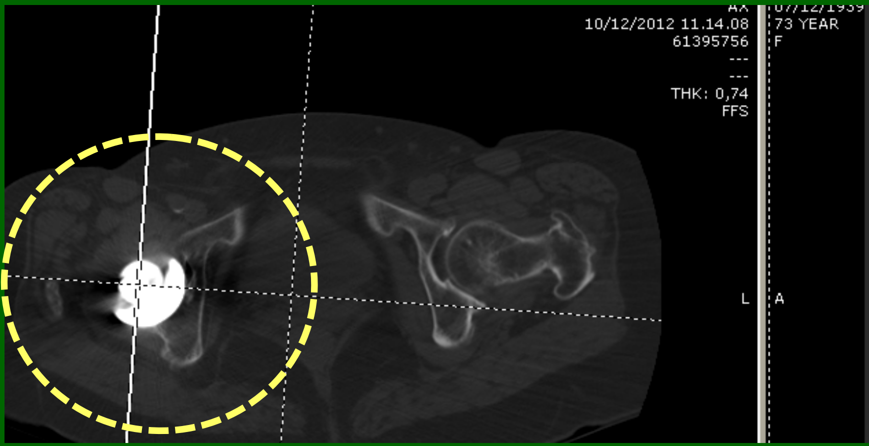
Rx 1 mese



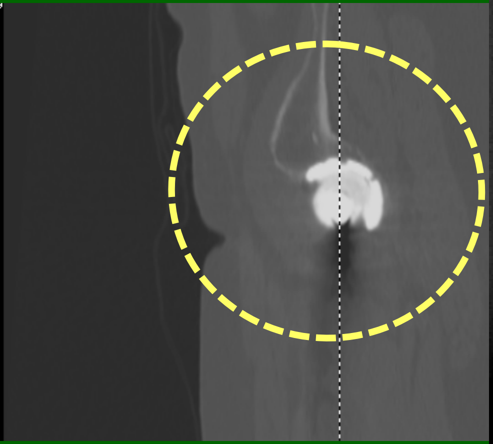
Rx 1 anno

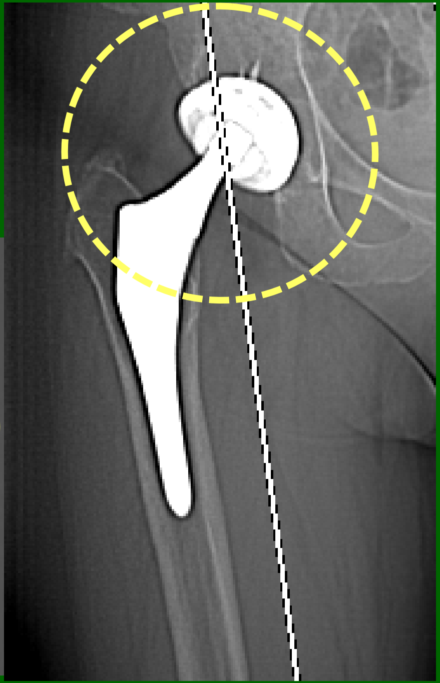
STUDIO TC versione componenti




AX
10/12/2012 11.14.08
61395756

THK: 0,74
FFS
73 YEAR
F
L
A

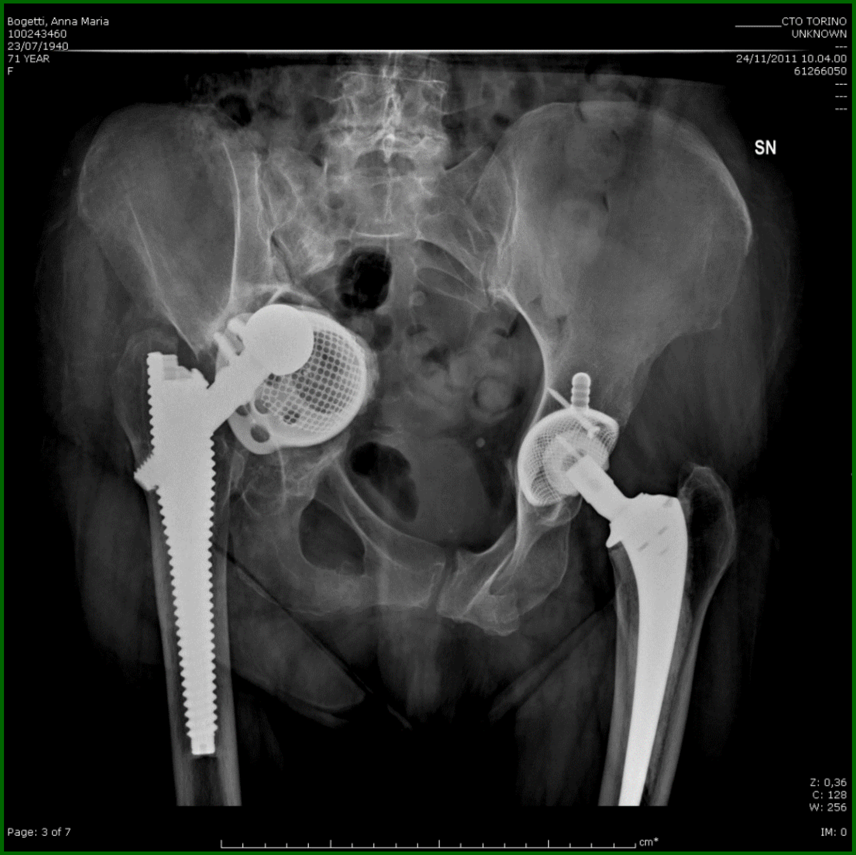


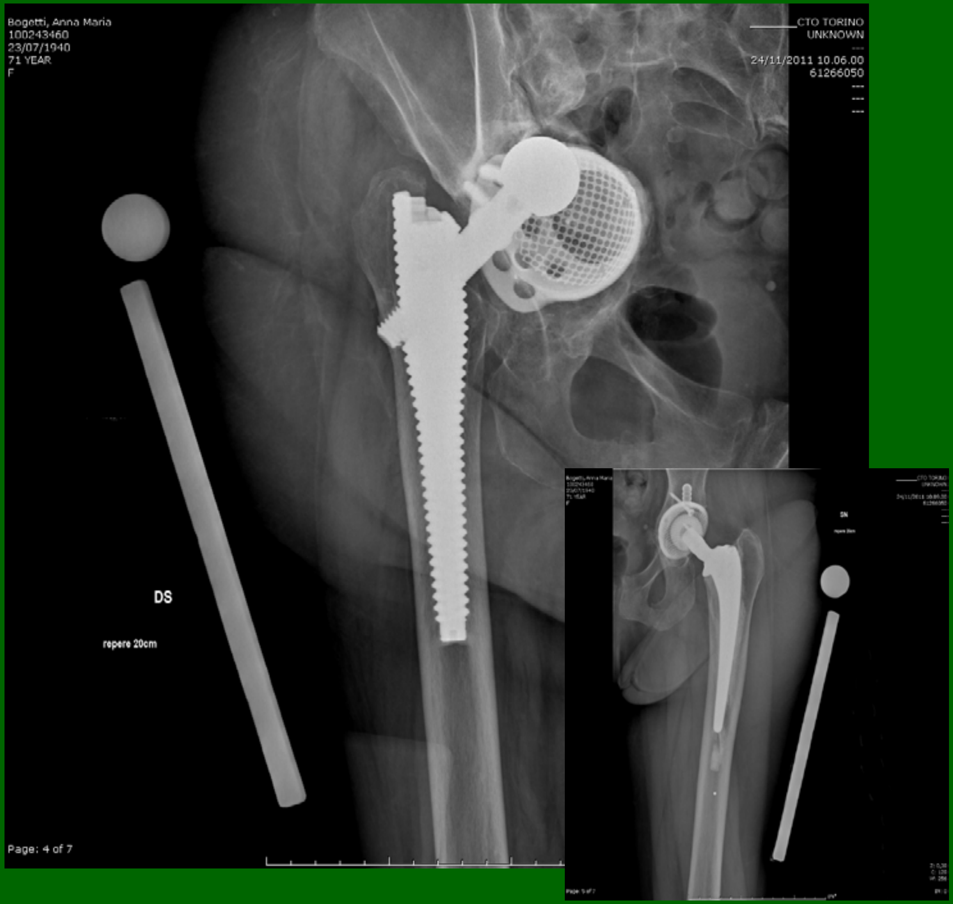


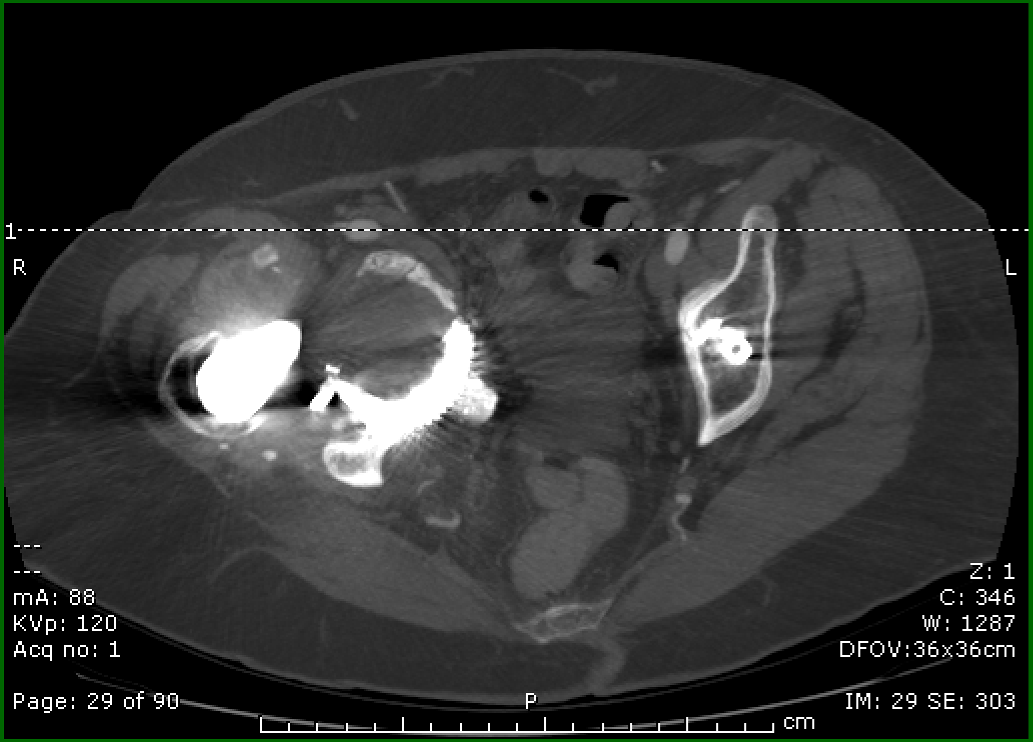
Mal orientamento del cotile

STUDIO TC/ANGIO-TC *vasi*

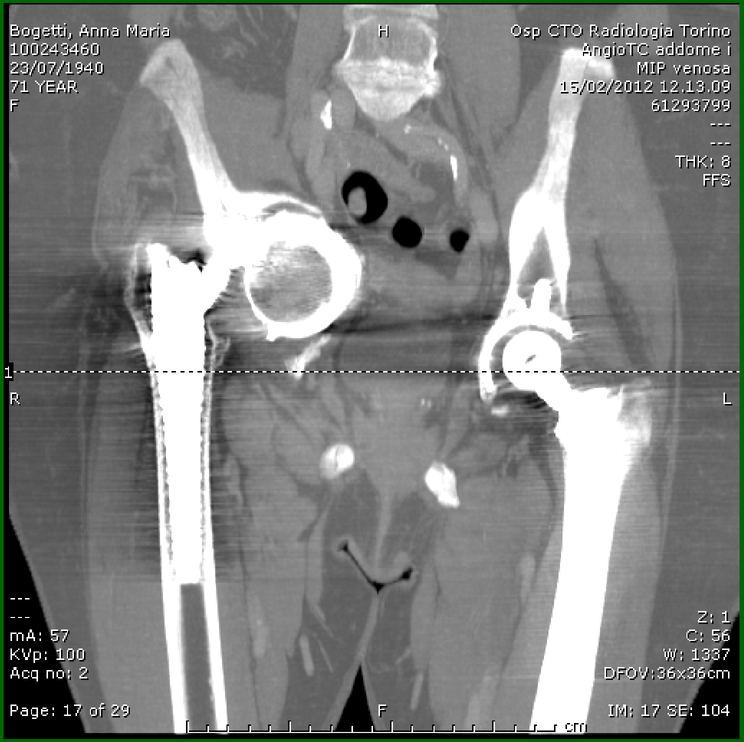
Mobilizzazione cotile in protesi totale d'anca a destra con protrusione delle componenti protesiche nello scavo pelvico in A.R.


Bogetti, Anna Maria
100243460
23/07/1940
71 YEAR
F
CTO TORINO
UNKNOWN
24/11/2011 10.04.00
61266050
SN
Z: 0,36
C: 128
W: 256
IM: 0
Page: 3 of 7
cm*


Bogetti, Anna Maria
100243460
23/07/1940
71 YEAR
F
CTO TORINO
UNKNOWN
24/11/2011 10.06.00
61266050
DS
repere 20cm
Page: 4 of 7

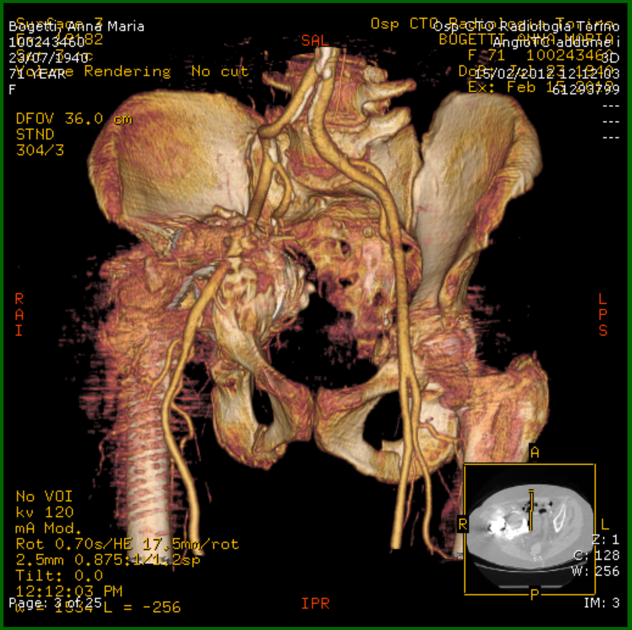

1
R
L

---
mA: 88
KVp: 120
Acq no: 1
Z: 1
C: 346
W: 1287
DFOV:36x36cm
Page: 29 of 90
P
IM: 29 SE: 303
cm


Bogetti, Anna Maria
100243460
23/07/1940
71 YEAR
F
H
Osp CTO Radiologia Torino
AngioTC addome i
MIP venosa
15/02/2012 12.13.09
61293799

THK: 8
FFS
1
R
L

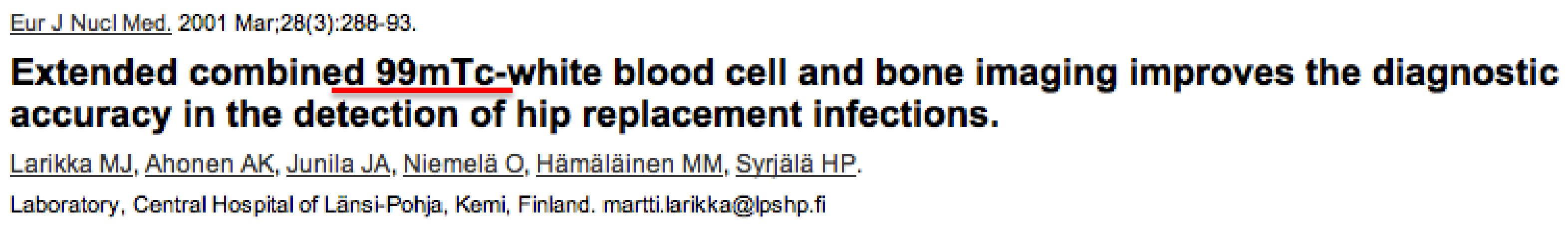
---
mA: 57
KVp: 100
Acq no: 2
Z: 1
C: 56
W: 1337
DFOV:36x36cm
Page: 17 of 29
F
IM: 17 SE: 104
cm


Bogetti, Anna Maria
100243460
23/07/1940
71 YEAR
F
Osp CTO Radiologia Torino
AngioTC addome i
15/02/2012 12.12.03
61293799
SAL
Volume Rendering No cut
DFOV 36.0 cm
STND
304/3
R
A
I
L
P
S
A
R
L
P
Z: 1
C: 128
W: 256
IM: 3
No VOI
kv 120
mA Mod.
Rot 0.70s/HE 17.5mm/rot
2.5mm 0.875:1/1.2sp
Tilt: 0.0
12:12:03 PM
L = -256
IPR

TC + AngioTC

L'esame TC mirato alla valutazione del fascio vascolare iliacofemorale destro in rapporto …
In presenza di lussazione inveterata di PTA dx si conferma dislocazione verso la linea mediana dell'arteria iliaca esterna che passa a ponte sulla componente acetabolare , senza immagini di riduzione del suo lume o di spandimento di mdc ……

Esami di 3° livello *….SCINTIGRAFIA*

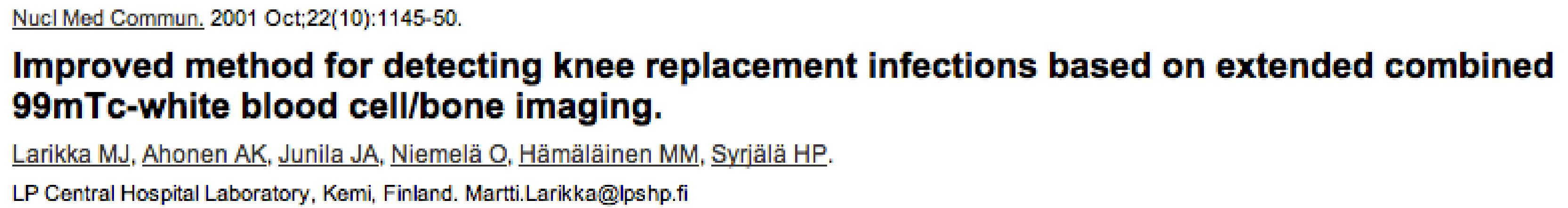


Eur J Nucl Med. 2001 Mar;28(3):288-93.

Extended combined 99mTc-white blood cell and bone imaging improves the diagnostic accuracy in the detection of hip replacement infections.

Larikka MJ, Ahonen AK, Junila JA, Niemelä O, Hämäläinen MM, Syrjälä HP.

Laboratory, Central Hospital of Länsi-Pohja, Kemi, Finland. martti.larikka@lpshp.fi

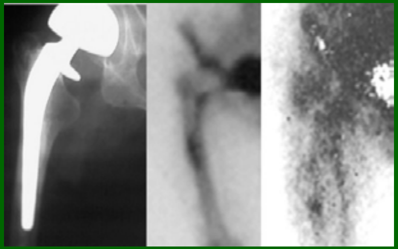


Nucl Med Commun. 2001 Oct;22(10):1145-50.

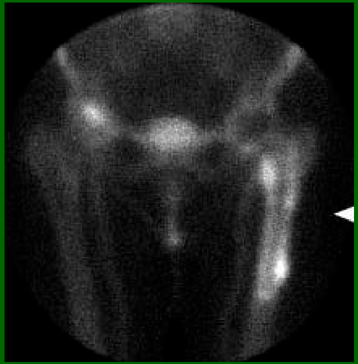
Improved method for detecting knee replacement infections based on extended combined 99mTc-white blood cell/bone imaging.

Larikka MJ, Ahonen AK, Junila JA, Niemelä O, Hämäläinen MM, Syrjälä HP.

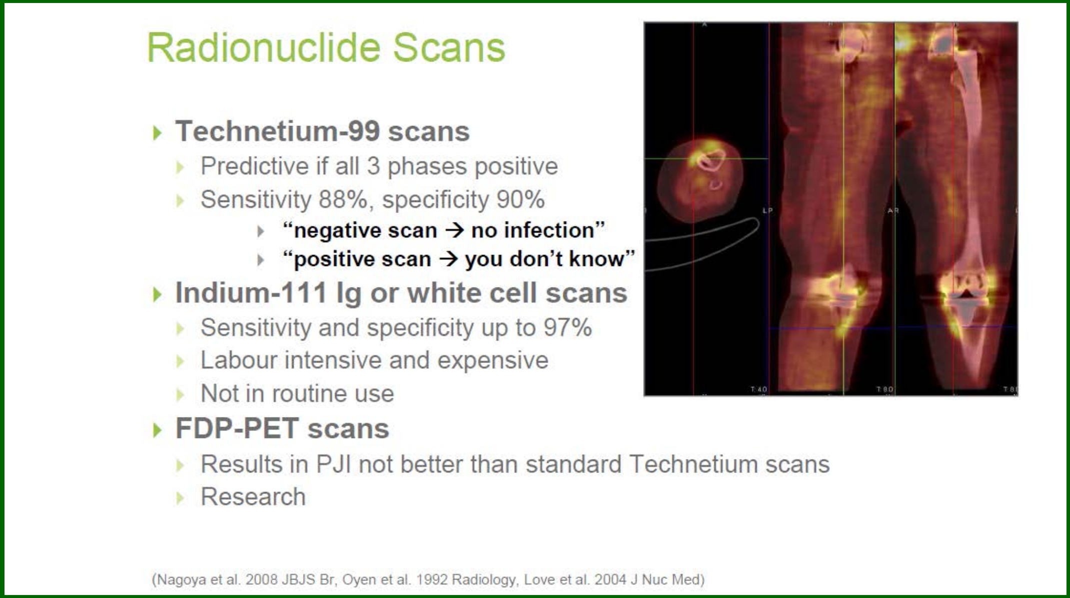
LP Central Hospital Laboratory, Kemi, Finland. Martti.Larikka@lpshp.fi



Tc99 = inflammation
leukocyte = infection



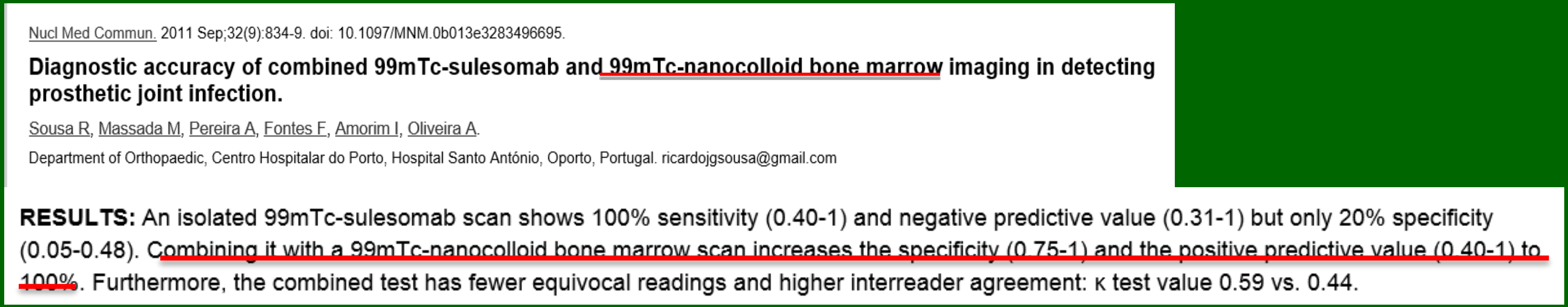
- **Se POSITIVA eseguire SCINTI con leucociti marcati**
- **Se NEGATIVA ricercare altre diagnosi. VPN 100%**



Radionuclide Scans

- **Technetium-99 scans**
  - Predictive if all 3 phases positive
  - Sensitivity 88%, specificity 90%
    - **“negative scan → no infection”**
    - **“positive scan → you don’t know”**
- **Indium-111 Ig or white cell scans**
  - Sensitivity and specificity up to 97%
  - Labour intensive and expensive
  - Not in routine use
- **FDP-PET scans**
  - Results in PJI not better than standard Technetium scans
  - Research

(Nagoya et al. 2008 JBJS Br, Oyen et al. 1992 Radiology, Love et al. 2004 J Nuc Med)



Nucl Med Commun. 2011 Sep;32(9):834-9. doi: 10.1097/MNM.0b013e3283496695.

Diagnostic accuracy of combined 99mTc-sulesomab and 99mTc-nanocolloid bone marrow imaging in detecting prosthetic joint infection.

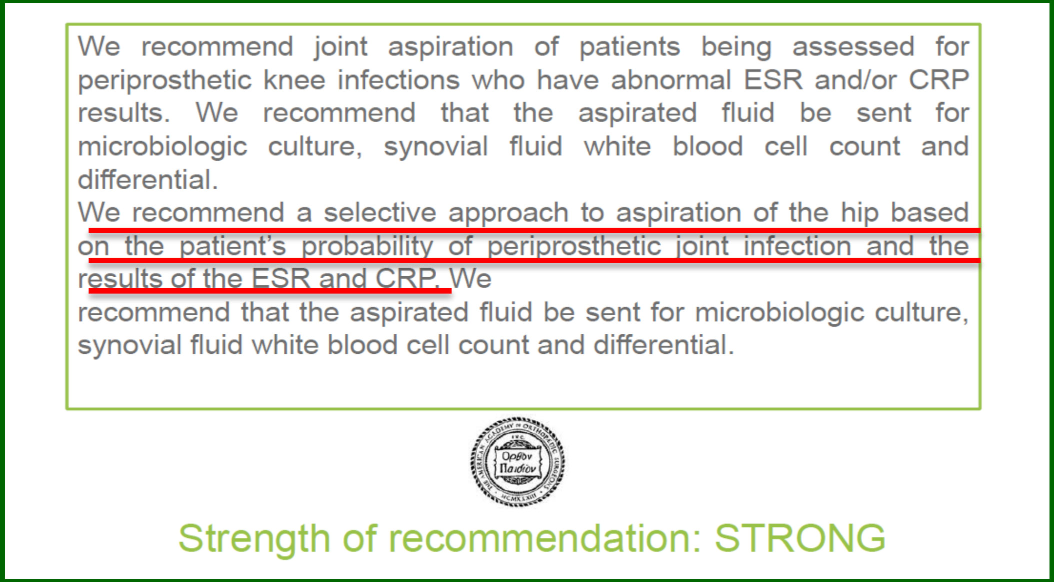
Sousa R, Massada M, Pereira A, Fontes F, Amorim I, Oliveira A.

Department of Orthopaedic, Centro Hospitalar do Porto, Hospital Santo António, Oporto, Portugal. ricardojgsousa@gmail.com

RESULTS: An isolated 99mTc-sulesomab scan shows 100% sensitivity (0.40-1) and negative predictive value (0.31-1) but only 20% specificity (0.05-0.48). Combining it with a 99mTc-nanocolloid bone marrow scan increases the specificity (0.75-1) and the positive predictive value (0.40-1) to 100%. Furthermore, the combined test has fewer equivocal readings and higher interreader agreement: κ test value 0.59 vs. 0.44.

➡ **Aumenta la SPECIFICITA’ e porta a 100% il VVP**

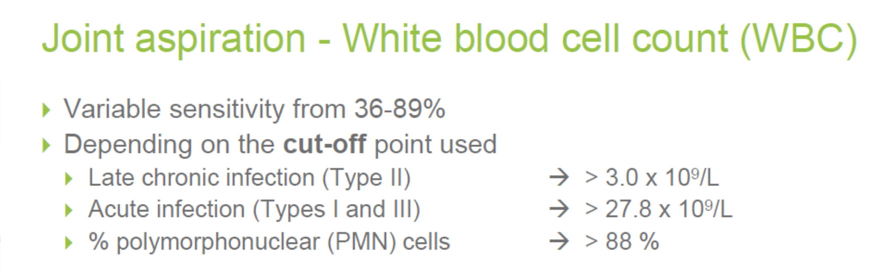
Joint aspiration ?



We recommend joint aspiration of patients being assessed for periprosthetic knee infections who have abnormal ESR and/or CRP results. We recommend that the aspirated fluid be sent for microbiologic culture, synovial fluid white blood cell count and differential.

We recommend a selective approach to aspiration of the hip based on the patient's probability of periprosthetic joint infection and the results of the ESR and CRP. We recommend that the aspirated fluid be sent for microbiologic culture, synovial fluid white blood cell count and differential.

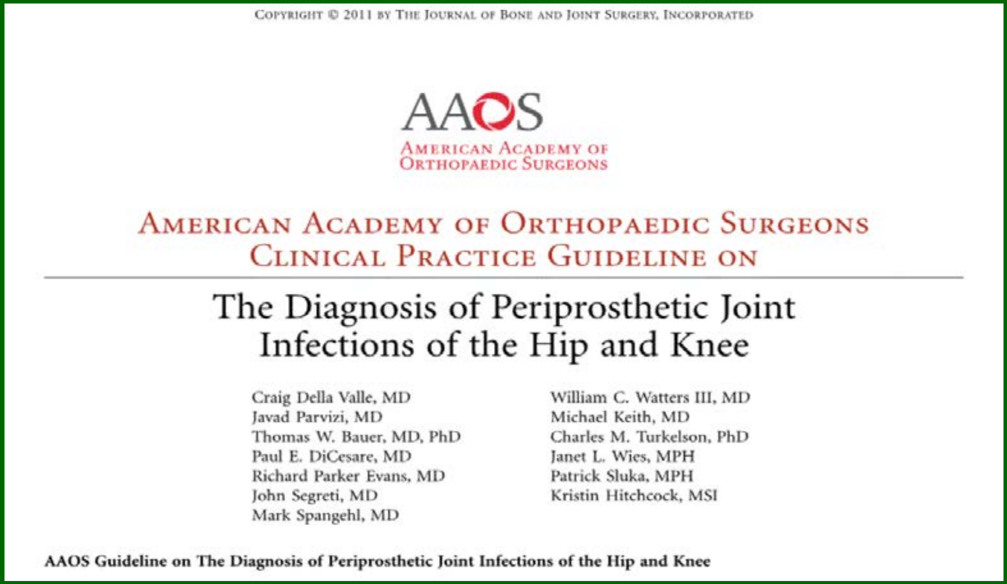
Strength of recommendation: STRONG



Joint aspiration - White blood cell count (WBC)

- Variable sensitivity from 36-89%
- Depending on the **cut-off** point used
  - Late chronic infection (Type II) → > 3.0 x 10^9/L
  - Acute infection (Types I and III) → > 27.8 x 10^9/L
  - % polymorphonuclear (PMN) cells → > 88 %

Se persistono dubbi ….
Attenersi alle linee guida!



Copyright © 2011 by The Journal of Bone and Joint Surgery, Incorporated

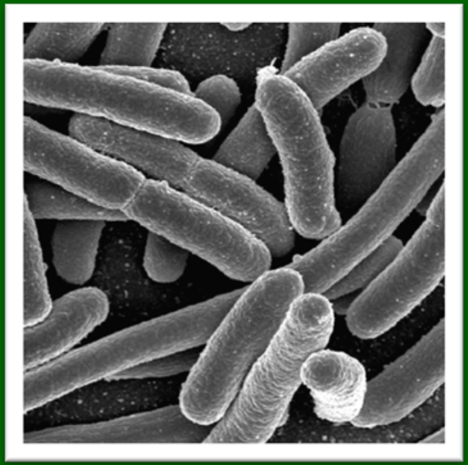
AAOS
American Academy of
Orthopaedic Surgeons

American Academy of Orthopaedic Surgeons
Clinical Practice Guideline on

The Diagnosis of Periprosthetic Joint
Infections of the Hip and Knee

Craig Della Valle, MD
Javad Parvizi, MD
Thomas W. Bauer, MD, PhD
Paul E. DiCesare, MD
Richard Parker Evans, MD
John Segreti, MD
Mark Spangehl, MD
William C. Watters III, MD
Michael Keith, MD
Charles M. Turkelson, PhD
Janet L. Wies, MPH
Patrick Sluka, MPH
Kristin Hitchcock, MSI

AAOS Guideline on The Diagnosis of Periprosthetic Joint Infections of the Hip and Knee



E affidarsi SEMPRE ad un buon infettivologo!

Il rettore Honsell: «L'infettivologia diventerà un punto di alta qualificazione per la facoltà di Medicina e l'ateneo friulano»

Apre il reparto malattie infettive

Lunedì i primi pazienti saranno ricoverati nei 13 posti letto allestiti nel padiglione universitario

INFEZIONE

FATTORI DI RISCHIO

✓Obesità
✓Diabete
✓Osteonecrosi
✓Alcolismo
✓Artrite reumatoide
✓Immunosoppressori
✓Prolungamento tempi intervento
…

METHOTREXATE
INJECTION USP
50 mg
25 mg/mL
STERILE ISOTONIC SOLUTION
Rx ONLY

- IMMEDIATA <4 sett
- PRECOCE 4sett-2anni
- TARDIVA >2 anni
- TAMPONE+/CLINICA-

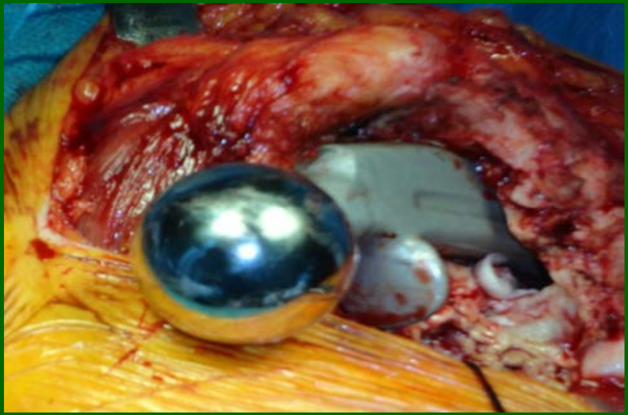
SUPERFICIALE
PROFONDA

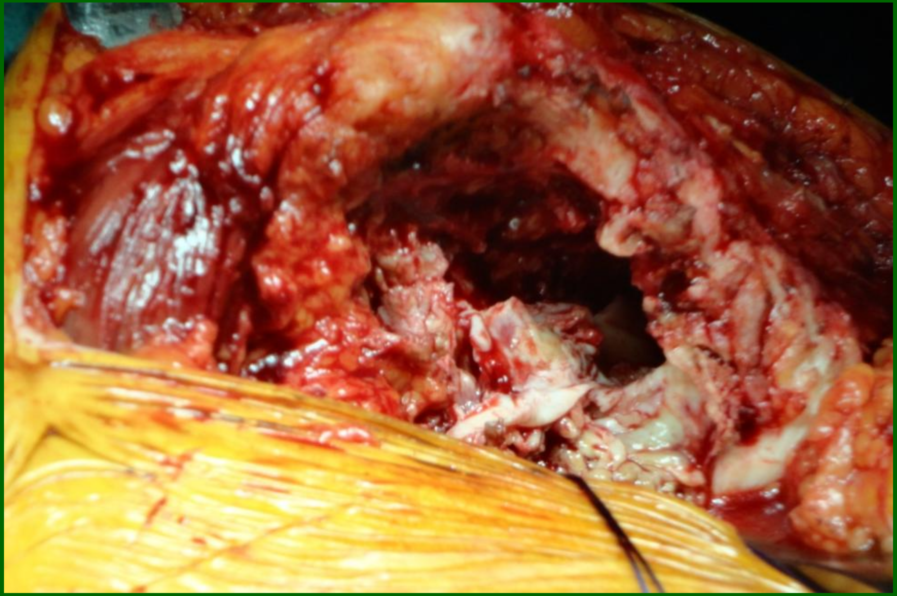
Fitzgerald et al: JBJS Am 1977; 59(7):847-855.
Tsukayama et al: JBJS Am 2003; 85A(suppl 1):S75-S80.

REVISIONE CHIRURGICA

PRECOCE

TARDIVA





ONE STEP or TWO STEP

primo TEMPO
LIGABUE
SECONDO TEMPO
LIGABUE

2 STEP

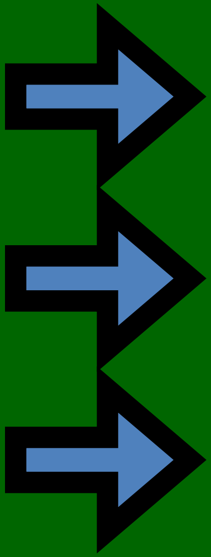
VANTAGGI

- ✓Aspettare effetti del trattamento ATB
- ✓Miglior controllo infezioni
- ✓Miglior management tessuti molli

SVANTAGGI

- ✓Lunghe ospedalizzazioni
- ✓Maggior morbidità perioperatoria
- ✓Almeno 2 interventi
- ✓Maggiori costi

TEMPI FONDAMENTALI

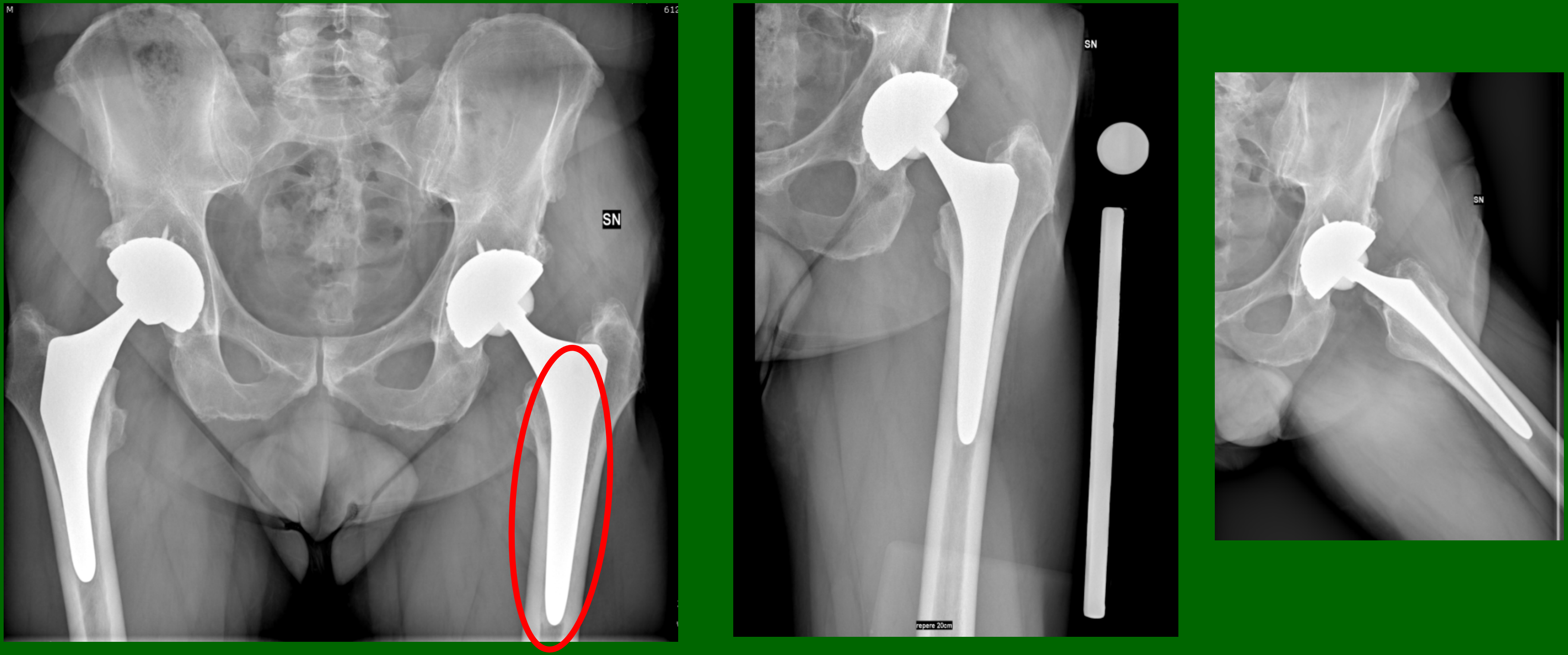


Primo intervento	Rimozione protesi e impianto spaziatore
Periodo intermedio	Trattamento ATB
Secondo intervento	Reimpianto protesi

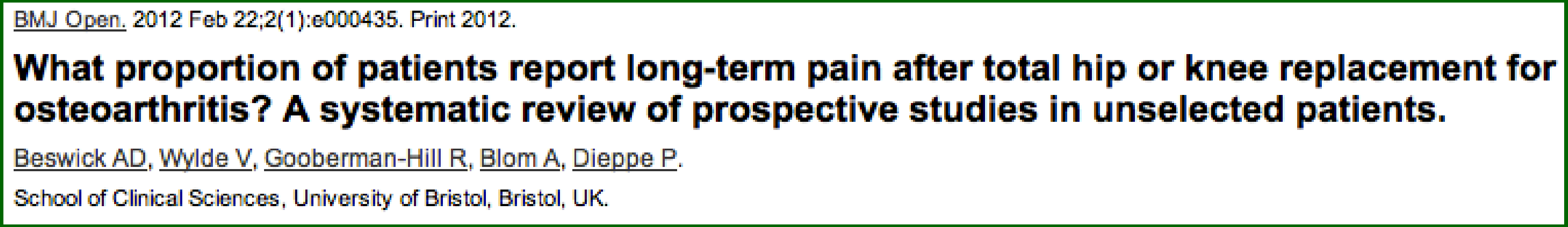
ROYAL AIR FORCE
STRIKE HARD STRIKE SURE

1. PROTESI DOLOROSA

M.P.L. 62aa. PTA sinistra dolorosa, integrata e stabile.
Probabile sovradimensionamento STELO


M
612
SN
SN
repere 20cm
SN

CHE FARE ?



BMJ Open. 2012 Feb 22;2(1):e000435. Print 2012.

What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients.

Beswick AD, Wylde V, Gooberman-Hill R, Blom A, Dieppe P.

School of Clinical Sciences, University of Bristol, Bristol, UK.

PRIMI IMPIANTI DOLOROSI

9% Anca

20% Ginocchio

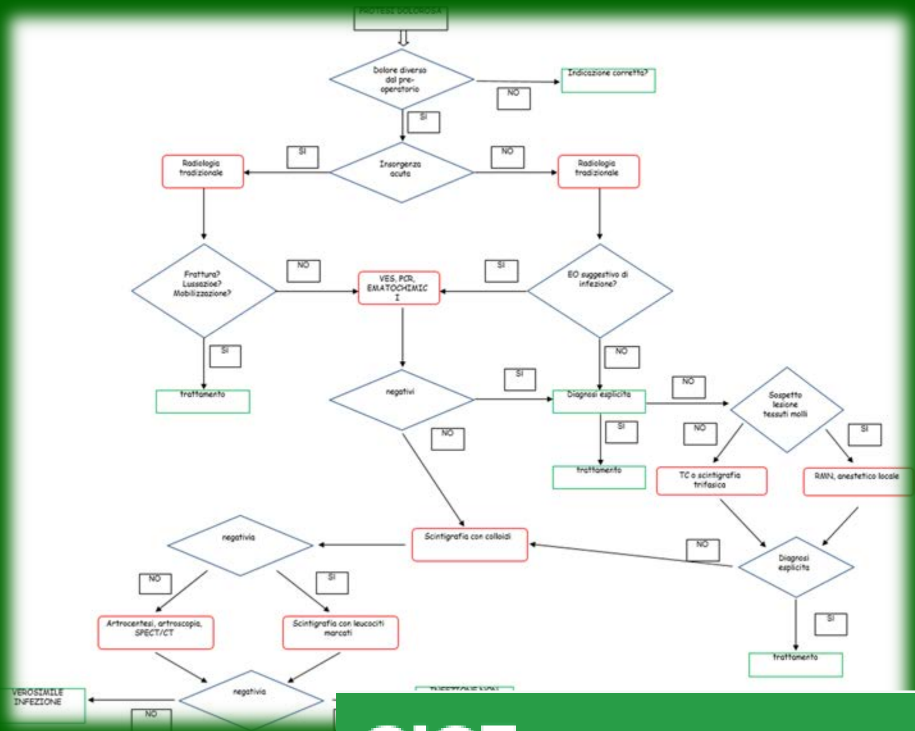
10-16% Spalla

COSA PREFERISCE? UN MEDICO CHE LE TIENE LA MANO MENTRE MUORE O CHE LA IGNORA MENTRE MIGLIORA?
FACCIA LEI! FINORA HO INCONTRATO SOLO MEDICI CHE TI IGNORANO MENTRE MUORI!
massy

Procedere ad una diagnosi di esclusione ed impostare un trattamento conservativo

N.B. monitorare il Pz. nel tempo

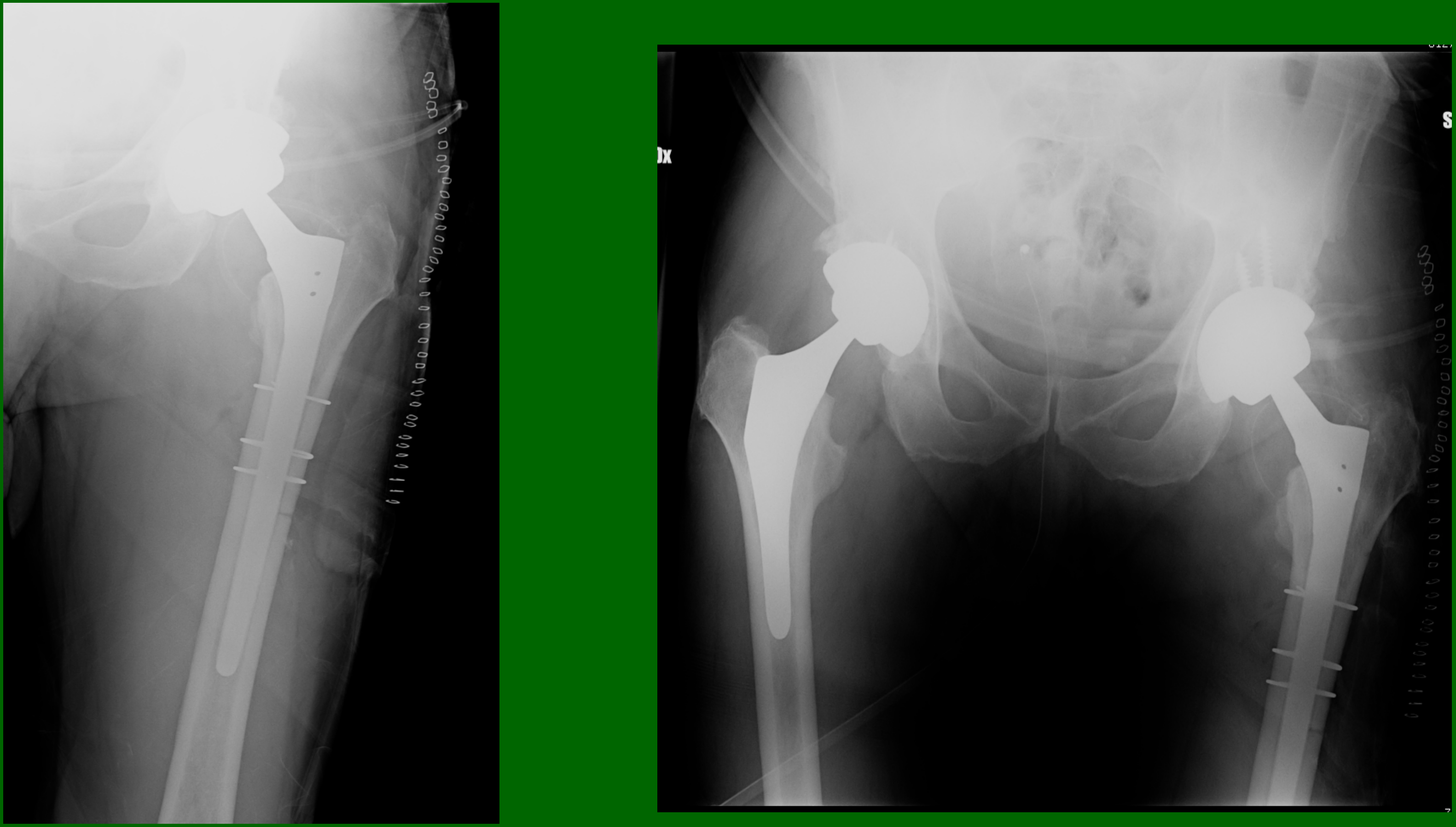
- ✓Escludere un processo infettivo in atto
- ✓Escludere mobilizzazione delle componenti
- ✓Escludere altre cause (ematoma, sciatalgia)


PROTESI DOLOROSA
Dolore diverso dal pre-operatorio
NO
Indicazione corretta?
SI
Insorgenza acuta
SI
Radiologia tradizionale
NO
Radiologia tradizionale
Frattura? Lussazioe? Mobilizzazione?
NO
VES, PCR, EMATOCHIMICI
SI
EO suggestivo di infezione?
SI
trattamento
NO
negativi
SI
Diagnosi esplicita
NO
Sospetto lesione tessuti molli
NO
SI
NO
SI
trattamento
TC o scintigrafia trifasica
RMN, anestetico locale
negativia
Scintigrafia con colloidi
NO
Diagnosi esplicita
NO
SI
Artrocentesi, artroscopia, SPECT/CT
Scintigrafia con leucociti marcati
SI
trattamento
VEROSIMILE INFEZIONE
negativia
NO

GIOT AGOSTO 2012;38(suppl.2):xx-xx

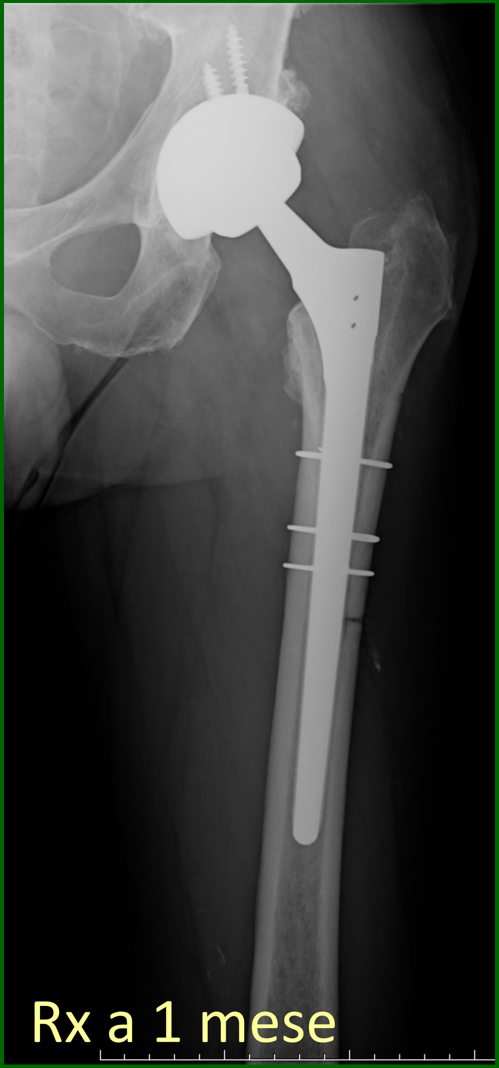
dopo trattamento incruento infruttuoso e indagini diagnostiche NEGATIVE PER INFEZIONE…

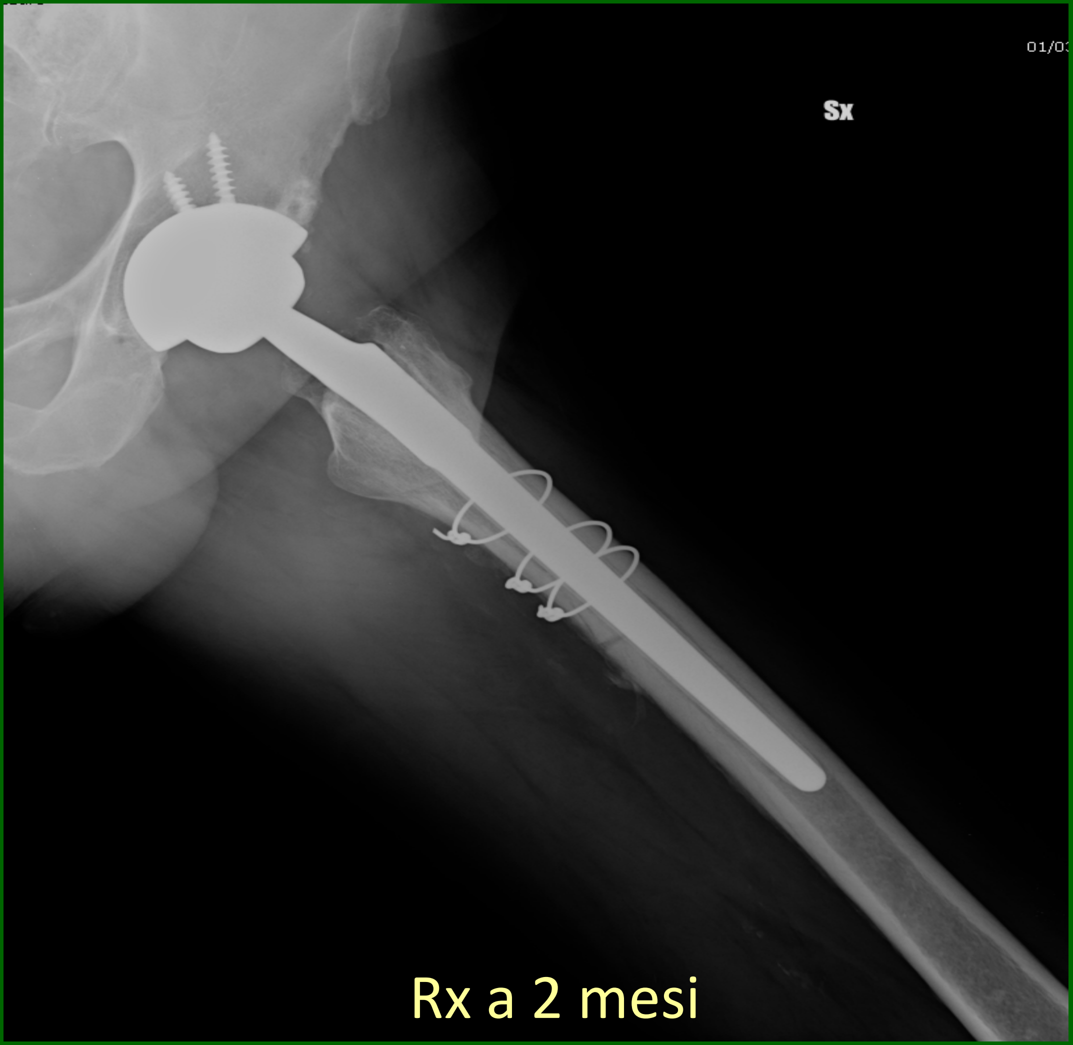
…REVISIONE STELO FEMORALE (Wagner)



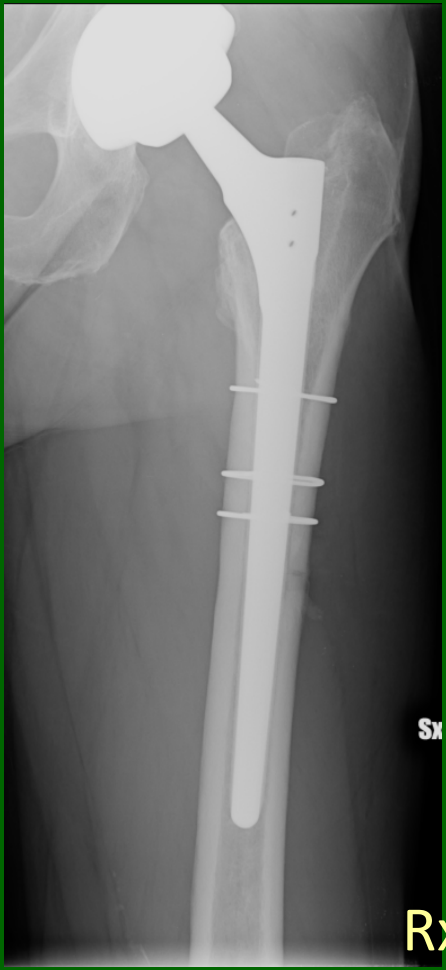
Rx post - op

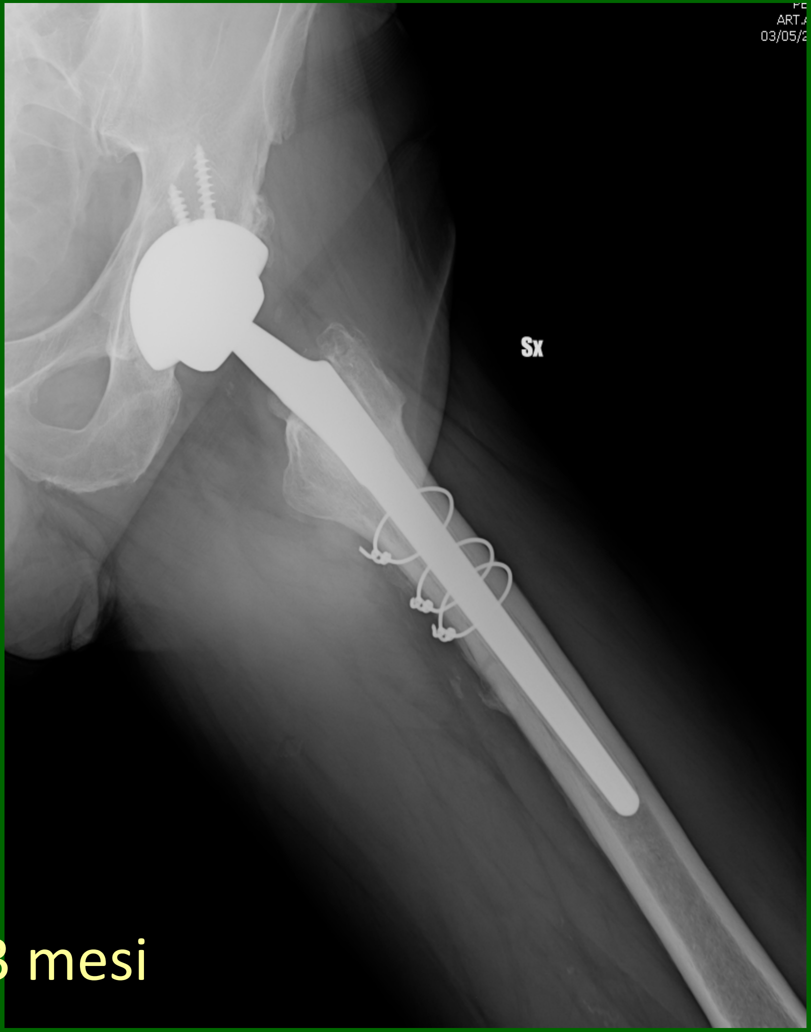
N.B. tampone intraoperatorio negativo.


Rx a 1 mese



Rx a 2 mesi

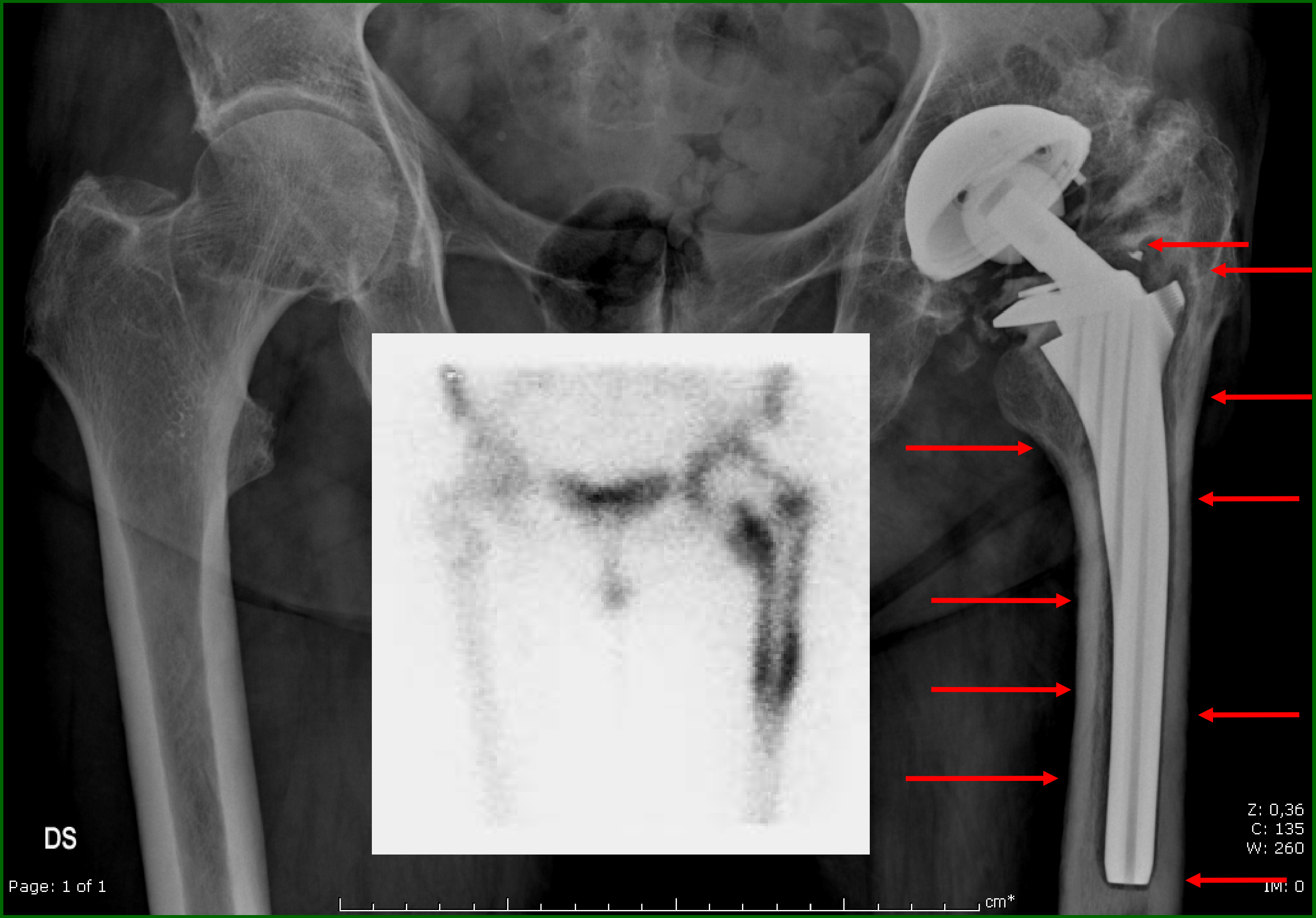




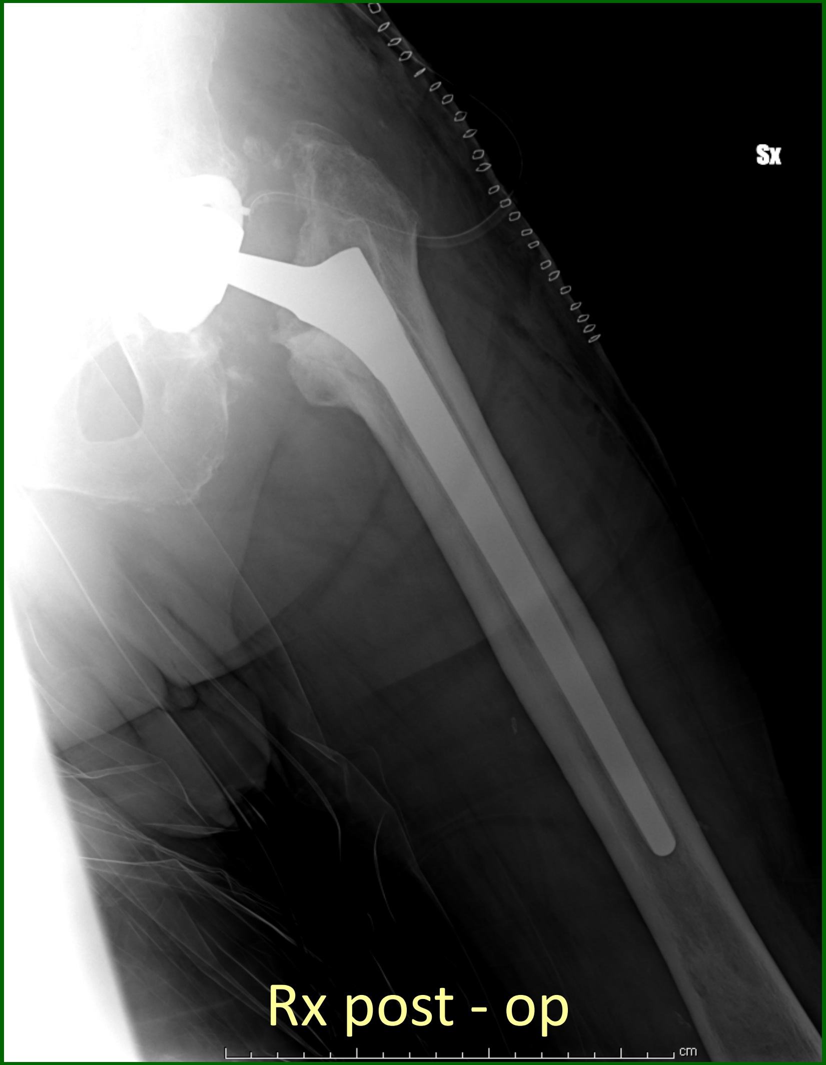
Rx a 3 mesi

Non più dolore nella deambulazione

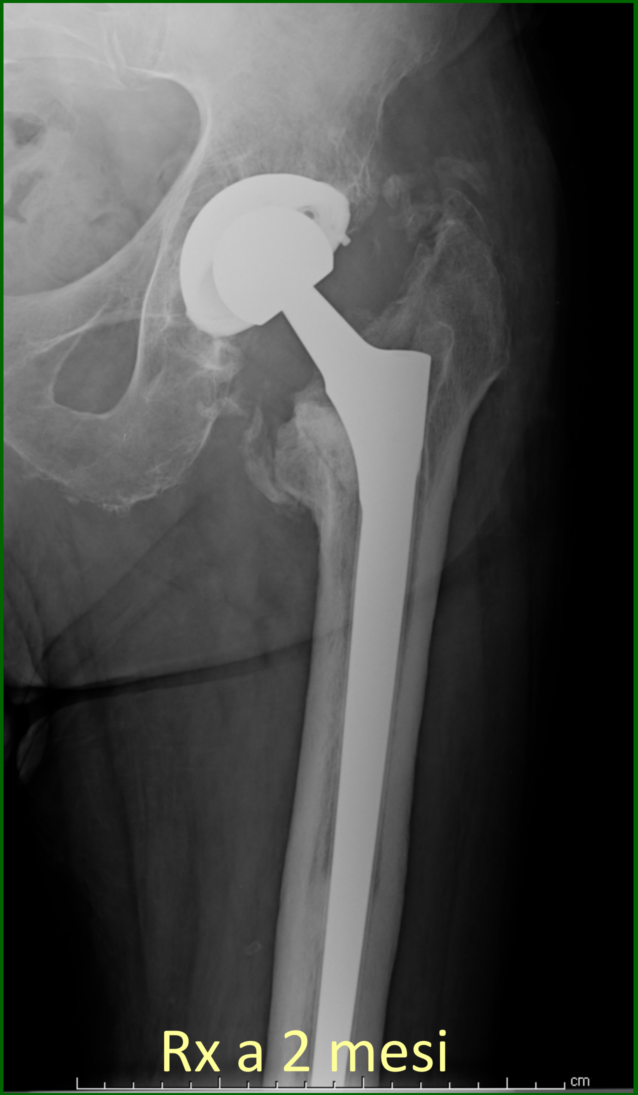
B.A.G. 82aa. Mobilizzazione asettica stelo PTA


DS
Page: 1 of 1
cm*
Z: 0,36
C: 135
W: 260
IM: 0

B.A.G. 82aa

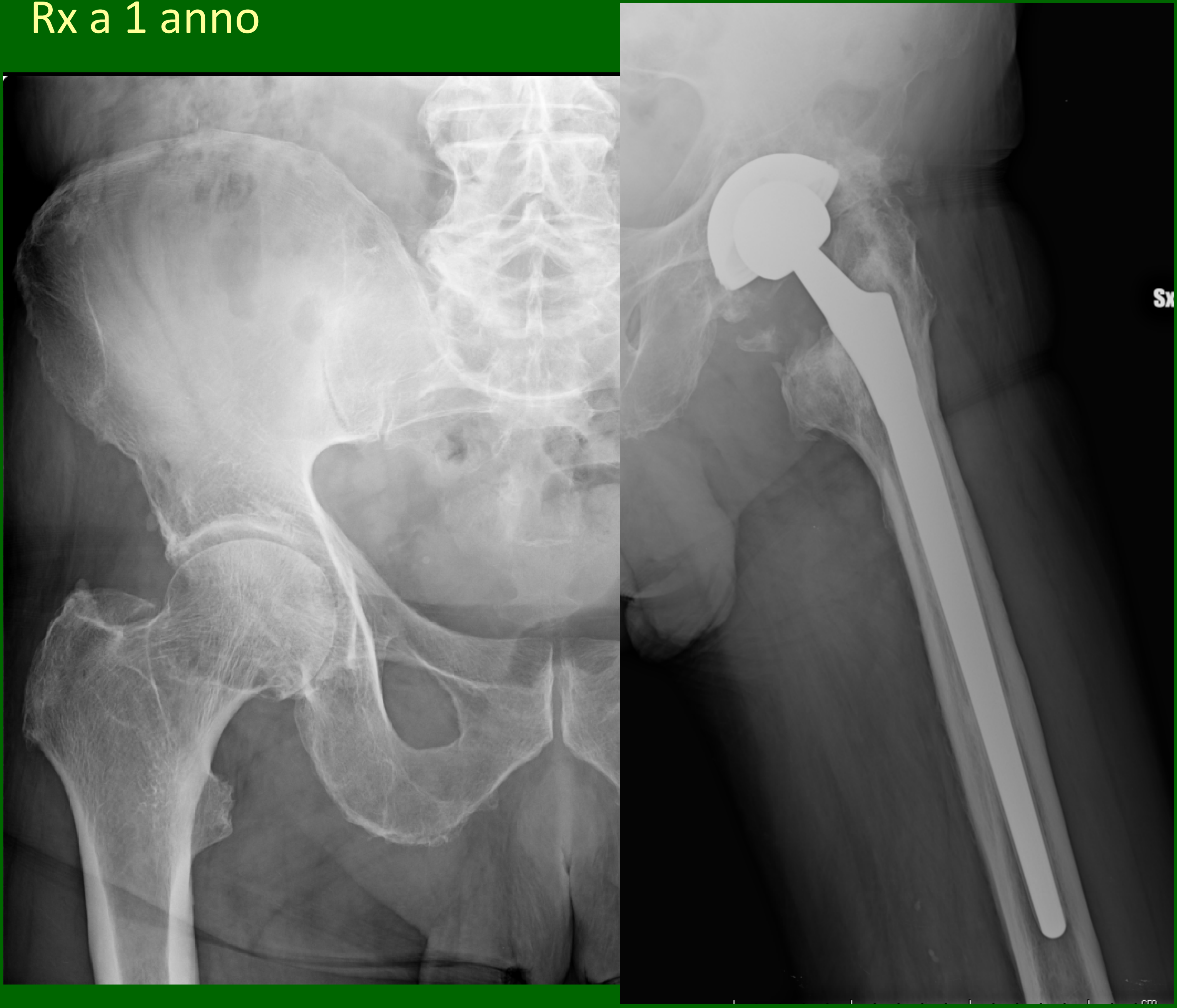


Rx post - op

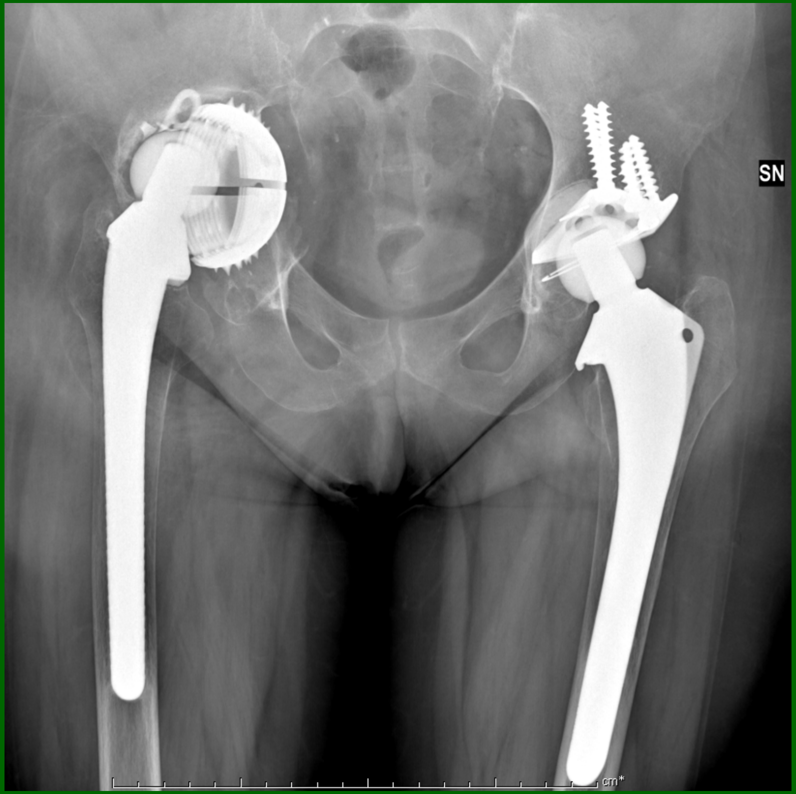


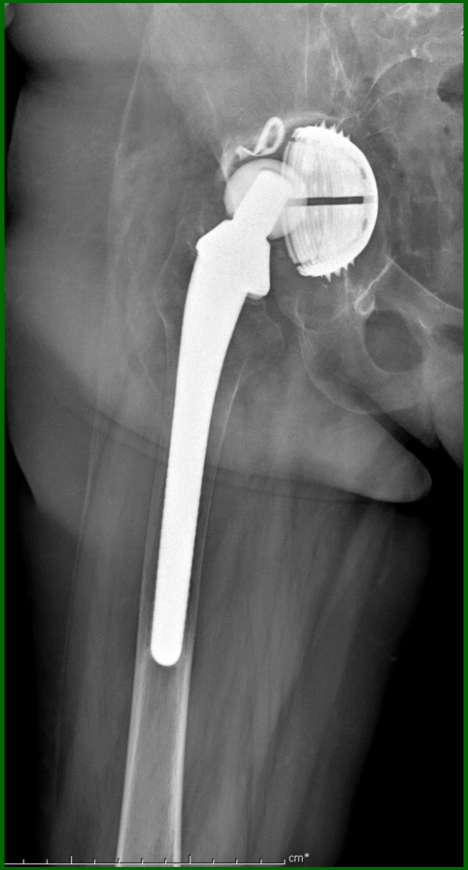
Rx a 2 mesi

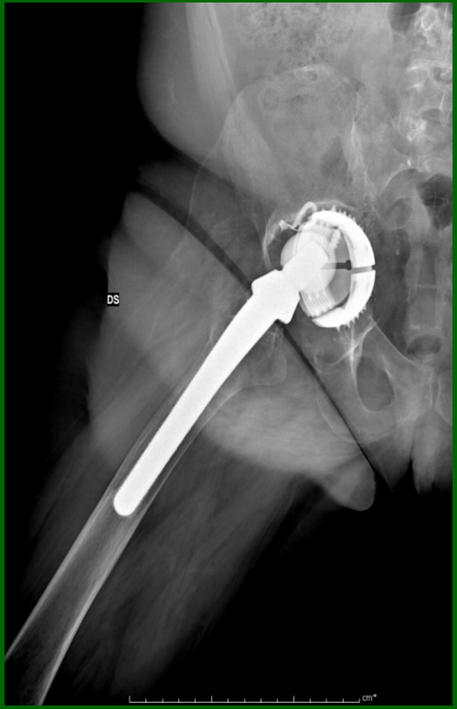
Rx a 1 anno



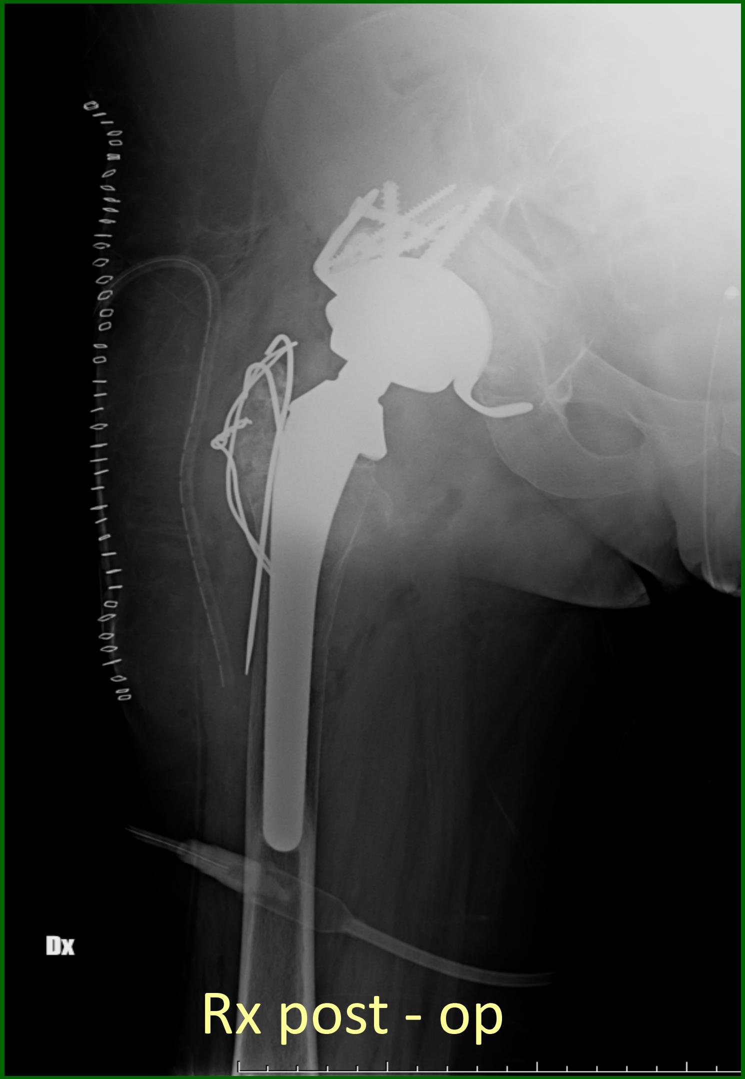
S.P. 52aa. Mobilizzazione asettica cotile destro in A.R. e PTA bilaterale



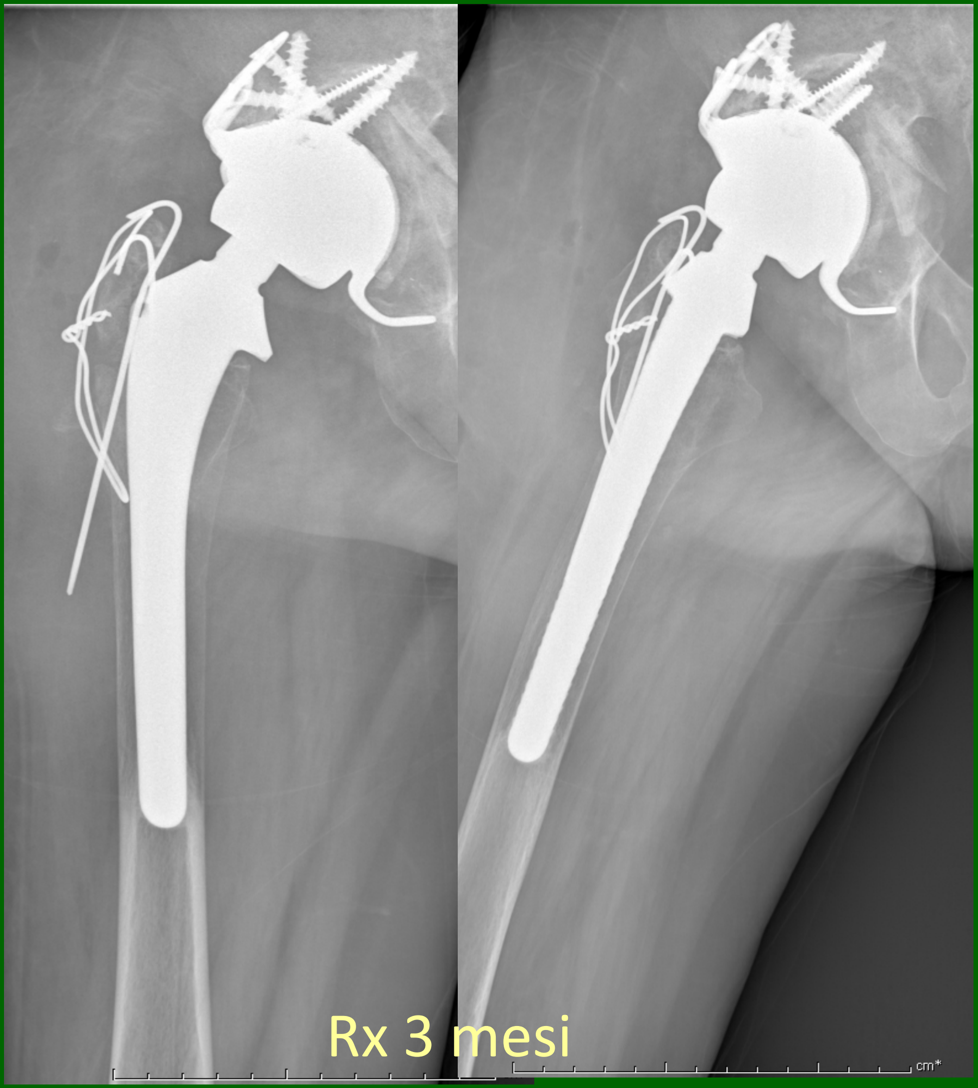




- distacco intraoperatorio del gran trocantere.
- n.3 tamponi di sala NEG.

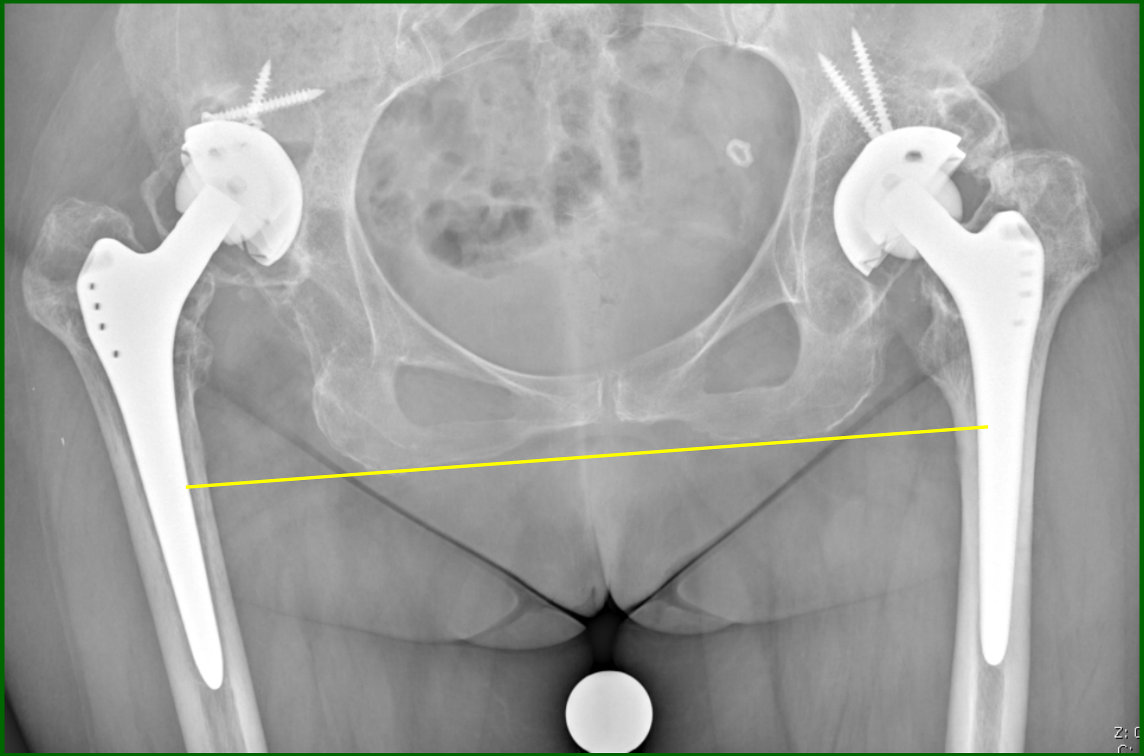


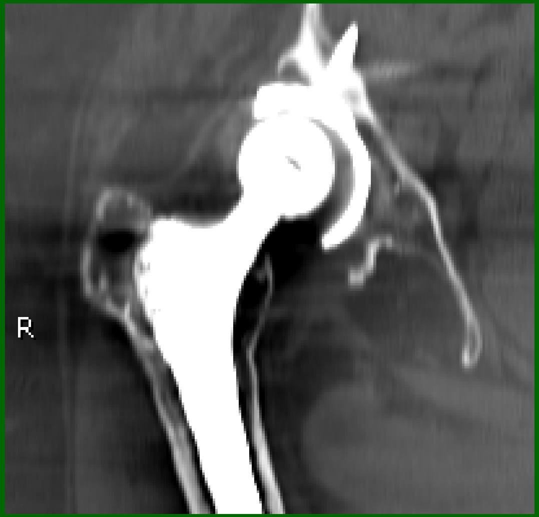
Rx post - op



Rx 3 mesi

C.E. 72aa. Mobilizzazione asettica cotile destro

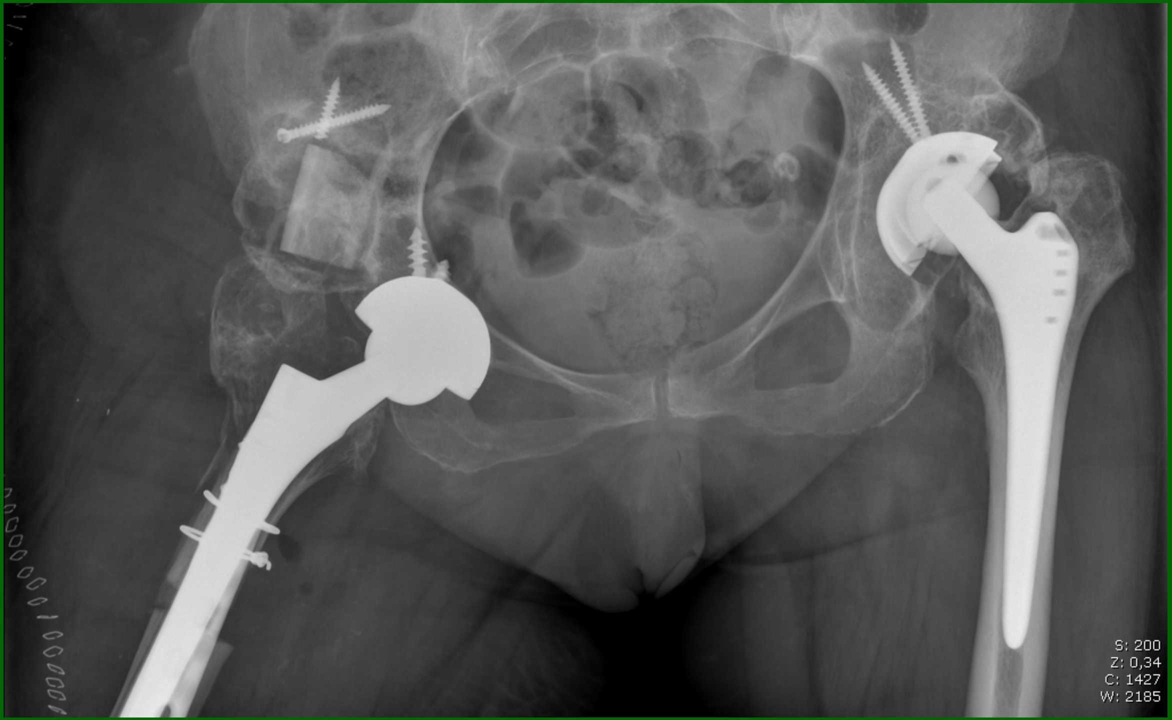


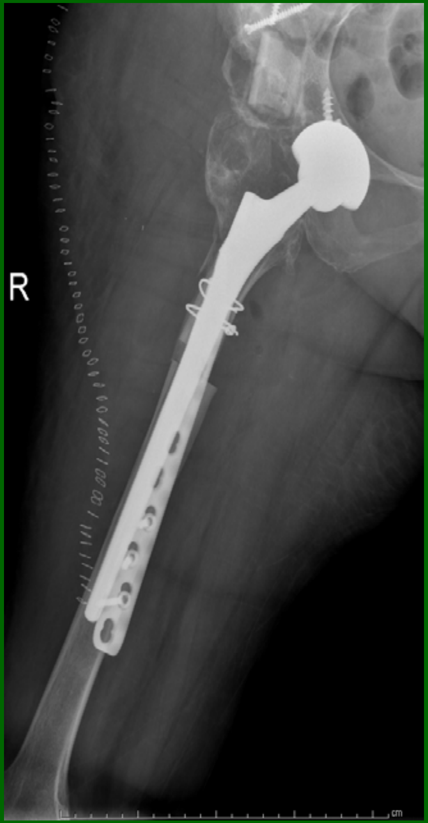


CHE FARE?

RIPOSIZIONARE COTILE NELLA MEDESIMA SEDE?

Valutare il tipo di Pz, età, richieste funzionali

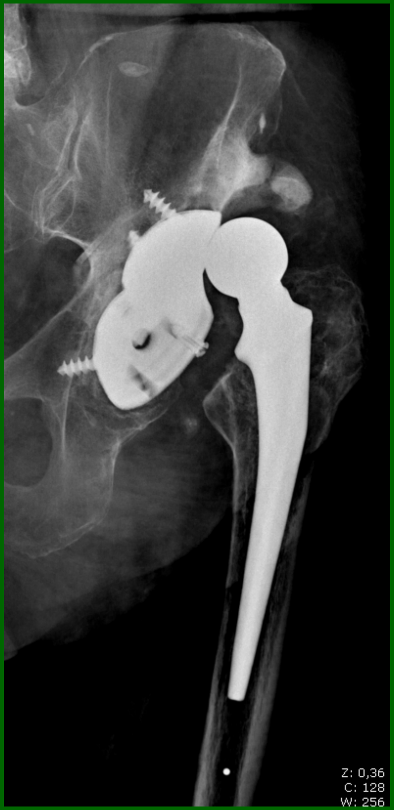


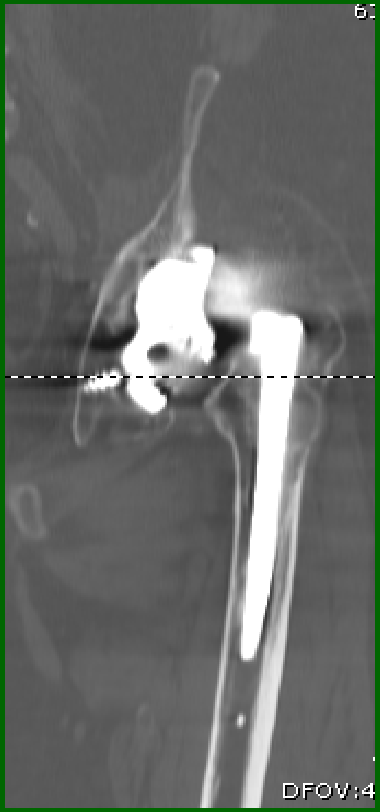


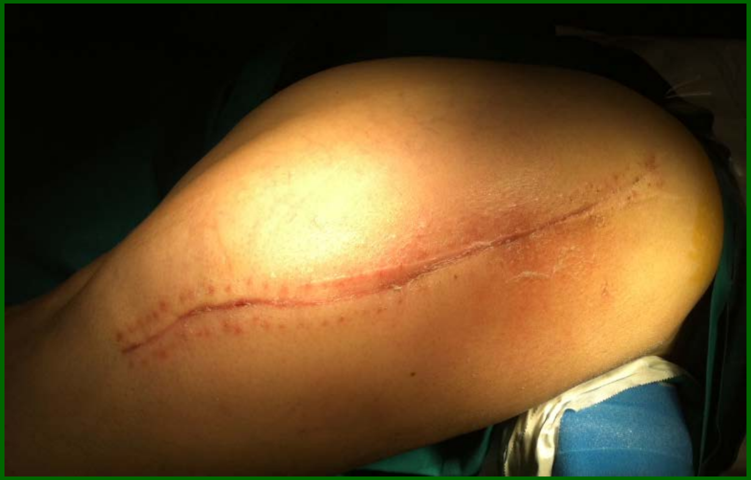
Wagner Trilogy (cup 44 mm con 2 viti da 20 mm, stelo 14 lunghezza 22, testa 28, accoppiamento cer -cer), osteotomia di accorciamento sotto-trocanterica, e stabilizzazione con placca LCP e cerchiaggi

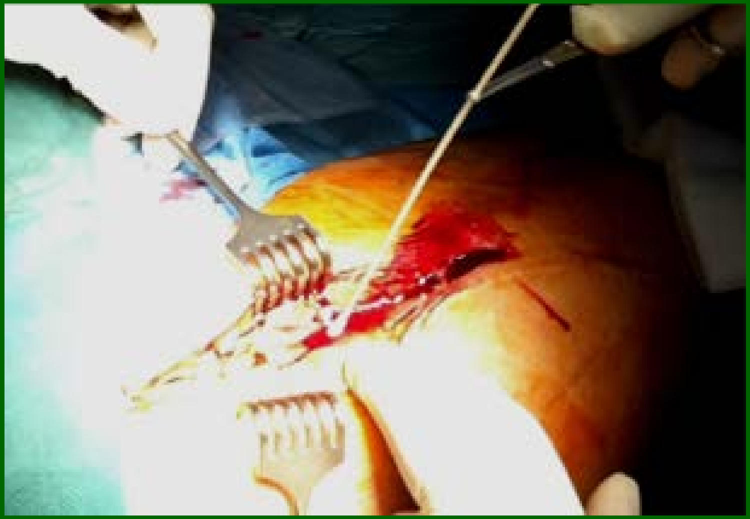
Prevedere gli imprevisti e/o le complicanze

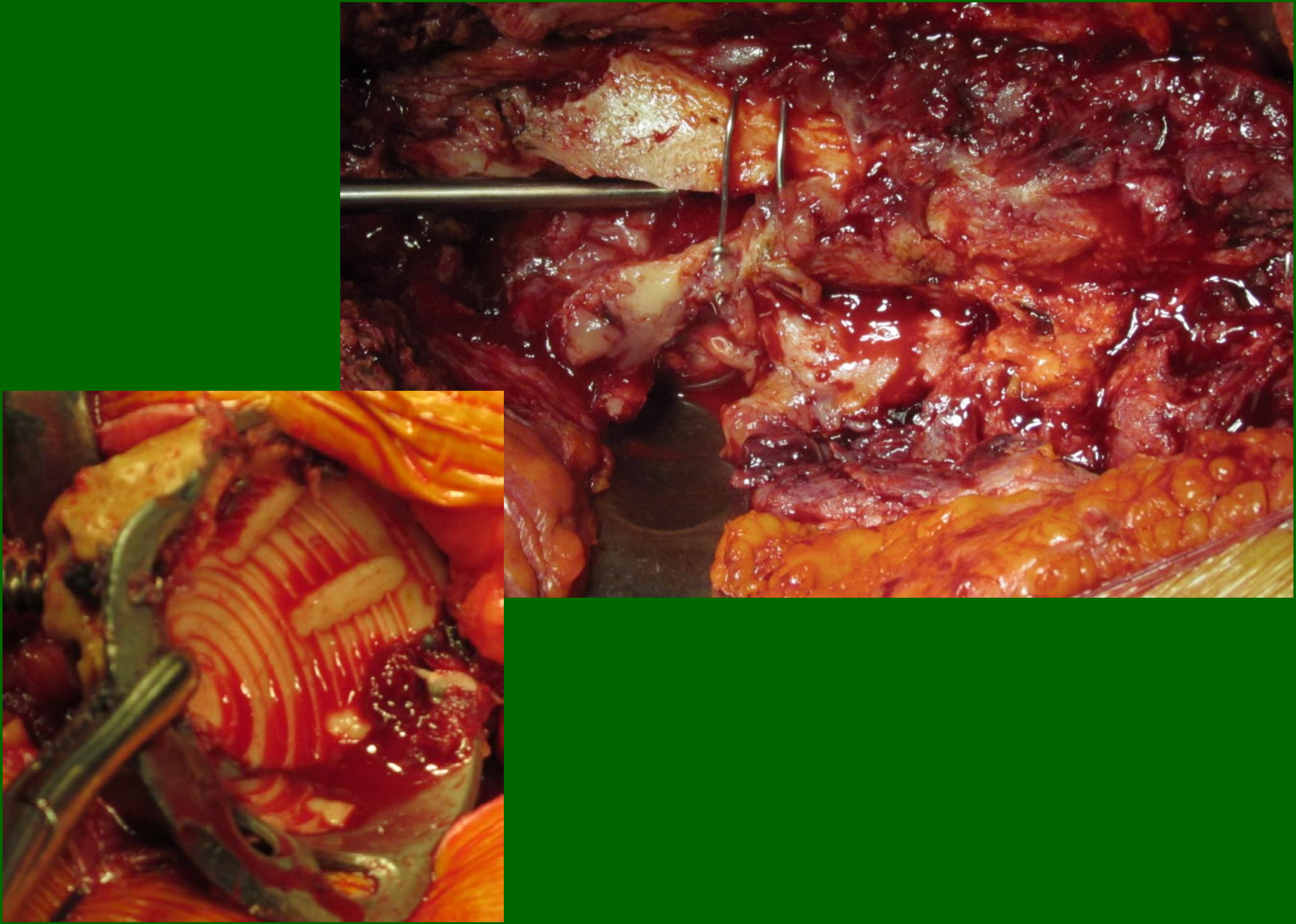
2. SCOLLAMENTO SETTICO

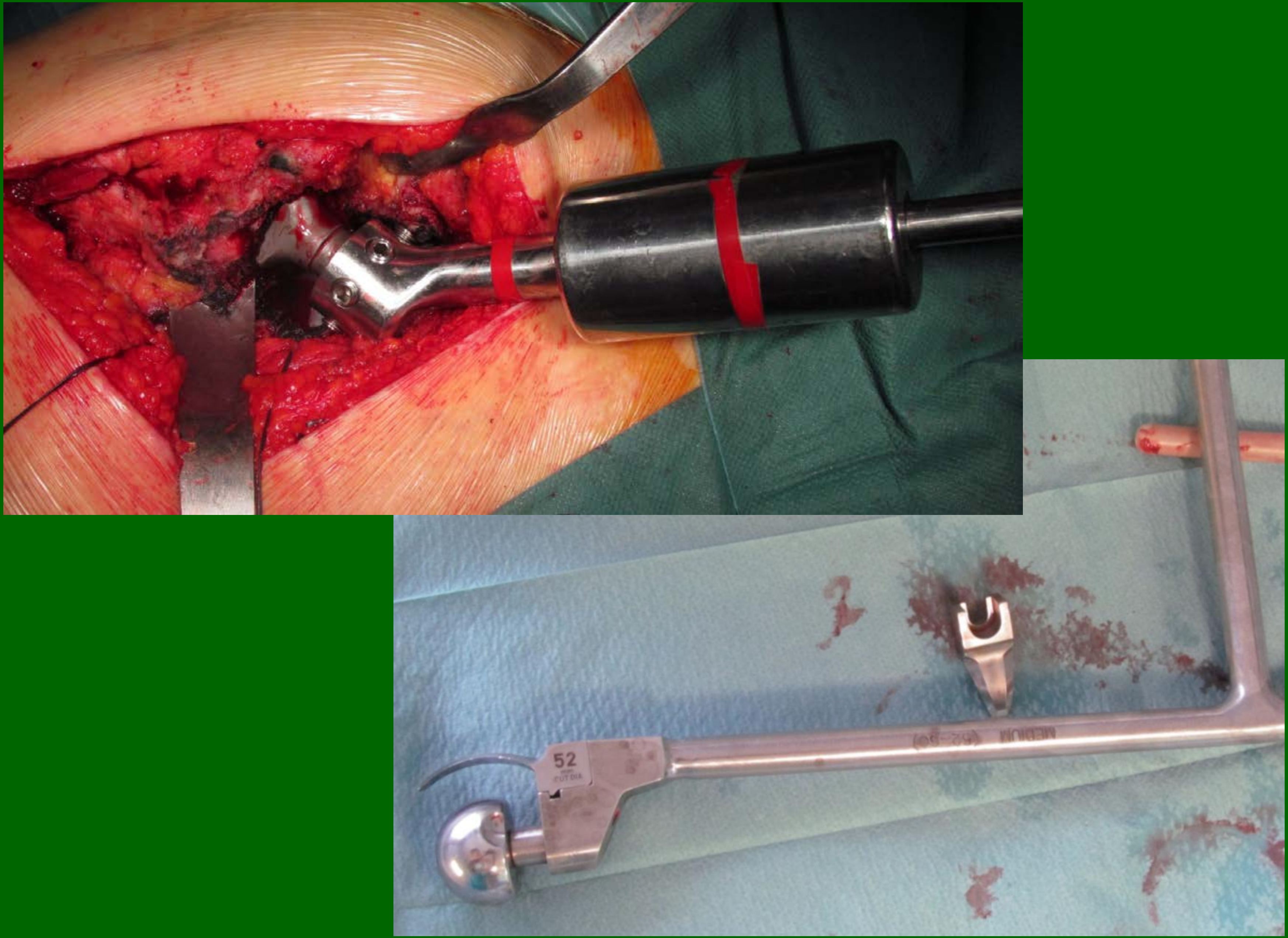

Z: 0,36
C: 128
W: 256

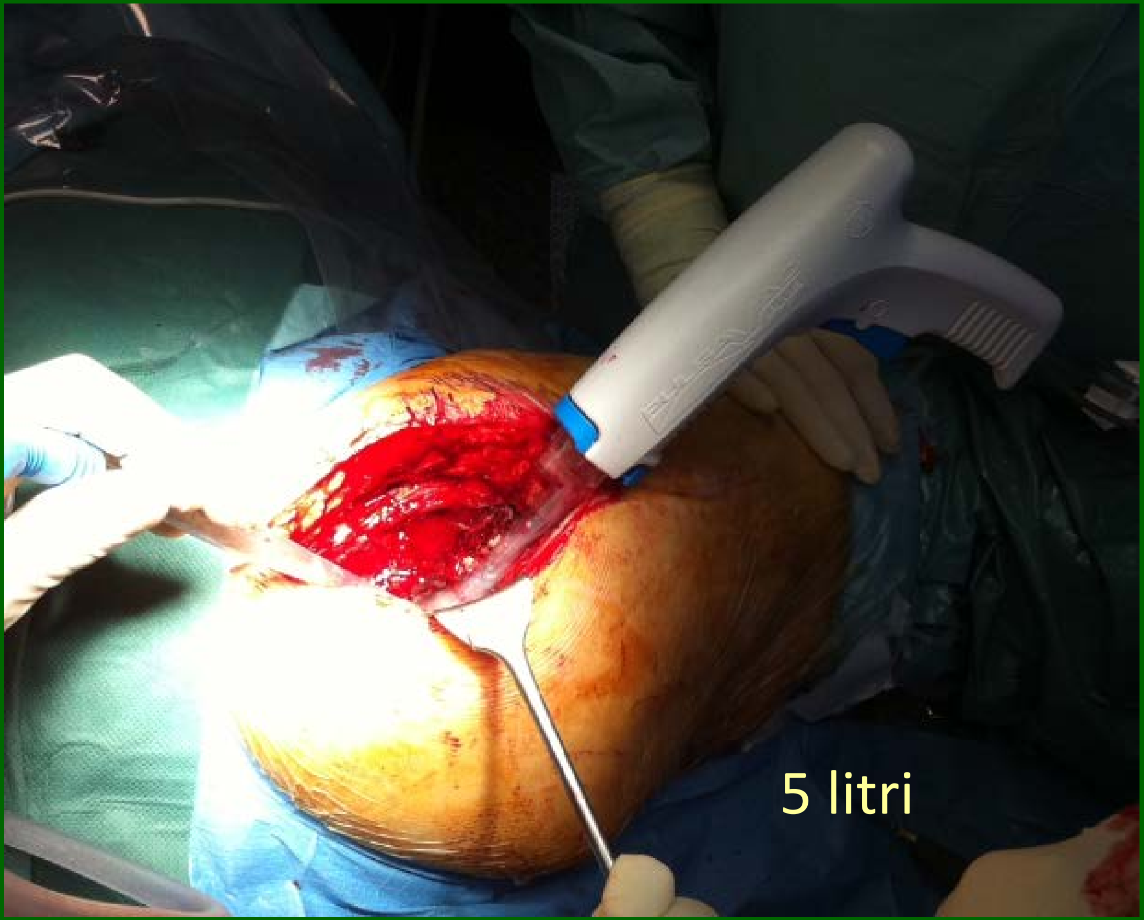




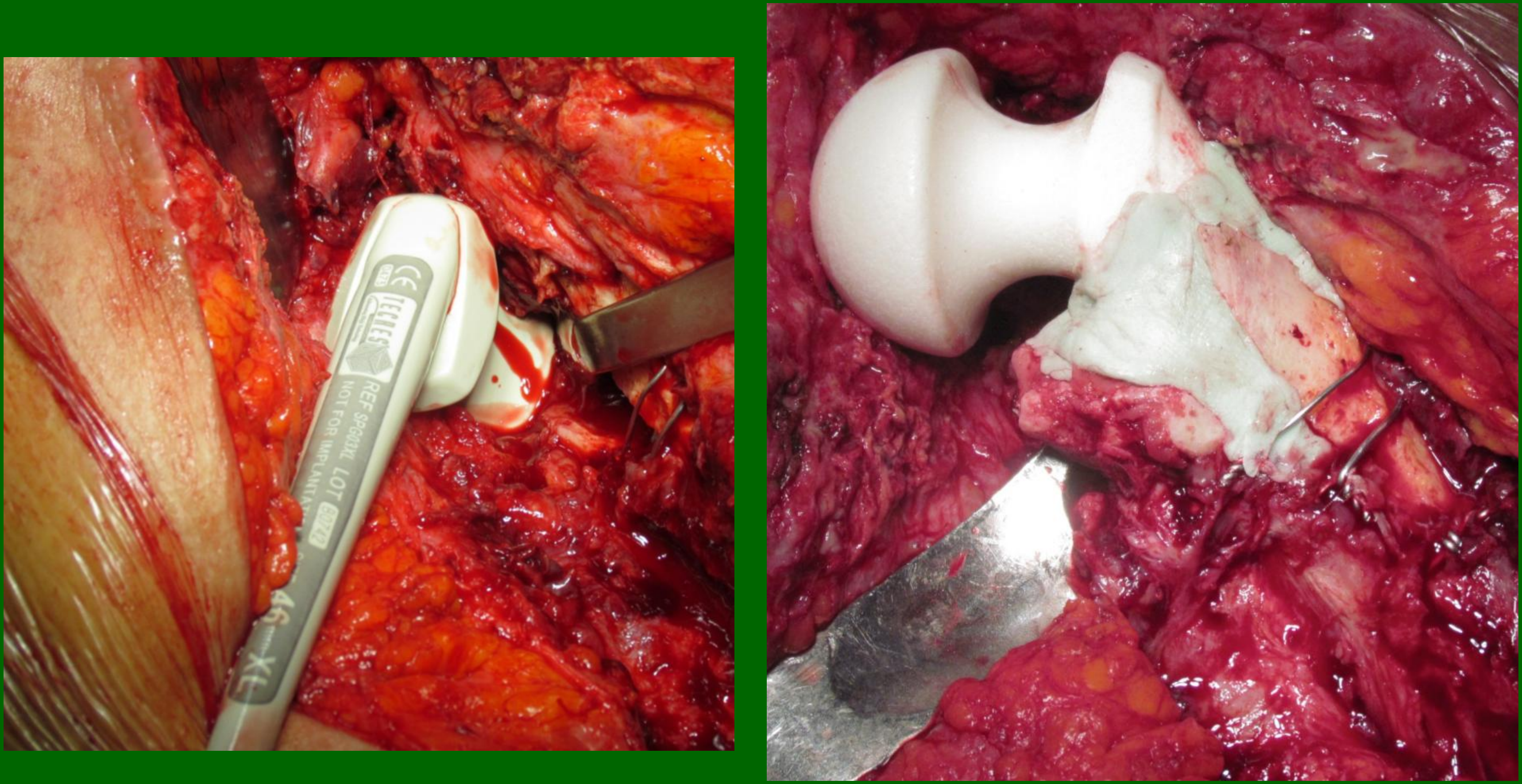


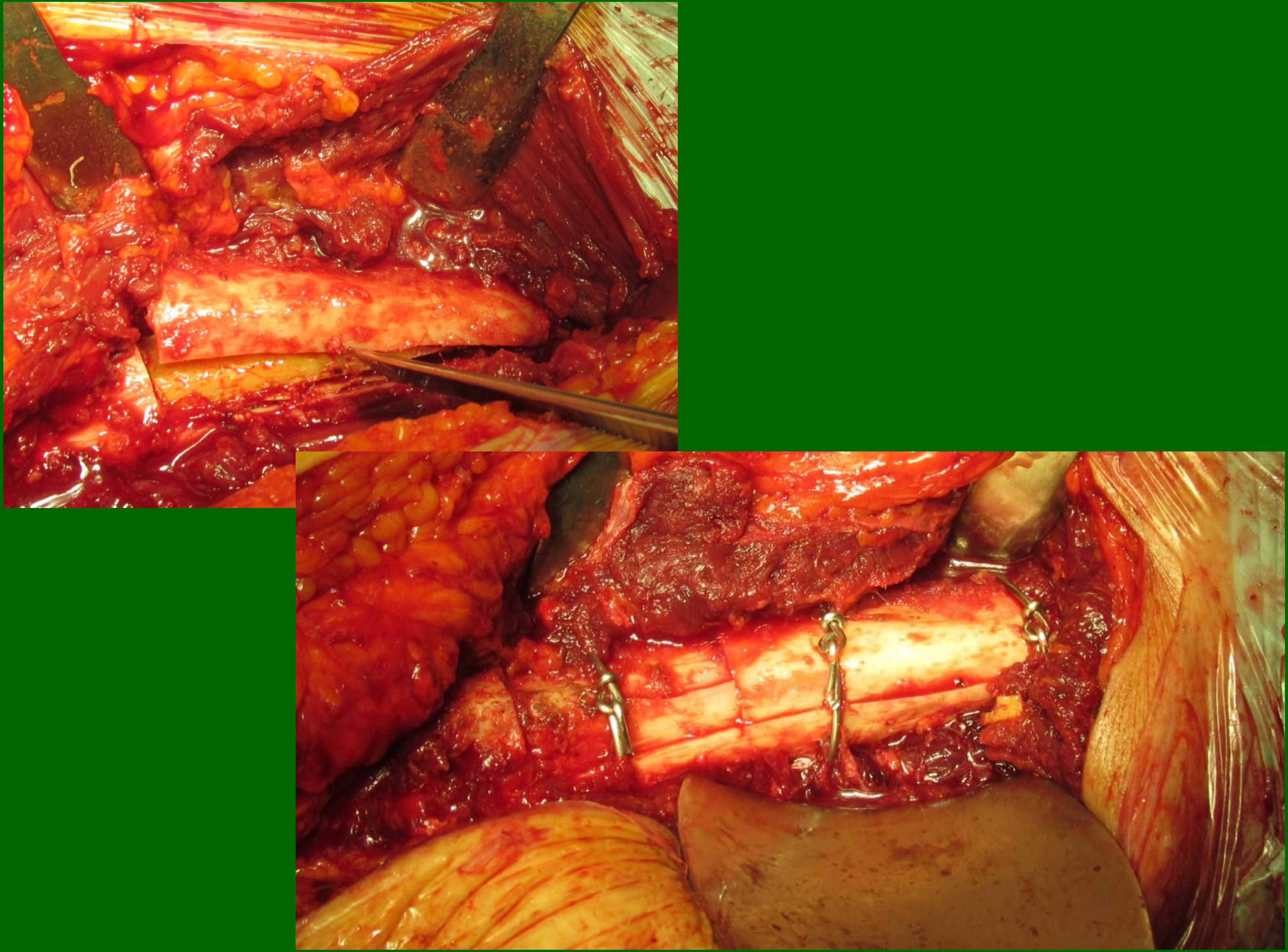



52
mm
CUT DIA
MEDIUM (52-60)

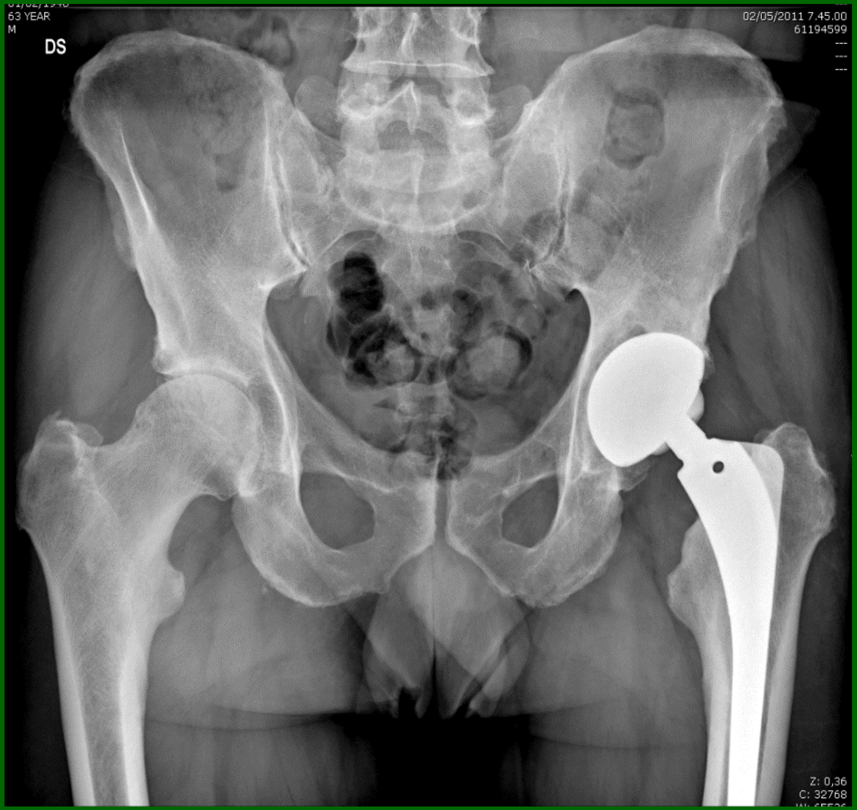


5 litri

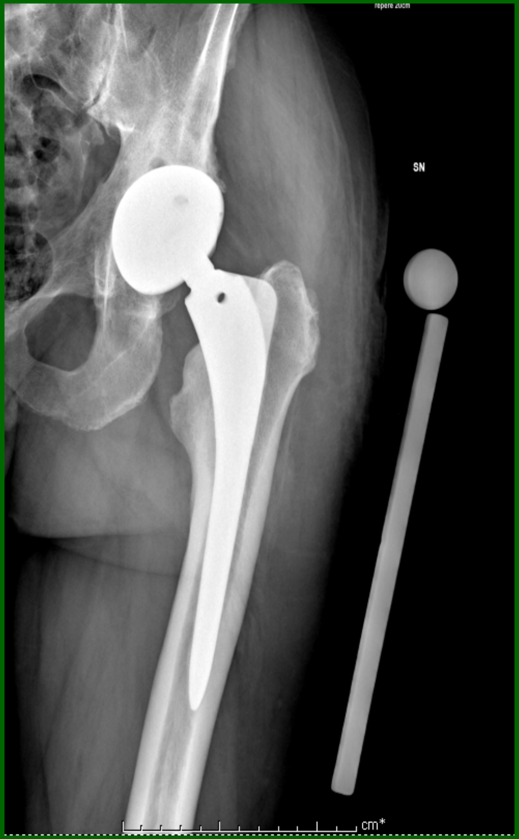

CE
TECRES
REF SPG03XL LOT
NOT FOR IMPLANTAT
46 XL

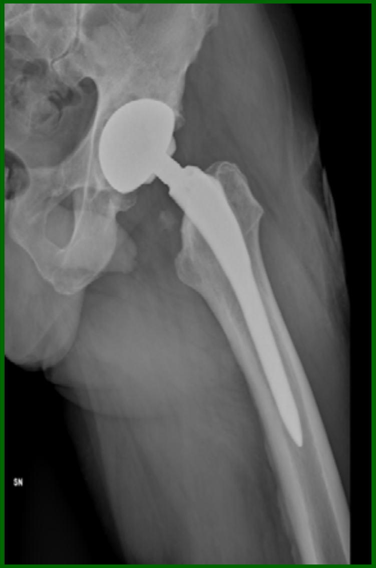


V.E. 69aa. Mobilizzazione PTA sinistra settica

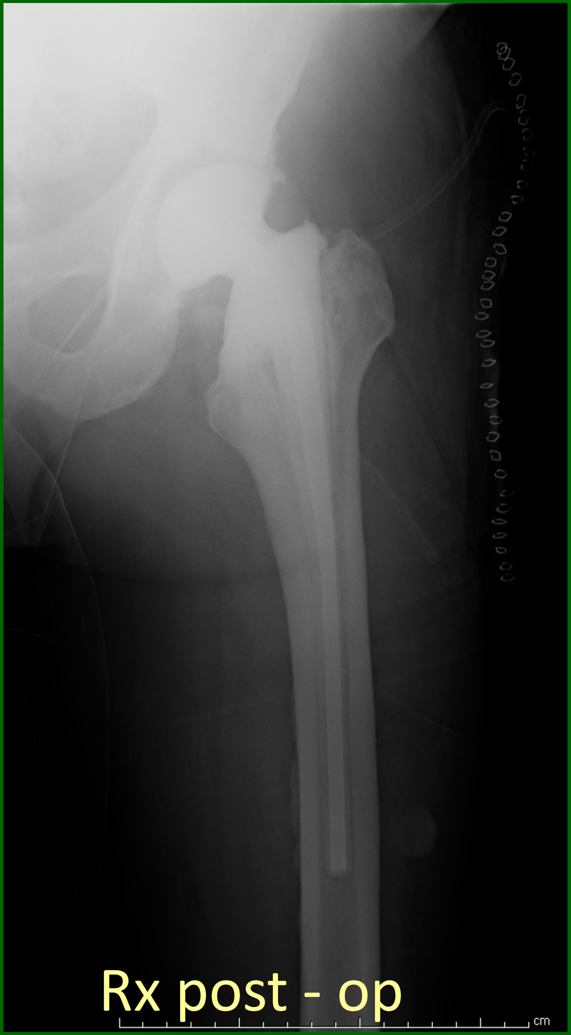

63 YEAR
M
DS
02/05/2011 7.45.00
61194599

Z: 0,36
C: 32768

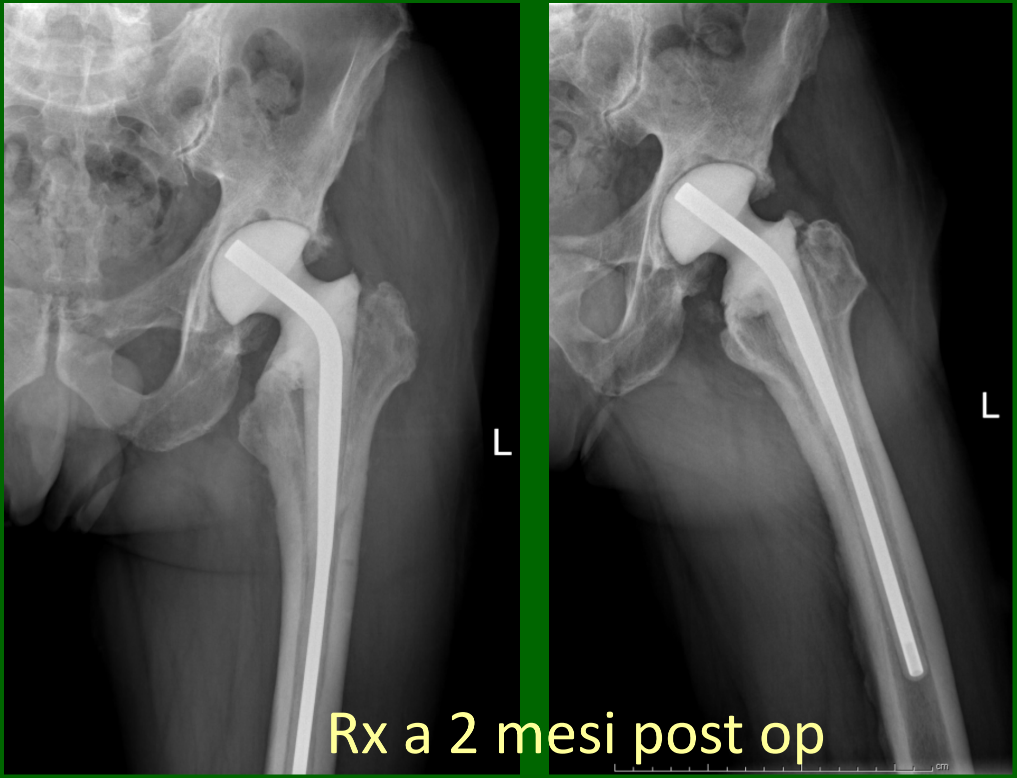




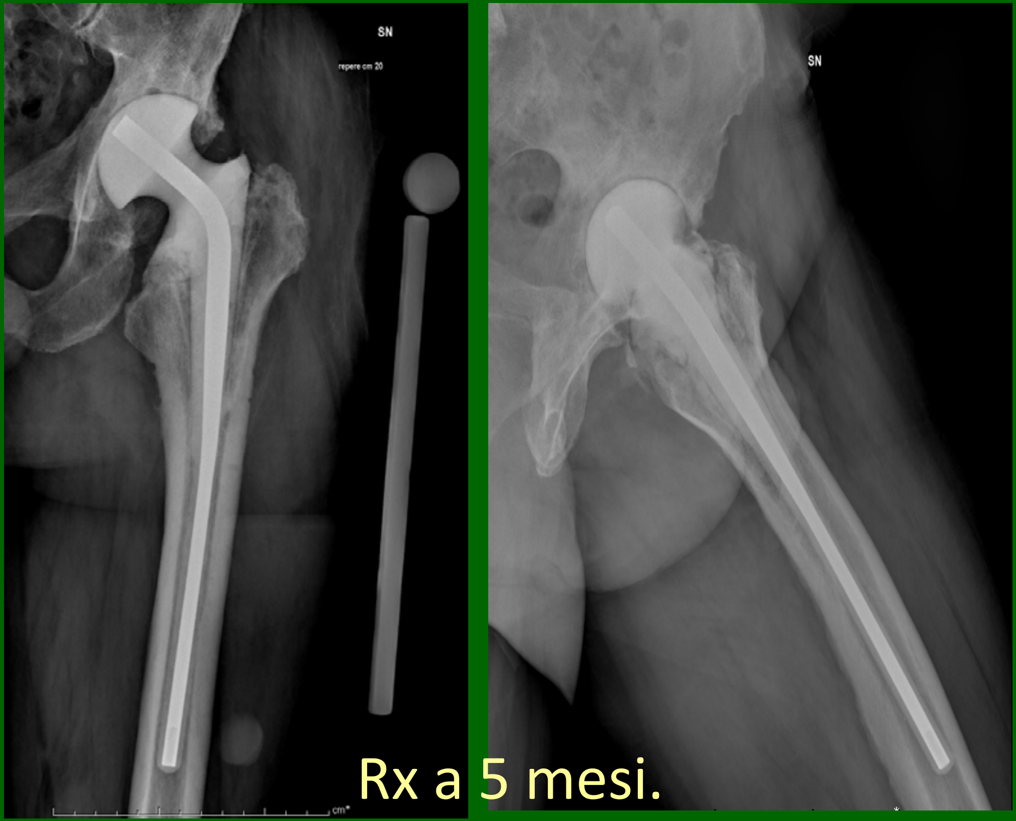
tampone di sala **+** per Pseudomonas ssp.



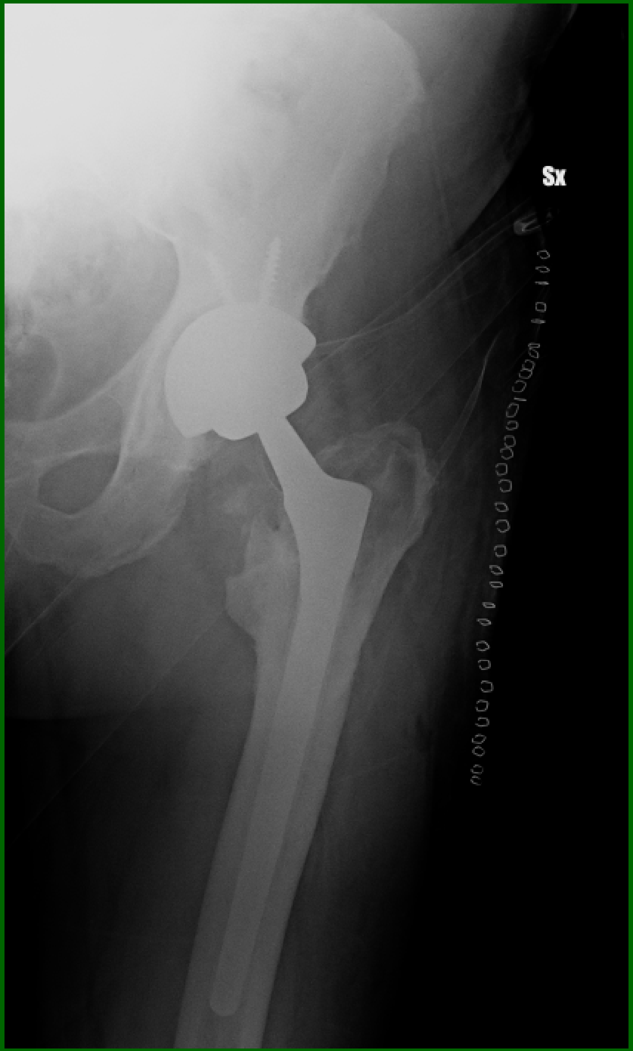
Rx post - op



Rx a 2 mesi post op

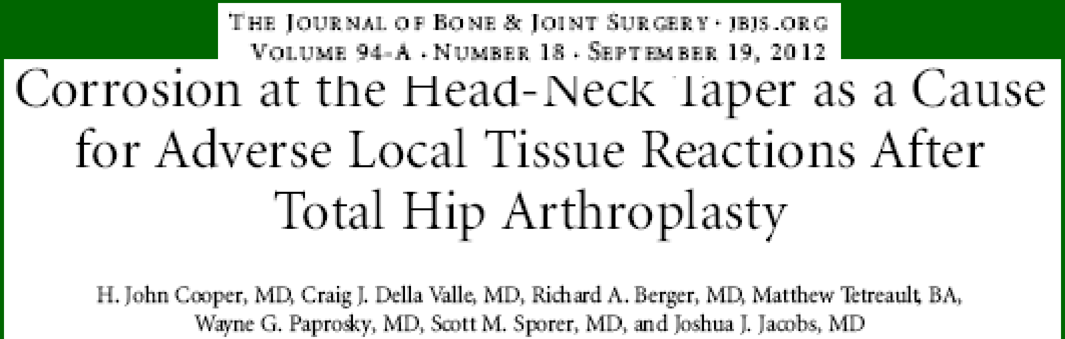

SN
repere cm 20
cm
SN

Rx a 5 mesi.



dopo terapia Atb e.v. e OK infettivologico.. REIMPIANTO
con Trilogy-Wagner ai 7 mesi.

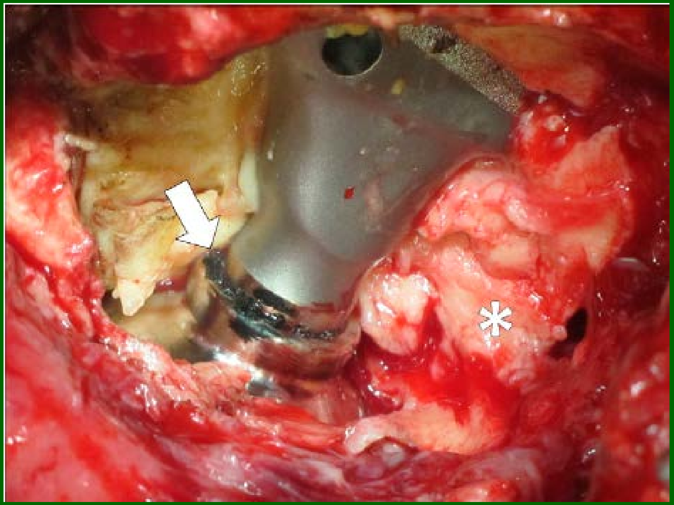
3. WEAR

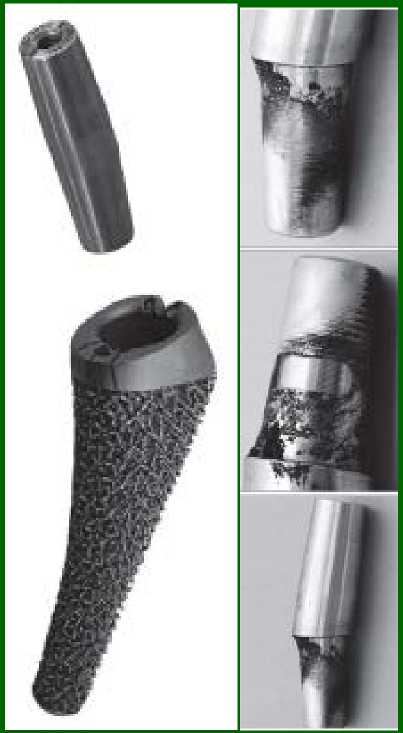


THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG
VOLUME 94-A · NUMBER 18 · SEPTEMBER 19, 2012

Corrosion at the Head-Neck Taper as a Cause for Adverse Local Tissue Reactions After Total Hip Arthroplasty

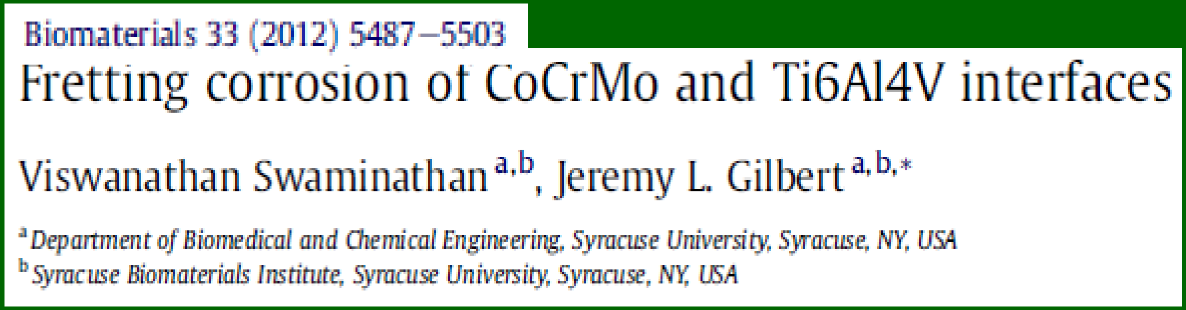
H. John Cooper, MD, Craig J. Della Valle, MD, Richard A. Berger, MD, Matthew Tetreault, BA,
Wayne G. Paprosky, MD, Scott M. Sporer, MD, and Joshua J. Jacobs, MD





- ✓Difficile QUANTIFICARE il danno.
- ✓Rx sottostima il danno litico.

- ✓Ausilio TC e RMN
- ✓Dosaggio ioni metallici su sangue ed urine (tossicità?)


Biomaterials 33 (2012) 5487–5503

Fretting corrosion of CoCrMo and Ti6Al4V interfaces

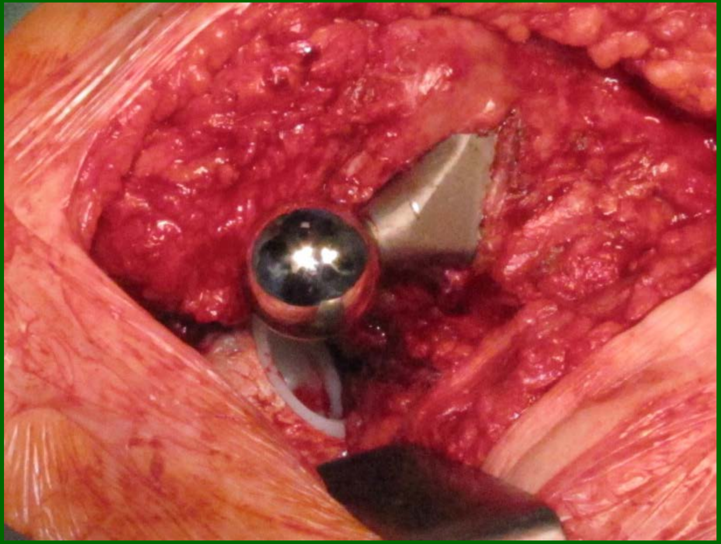
Viswanathan Swaminathan [a,b], Jeremy L. Gilbert [a,b,*]

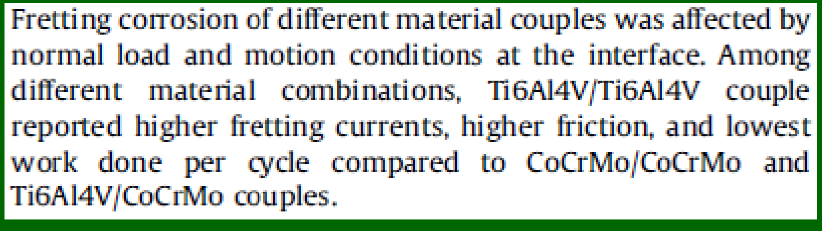
[a] *Department of Biomedical and Chemical Engineering, Syracuse University, Syracuse, NY, USA*
[b] *Syracuse Biomaterials Institute, Syracuse University, Syracuse, NY, USA*

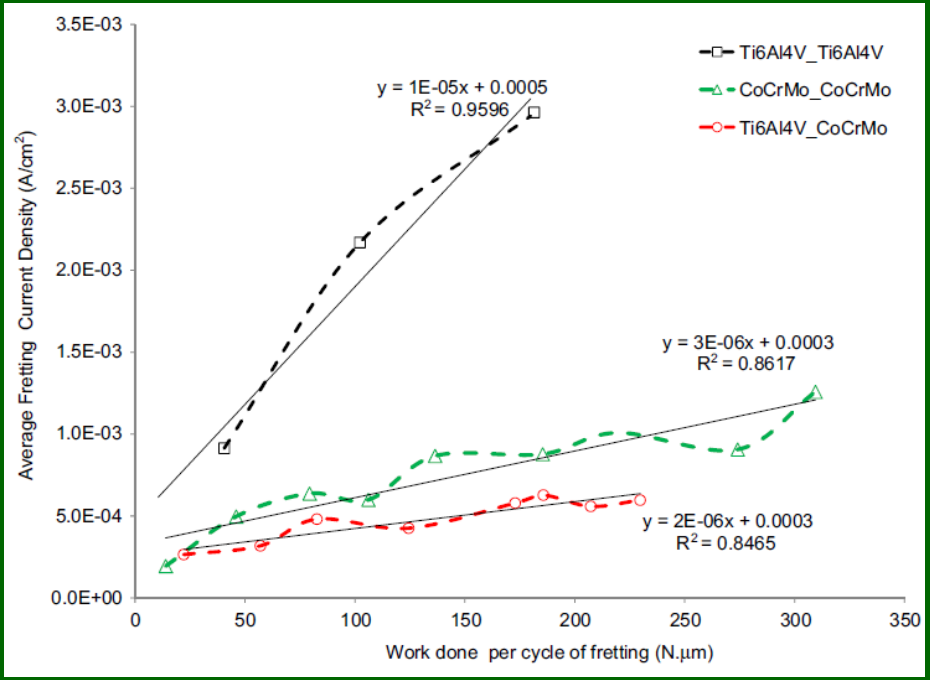
Ti6Al4V/ Ti6Al4V

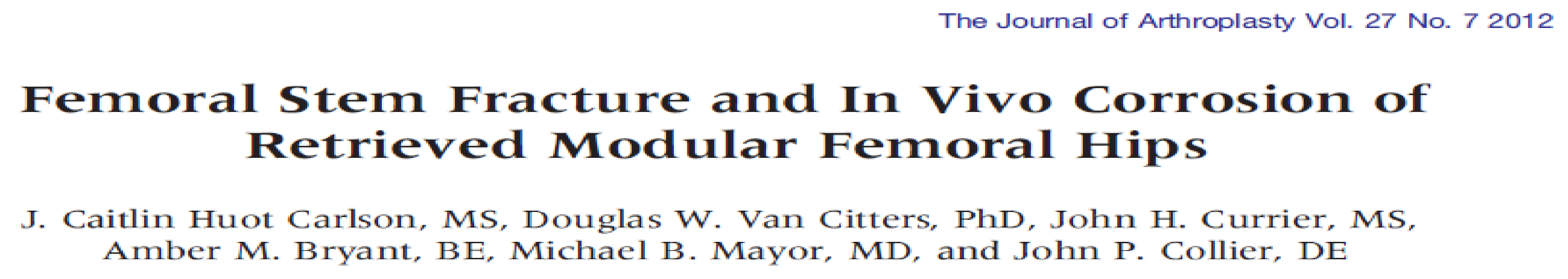
maggior tasso di fretting

CoCr/CoCr e Ti6Al4V/CoCr a scalare




Fretting corrosion of different material couples was affected by normal load and motion conditions at the interface. Among different material combinations, Ti6Al4V/Ti6Al4V couple reported higher fretting currents, higher friction, and lowest work done per cycle compared to CoCrMo/CoCrMo and Ti6Al4V/CoCrMo couples.



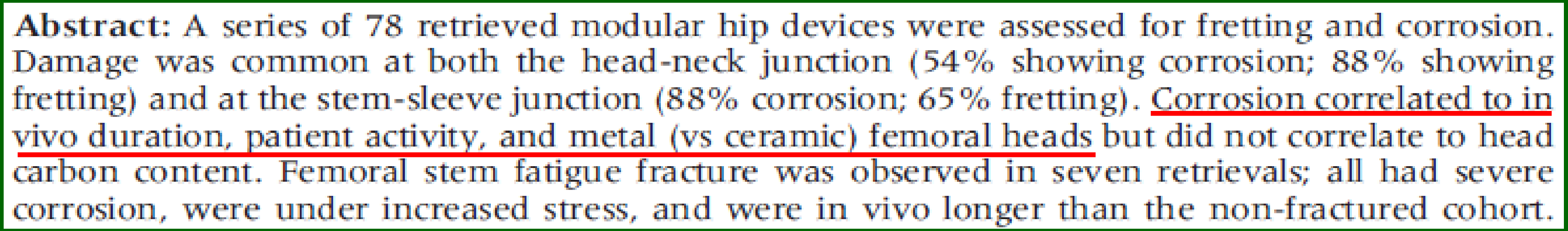


The Journal of Arthroplasty Vol. 27 No. 7 2012

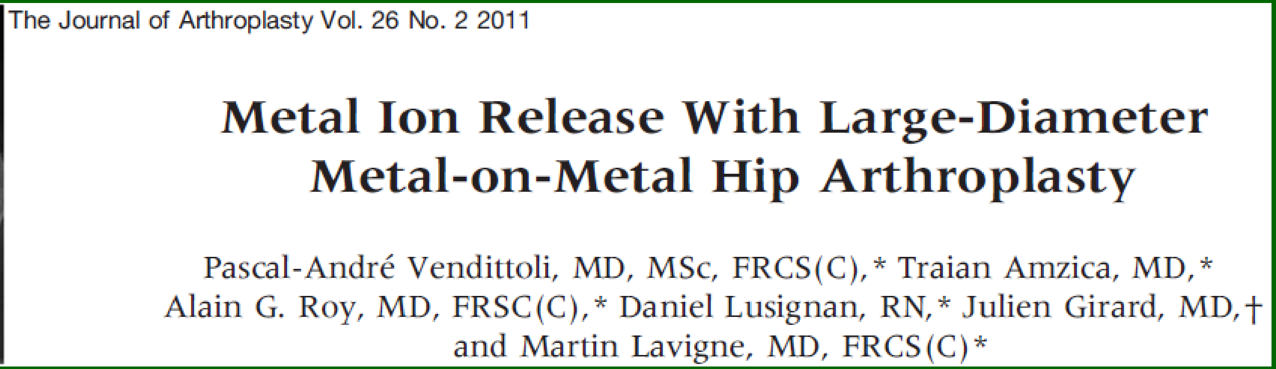
Femoral Stem Fracture and In Vivo Corrosion of Retrieved Modular Femoral Hips

J. Caitlin Huot Carlson, MS, Douglas W. Van Citters, PhD, John H. Currier, MS,
Amber M. Bryant, BE, Michael B. Mayor, MD, and John P. Collier, DE

- ✓ **Sopravvivenza correlata alla gravità della corrosione alla giunzione stelo-sleeve** (p<0,002), non a livello testa-collo
- ✓ Corrosione correlata al livello di attività del paziente
- ✓ Corrosione maggiore nelle testine CoCr (vs. cer),



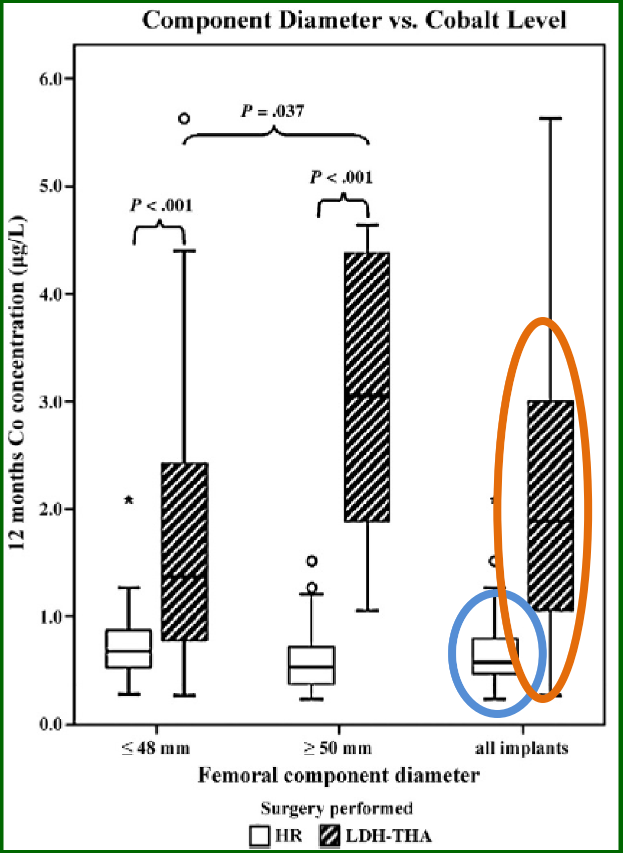
Abstract: A series of 78 retrieved modular hip devices were assessed for fretting and corrosion. Damage was common at both the head-neck junction (54% showing corrosion; 88% showing fretting) and at the stem-sleeve junction (88% corrosion; 65% fretting). Corrosion correlated to in vivo duration, patient activity, and metal (vs ceramic) femoral heads but did not correlate to head carbon content. Femoral stem fatigue fracture was observed in seven retrievals; all had severe corrosion, were under increased stress, and were in vivo longer than the non-fractured cohort.



The Journal of Arthroplasty Vol. 26 No. 2 2011

Metal Ion Release With Large-Diameter Metal-on-Metal Hip Arthroplasty

Pascal-André Vendittoli, MD, MSc, FRCS(C),* Traian Amzica, MD,*
Alain G. Roy, MD, FRSC(C),* Daniel Lusignan, RN,* Julien Girard, MD,†
and Martin Lavigne, MD, FRCS(C)*

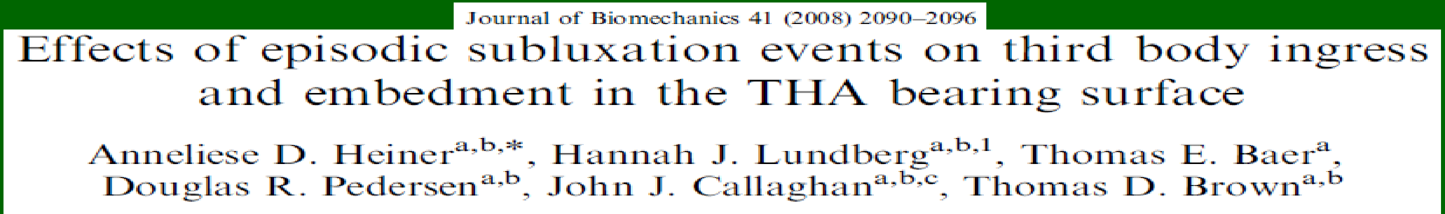


LDH-THA vs HR

Livelli medi di cobaltemia aumentati 3,3 volte nel gruppo LDH-THA

L’introduzione di uno sleeve aumenta fortemente il rilascio di ioni metallo

Third-body wear

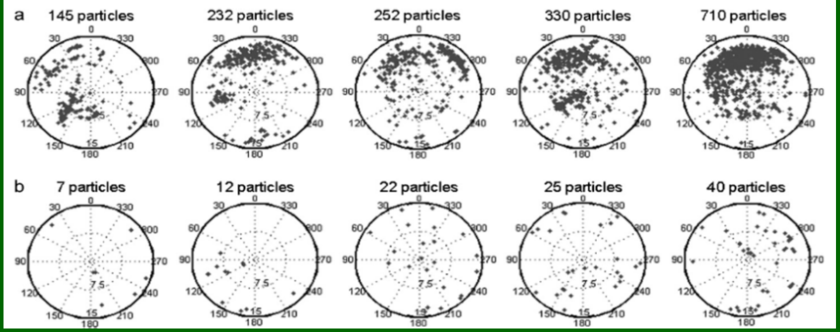


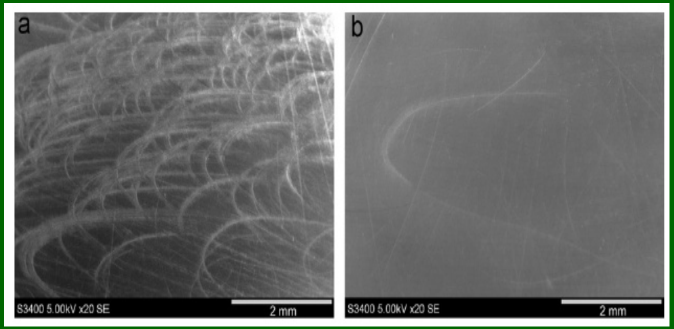
Journal of Biomechanics 41 (2008) 2090–2096

Effects of episodic subluxation events on third body ingress and embedment in the THA bearing surface

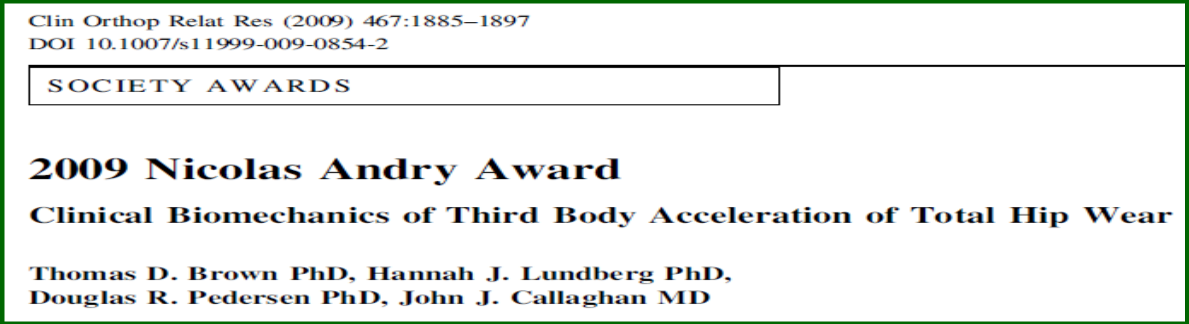
Anneliese D. Heiner[a,b,*], Hannah J. Lundberg[a,b,1], Thomas E. Baer[a], Douglas R. Pedersen[a,b], John J. Callaghan[a,b,c], Thomas D. Brown[a,b]

Fino al 66% dei cotili espiantati presenta “rim indentation” da impingement





Episodi ripetuti di instabilità in caso di impingement causano l’accesso del particolato all’interfaccia e determinano l’usura da terzo corpo



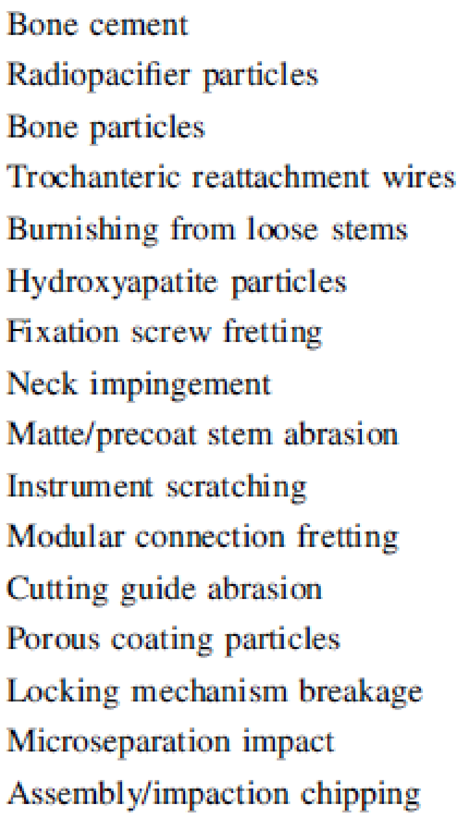
Clin Orthop Relat Res (2009) 467:1885–1897
DOI 10.1007/s11999-009-0854-2

SOCIETY AWARDS

2009 Nicolas Andry Award

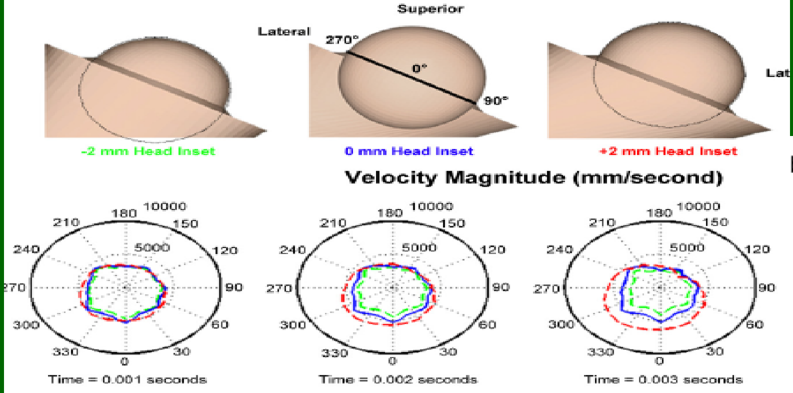
Clinical Biomechanics of Third Body Acceleration of Total Hip Wear

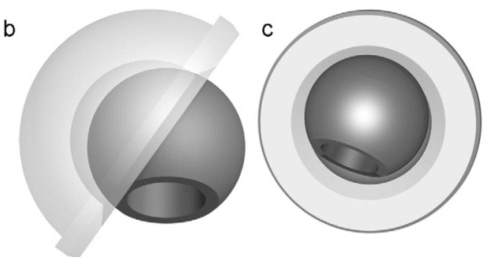
Thomas D. Brown PhD, Hannah J. Lundberg PhD,
Douglas R. Pedersen PhD, John J. Callaghan MD

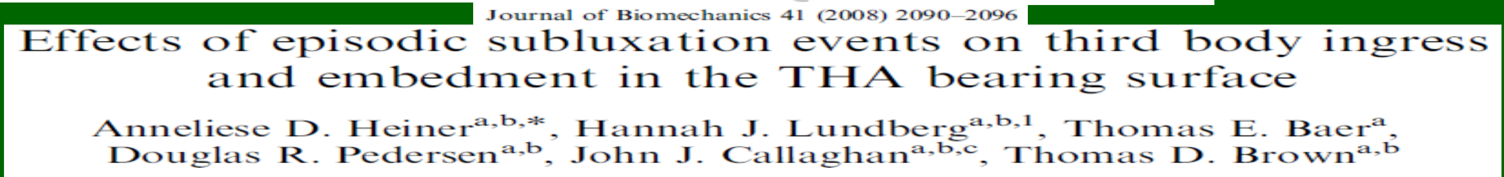


- Bone cement
- Radiopacifier particles
- Bone particles
- Trochanteric reattachment wires
- Burnishing from loose stems
- Hydroxyapatite particles
- Fixation screw fretting
- Neck impingement
- Matte/precoat stem abrasion
- Instrument scratching
- Modular connection fretting
- Cutting guide abrasion
- Porous coating particles
- Locking mechanism breakage
- Microseparation impact
- Assembly/impaction chipping

Nella sublussazione (<0,6mm), il particolato sospeso viene trasportato nello spazio articolare





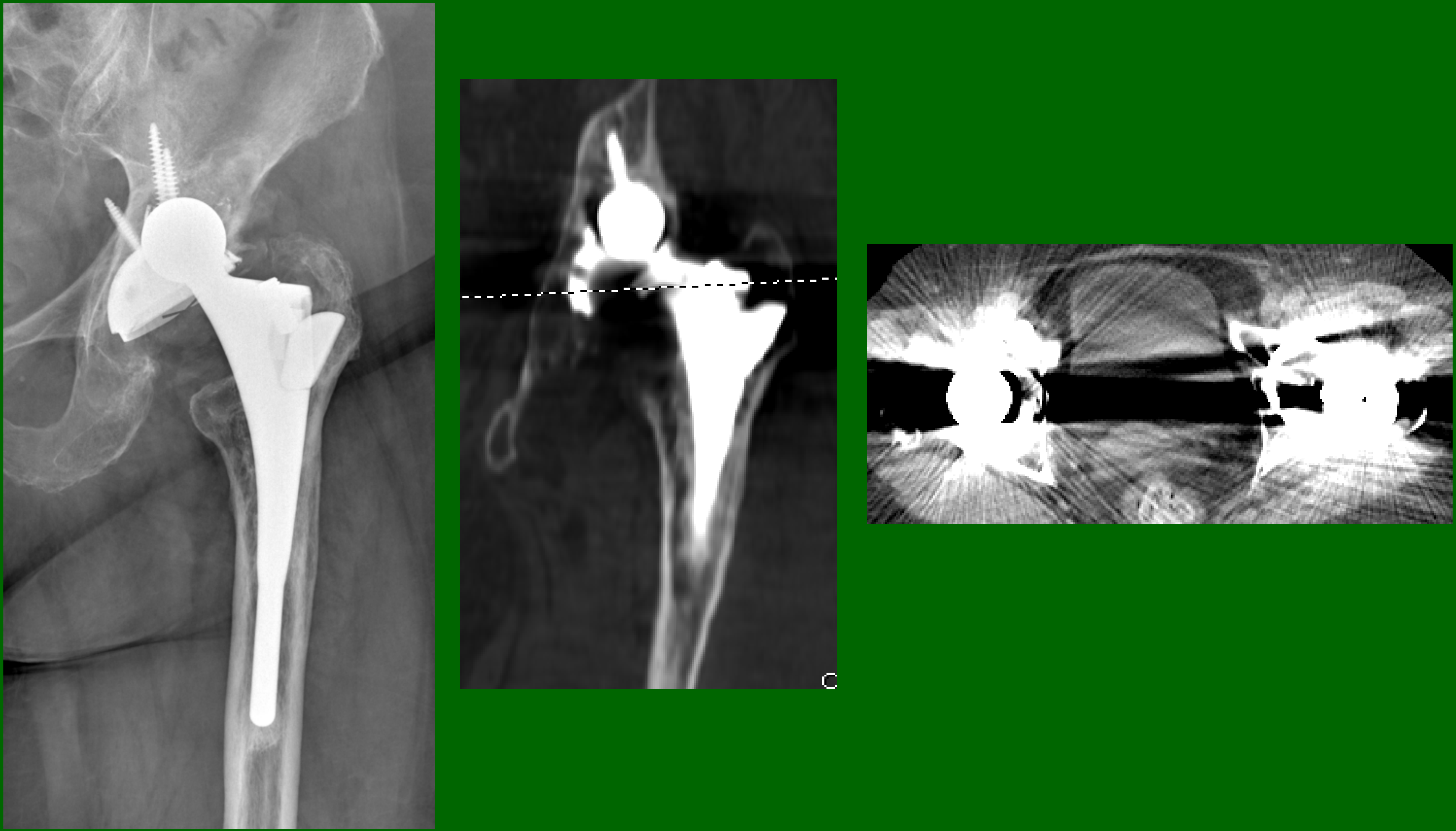


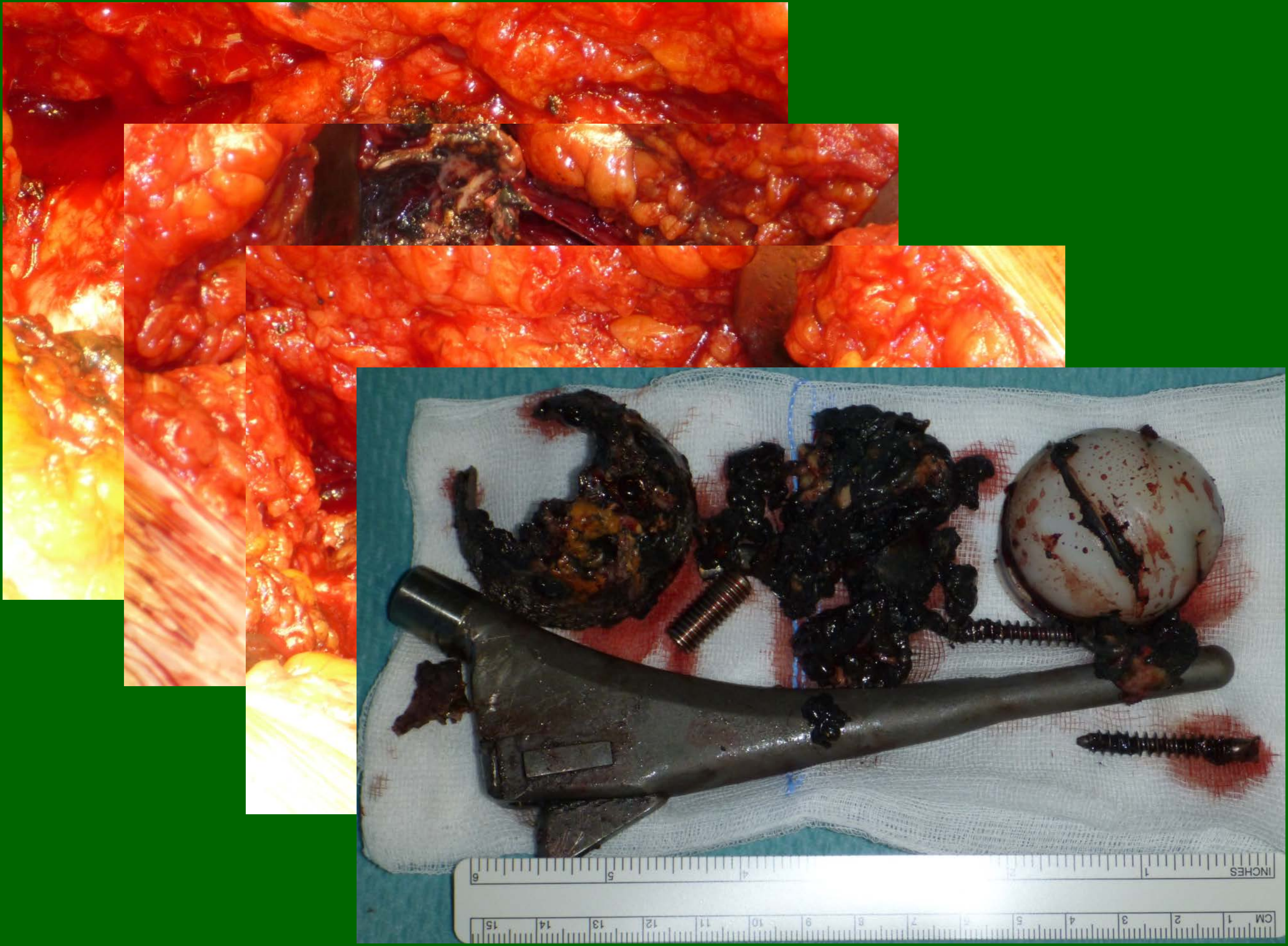
Journal of Biomechanics 41 (2008) 2090–2096

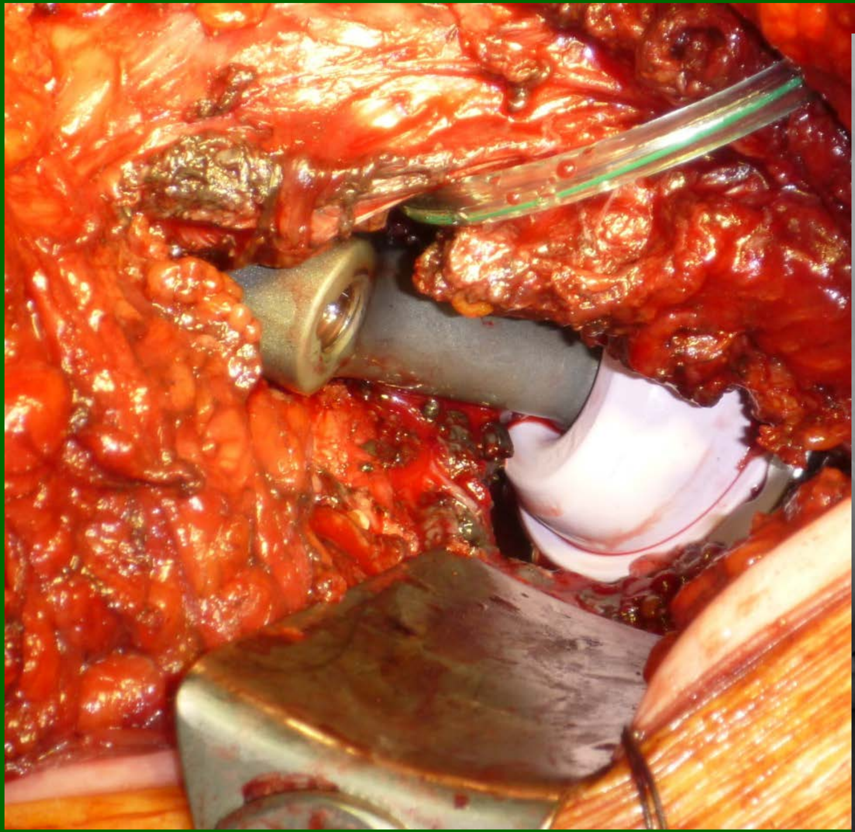
Effects of episodic subluxation events on third body ingress and embedment in the THA bearing surface

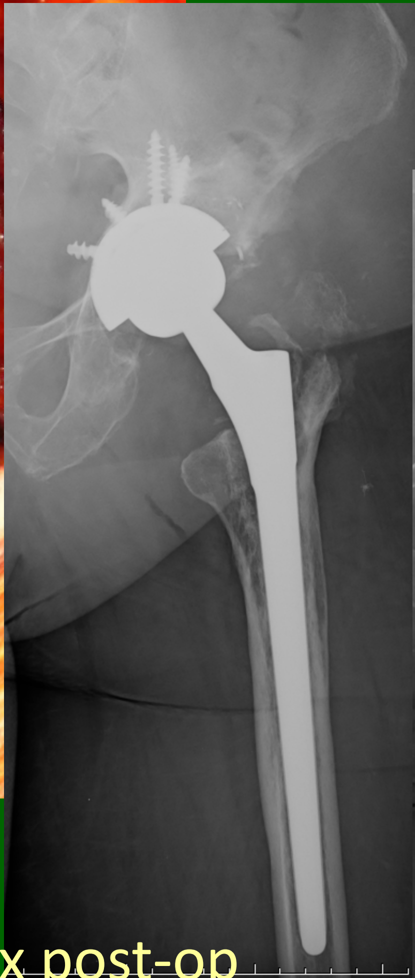
Anneliese D. Heiner[a,b,*], Hannah J. Lundberg[a,b,1], Thomas E. Baer[a],
Douglas R. Pedersen[a,b], John J. Callaghan[a,b,c], Thomas D. Brown[a,b]

B.G. 80aa. lussazione inveterata PTA in esiti scollamento asettico

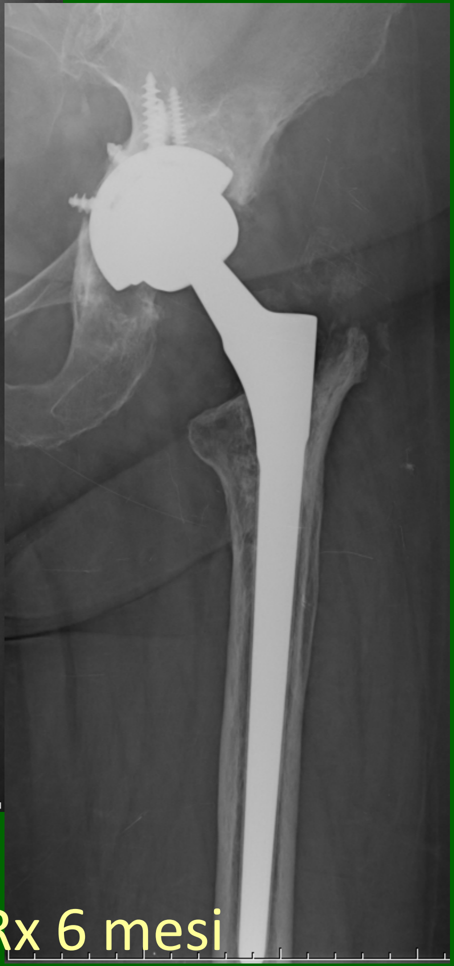



INCHES
CM





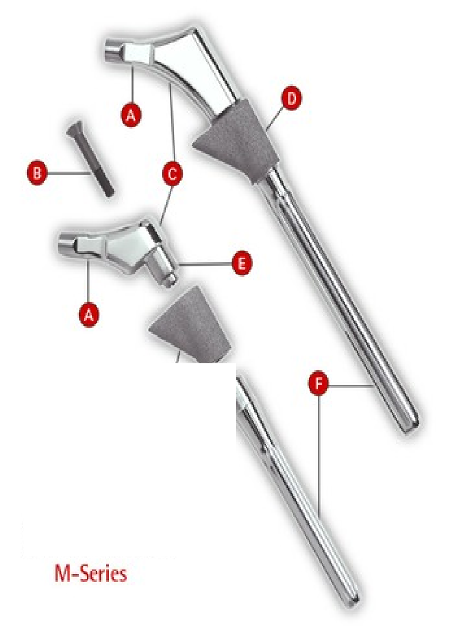
Rx post-op



Rx 6 mesi

- ✓ ***Modularità:*** risorsa importante ma soggetta a fretting corrosion. da utilizzare in POCHI casi selezionati.

~~Sleeves~~

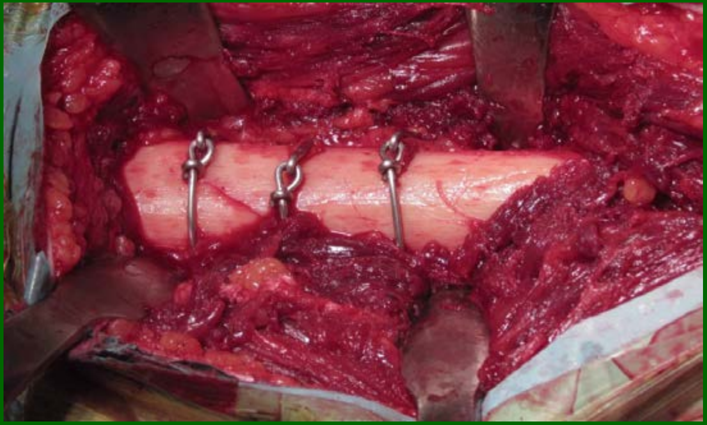


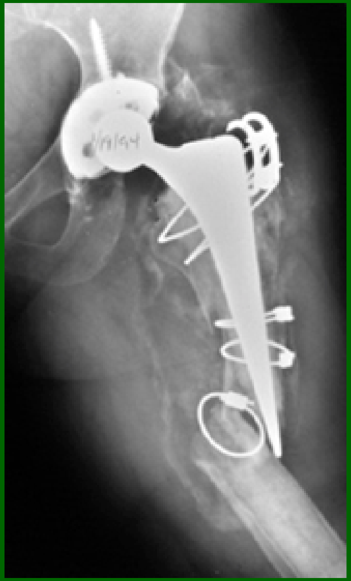
- ✓ ***third body wear:*** problema, rilevante in MoM e Mop, spesso non dominabile

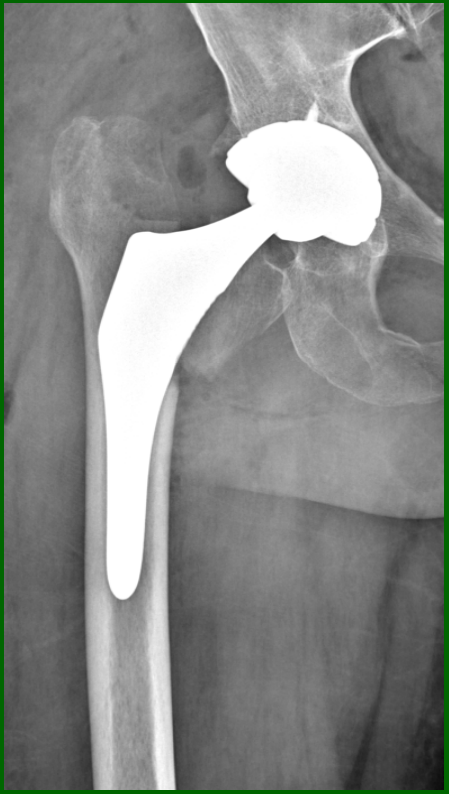
- ✓ *Design protesico*
- ✓ *Mezzi di sintesi accessori*
- ✓ *Dinamica articolare*
- ✓ *Pregressi impianti*
- ✓ *Strumentari*
- ✓ *Materiali*

4. FRATTURE PERIPROTESICHE

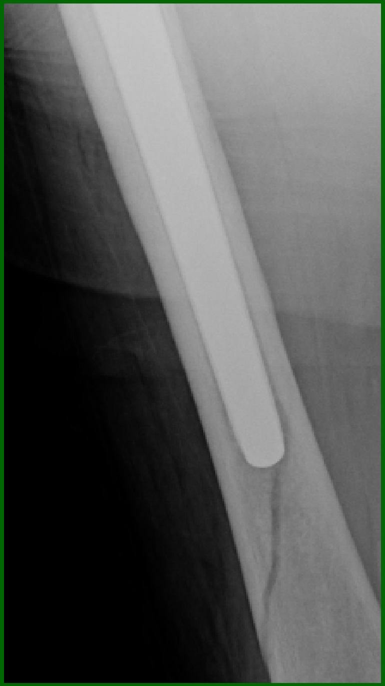
ACETABOLO	0,8%
FEMORE	7-8%



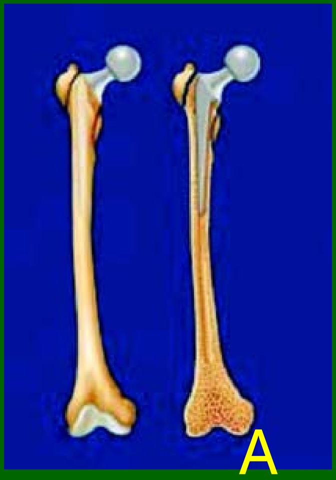




CLASSIFICAZIONE DI VANCOUVER INTRAOPERATORIA

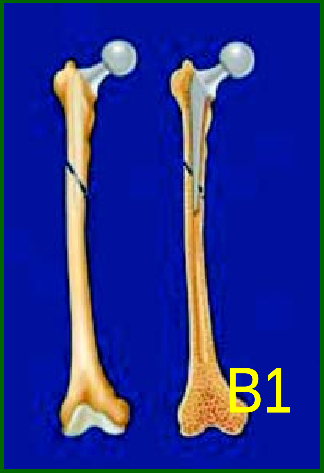


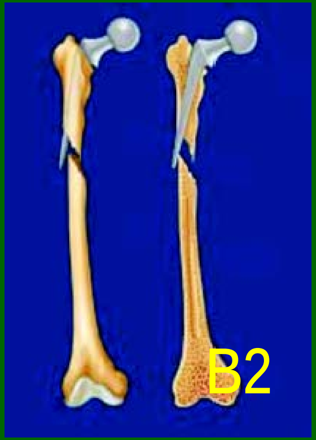
CLASSIFICAZIONE DI VANCOUVER POST-OPERATORIA

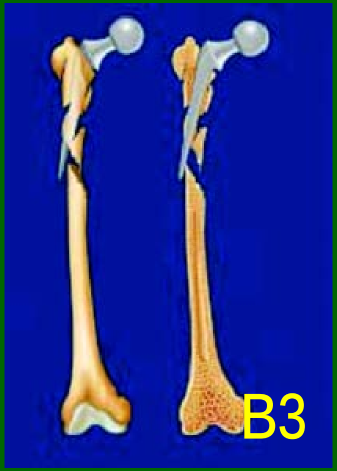


A REGIONE TROCANTERICA

A1 GRAN TROCANTERE
A2 PICCOLO TROCANTERE

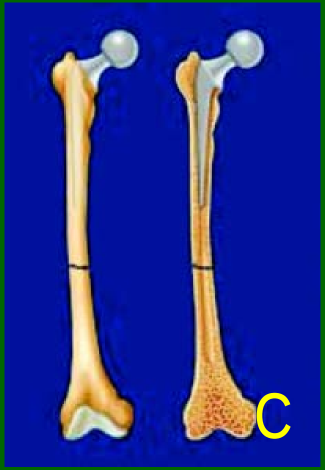






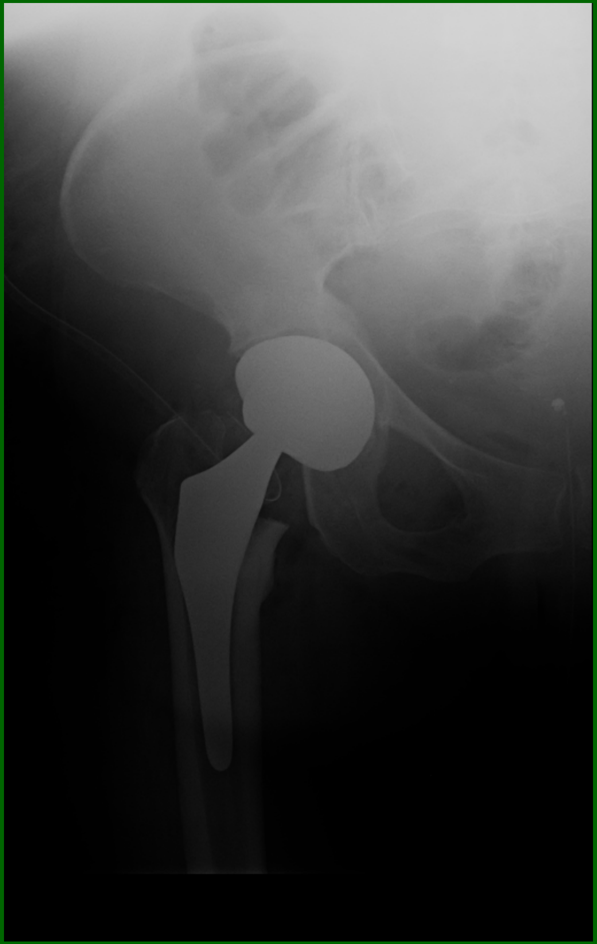
B DIAFISI FEMORALE

B1 PROTESI STABILE
B2 PROTESI INSTABILE
B3 PROTESI CON DIFETTO OSSEO

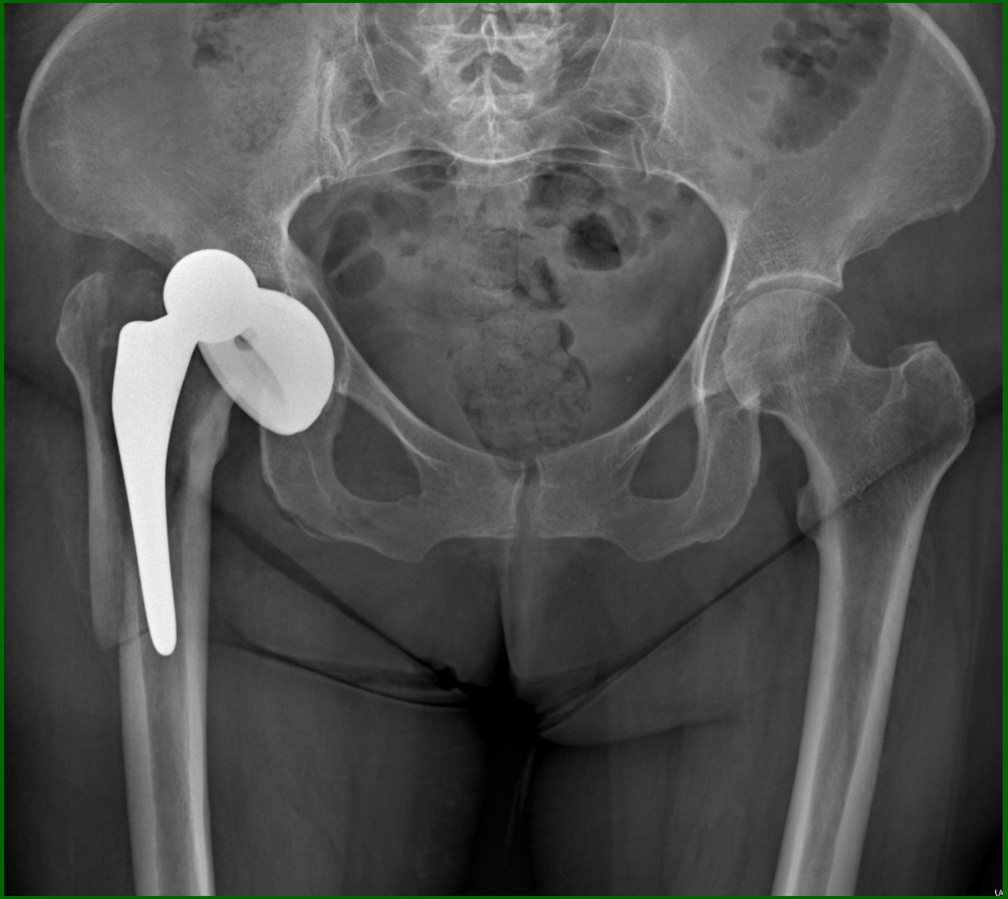


C TERZO INFERIORE DEL FEMORE

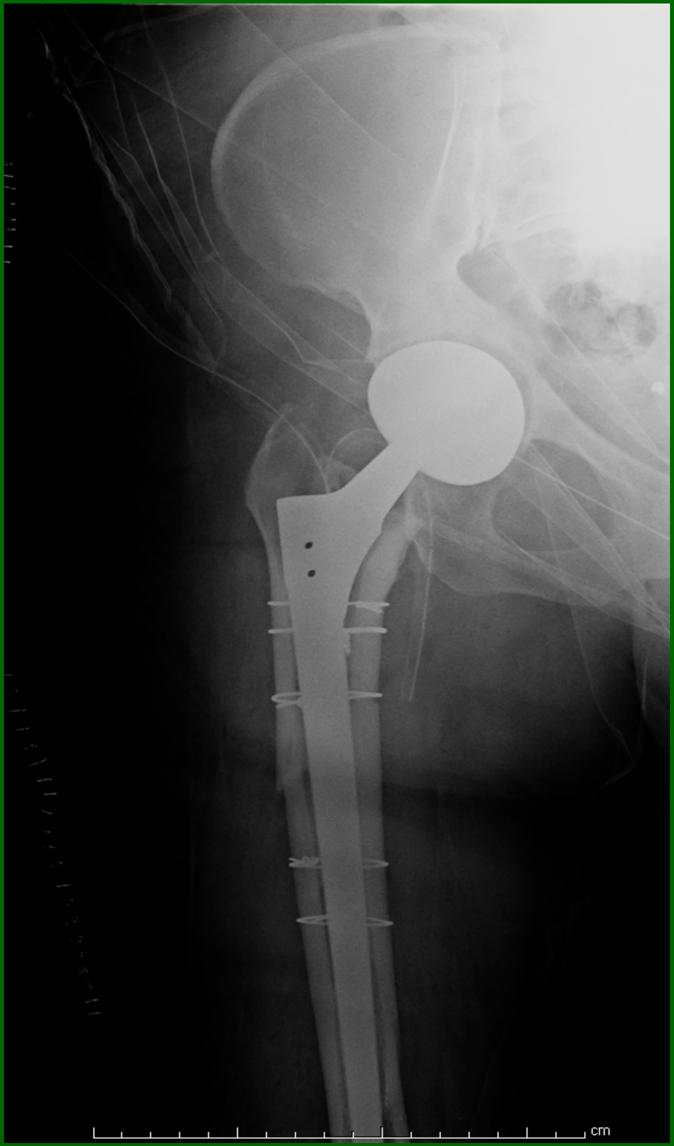
D.M.G. 70aa. Frattura - lussazione PTA



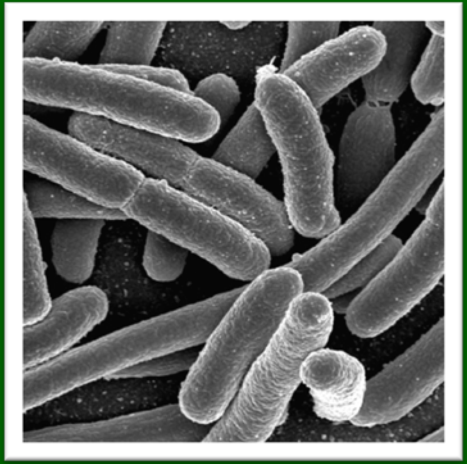
1° impianto



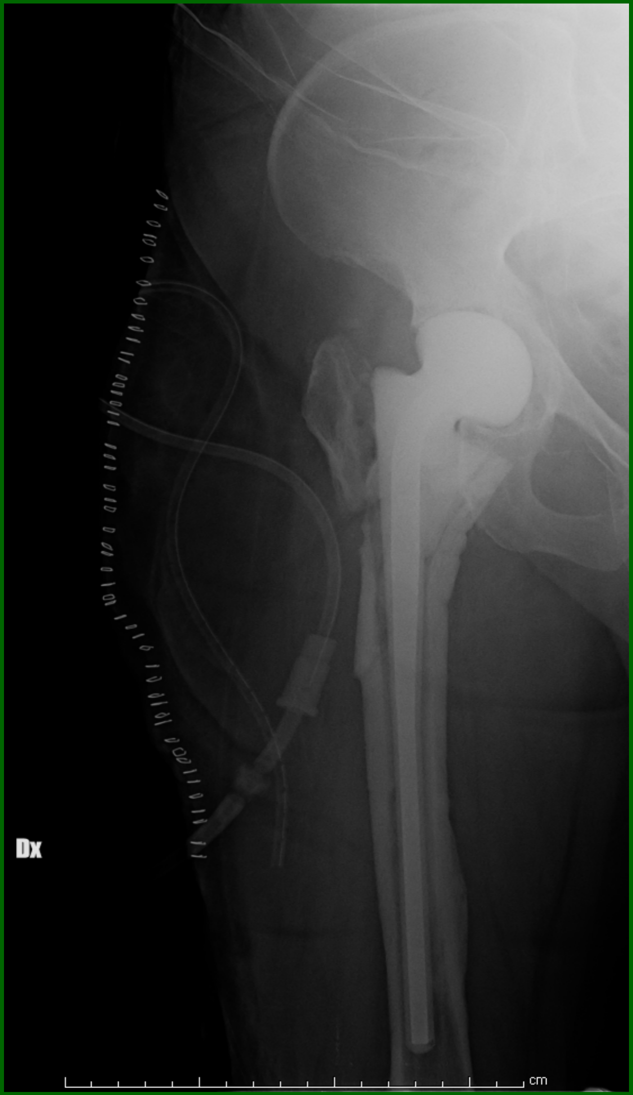
IV giornata post op CADUTA ACCIDENTALE
-LUSSAZIONE
-STELO INSTABILE



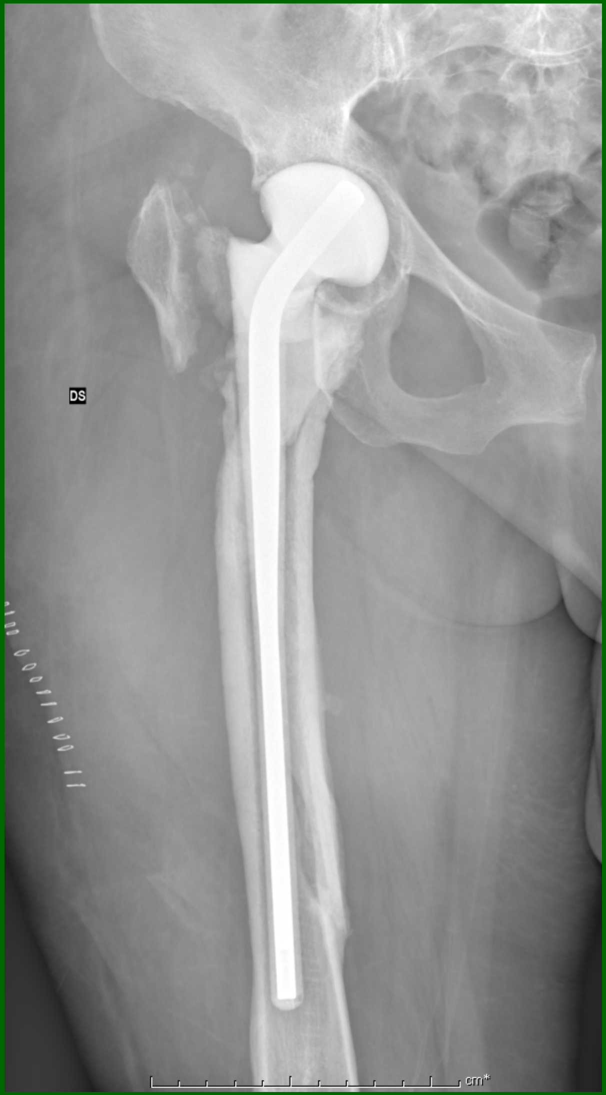
Reimpianto in VIII giornata



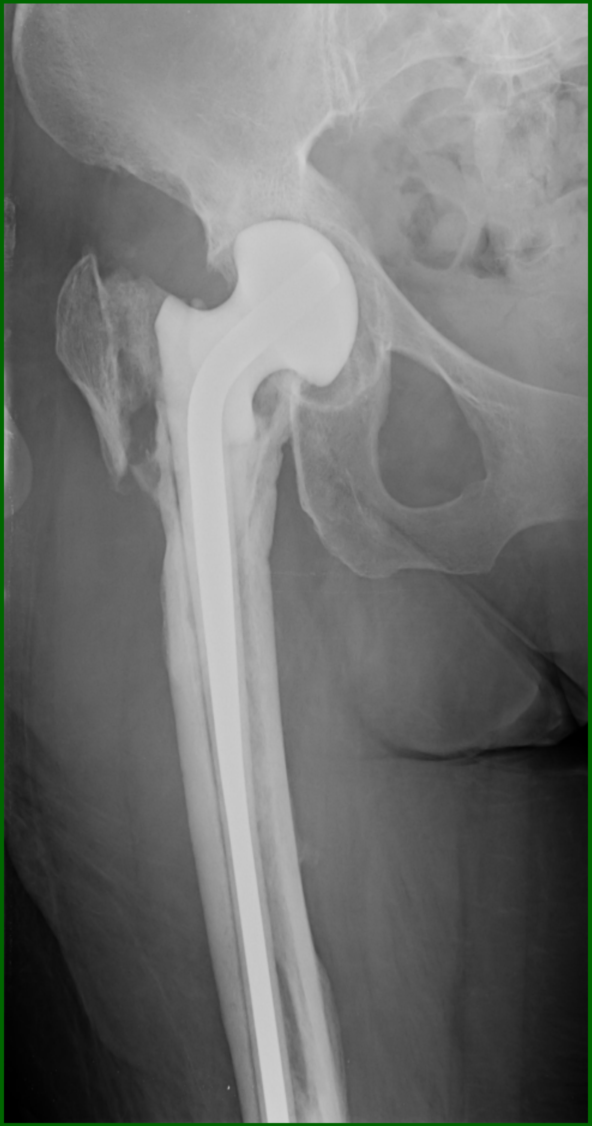
INFEZIONE

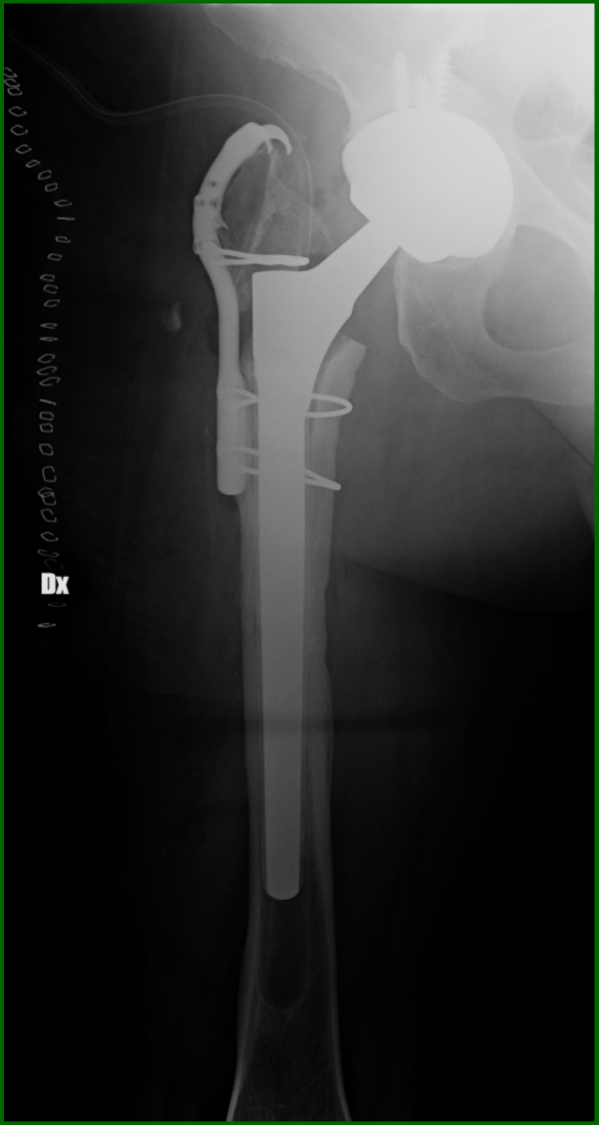


Cemento spaziatore
dopo 8 mesi
dal reimpianto

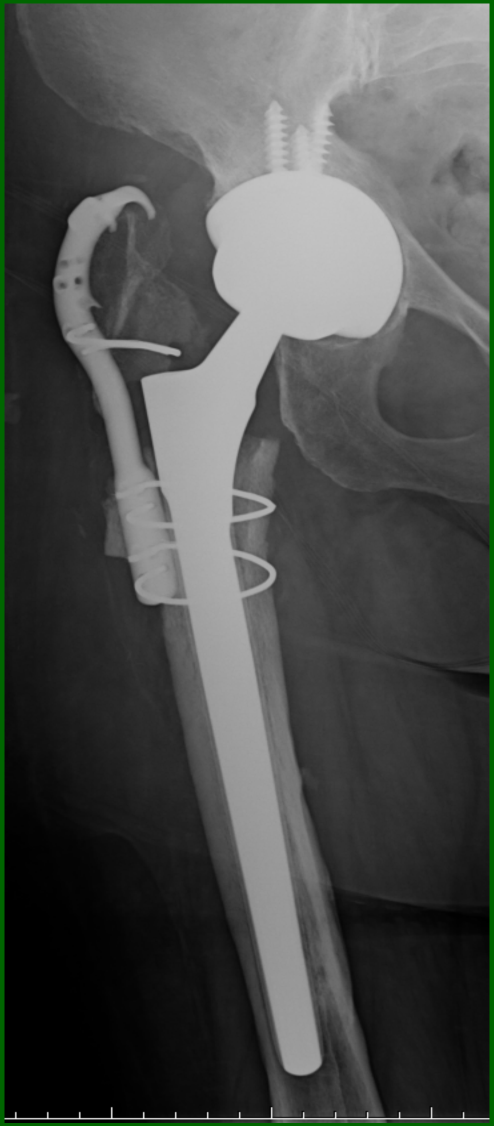


Rx a 7gg.





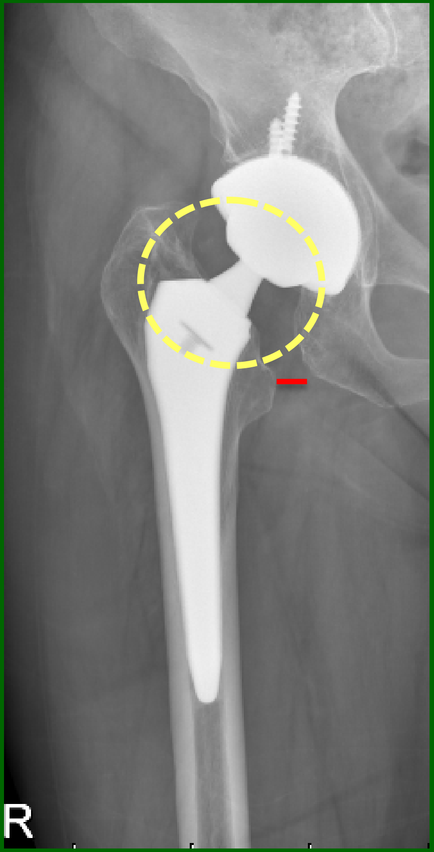
2° reimpianto

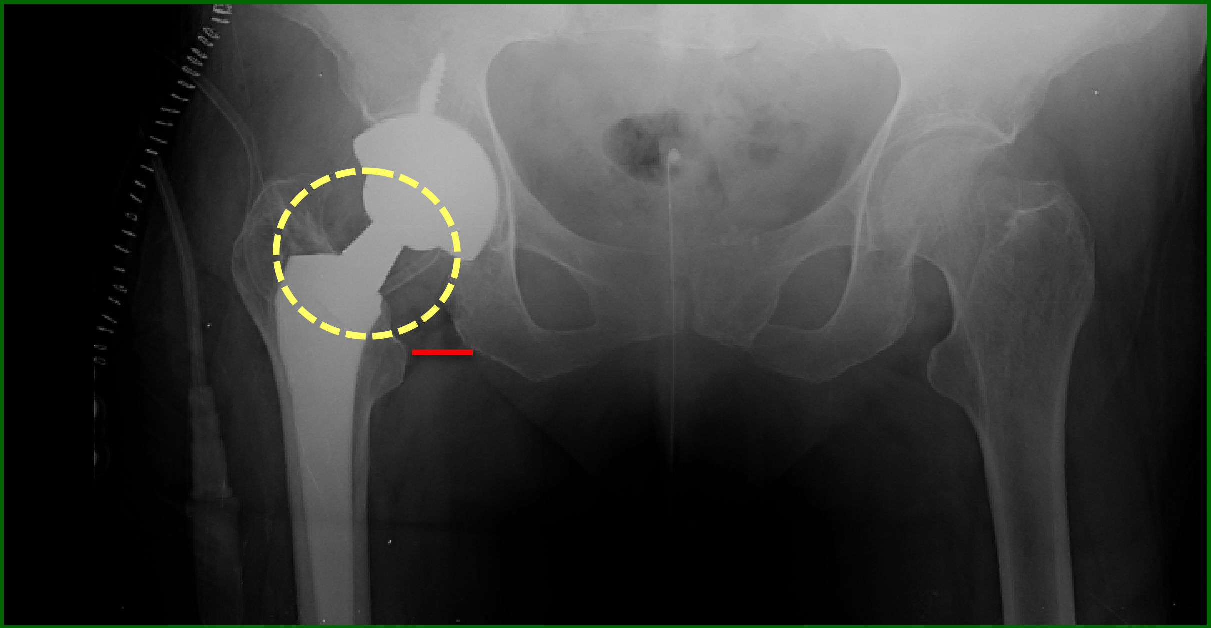


Rx a 2 mesi

5. INSTABILITA’ (LUSSAZIONI RECIDIVANTI)

- ✓Capire la causa
- ✓TC pre-op (valutazione versioni)



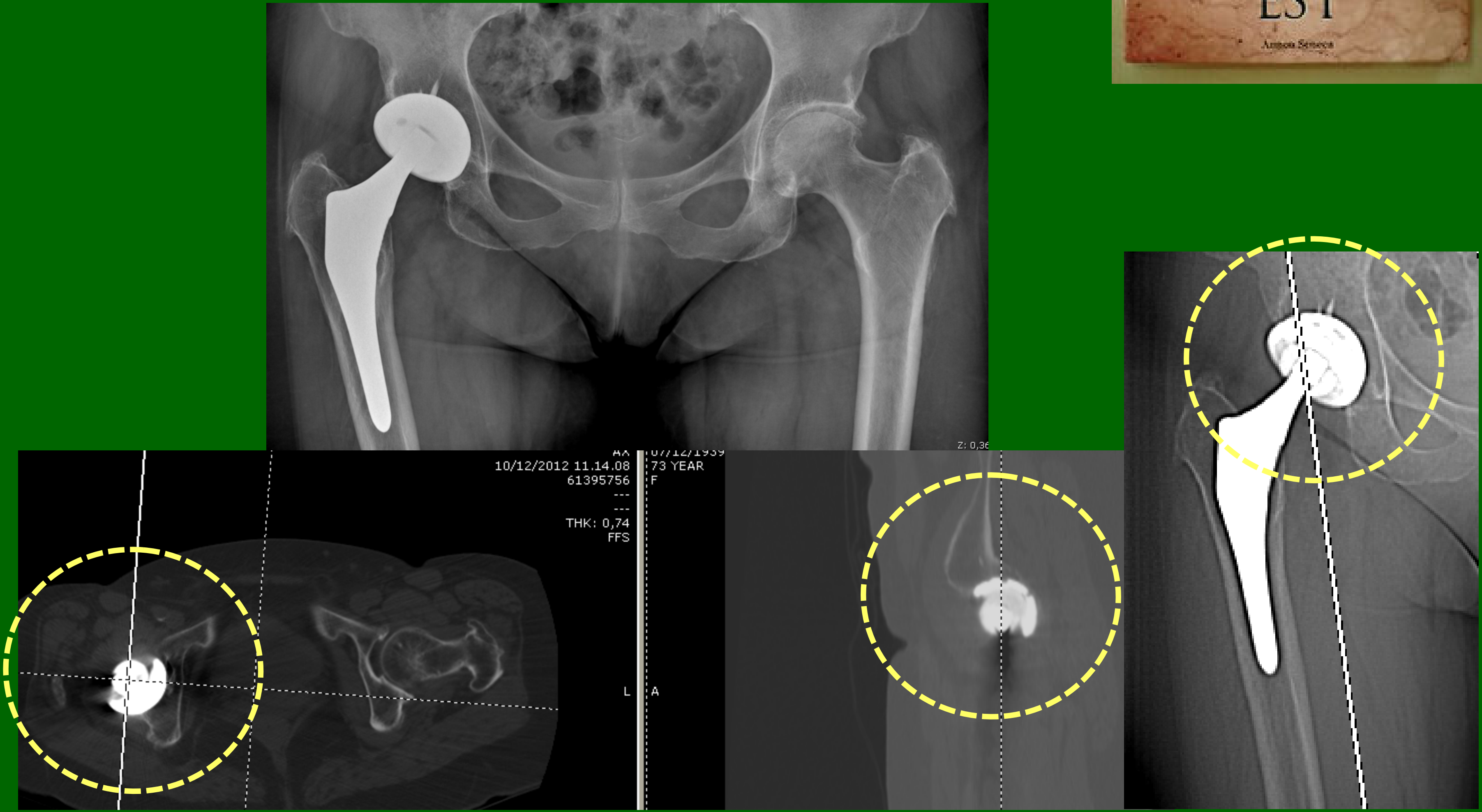


NESSUN COMPROMESSO

sostituire le componenti mal posizionate

6. ERRORI DI TECNICA

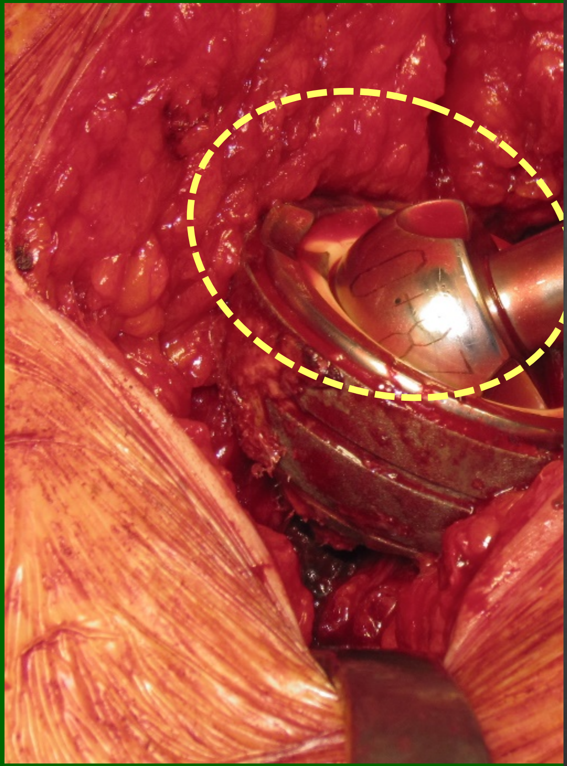
ERRARE
HUMANUM
EST

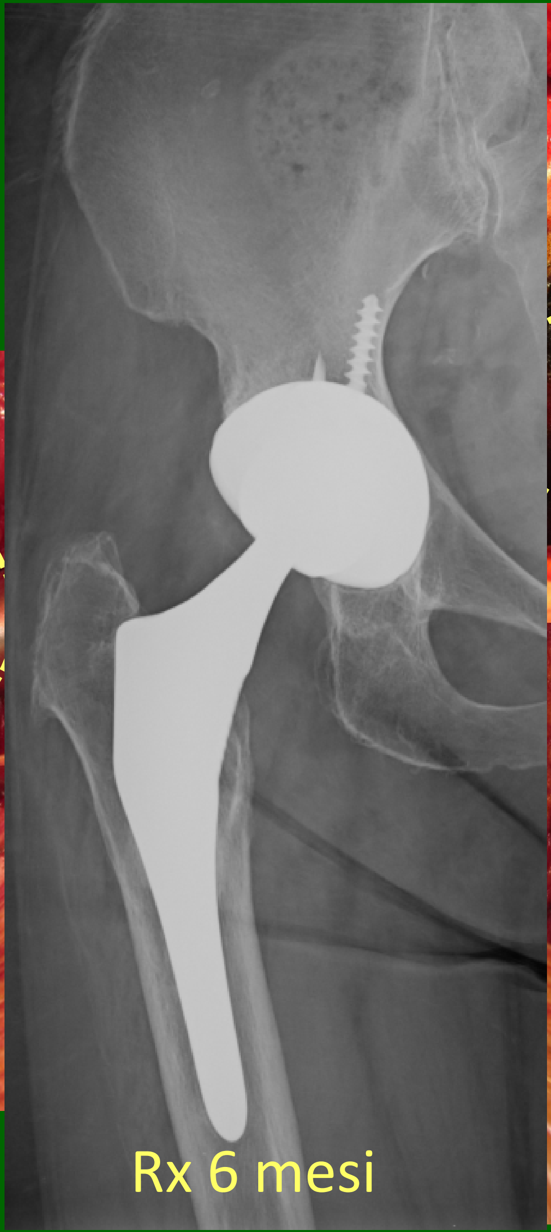

AX
10/12/2012 11.14.08
61395756

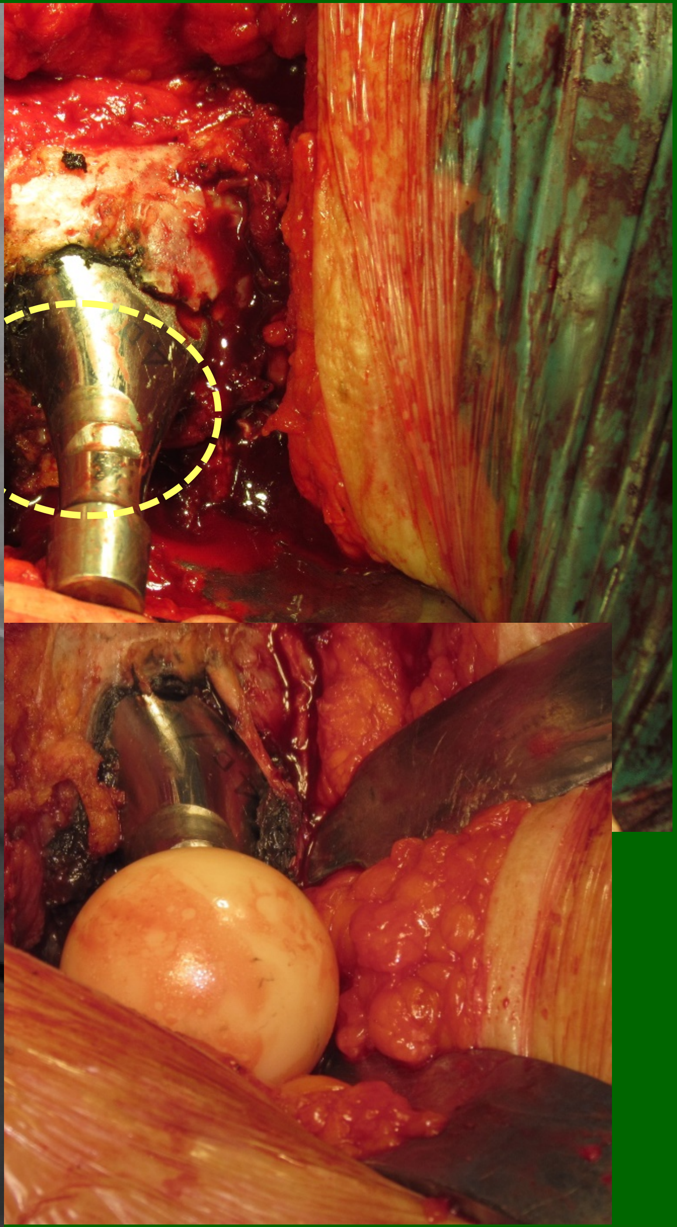
THK: 0,74
FFS
L
07/12/1939
73 YEAR
F
A
Z: 0,36

M.R. 74aa. Mal orientamento del cotile

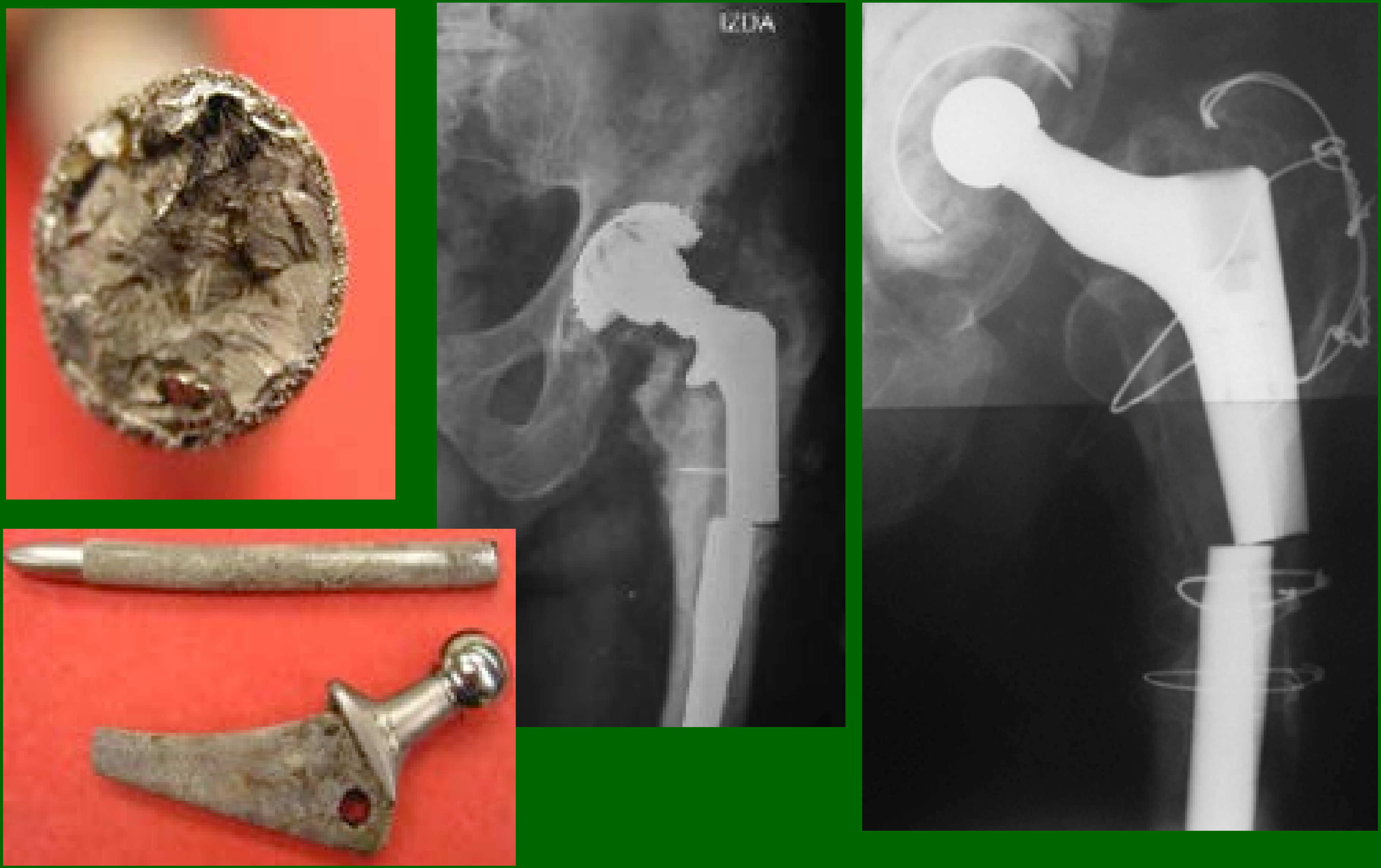
REIMPIANTO COTILE ABG II 52 + sostituzione testina +4/32, spike e 1 vite CoC)



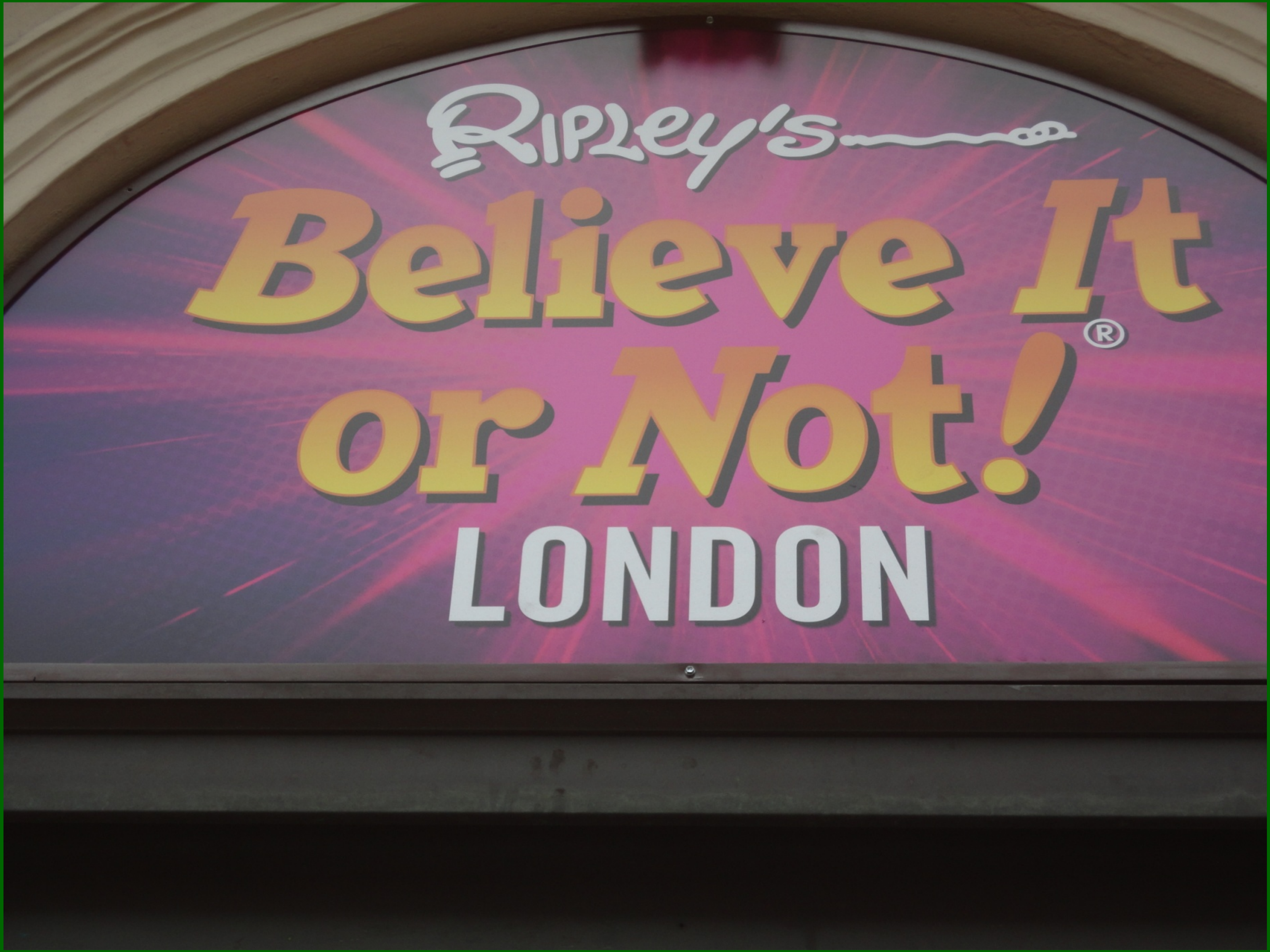




7. ROTTURA COMPONENTI

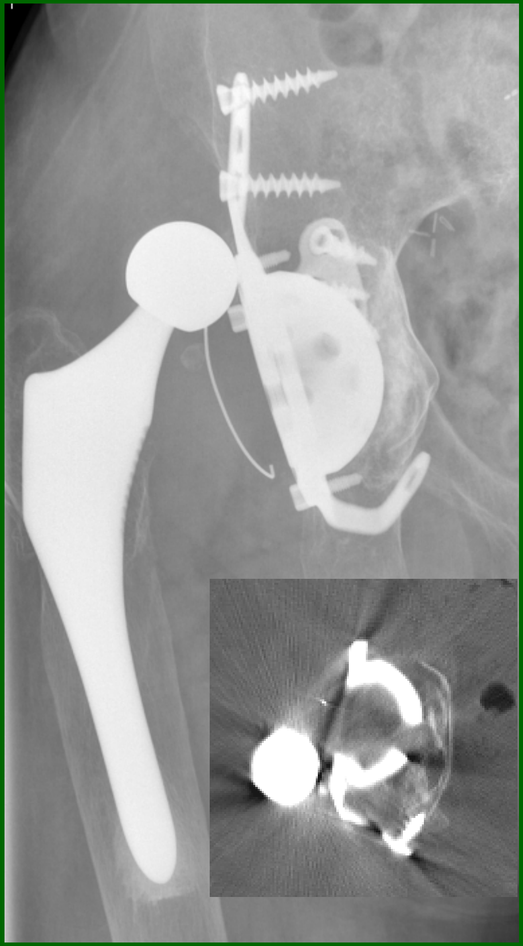


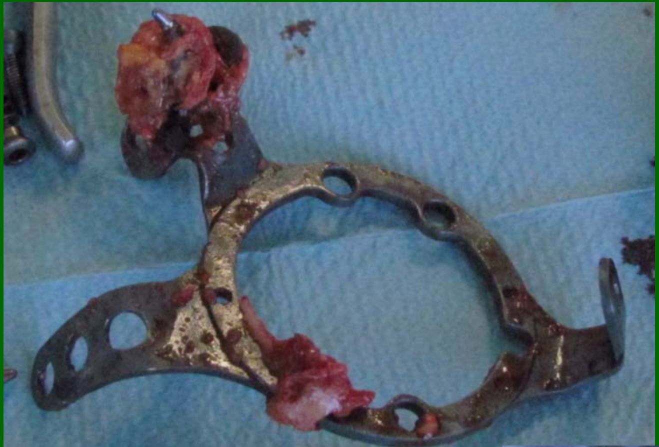
AVERE IN SALA OPERATORIA TUTTO IL MATERIALE NECESSARIO CONSIDERANDO LA PEGGIORE DELLE IPOTESI POSSIBILI!


Ripley's
Believe It or Not!®
LONDON

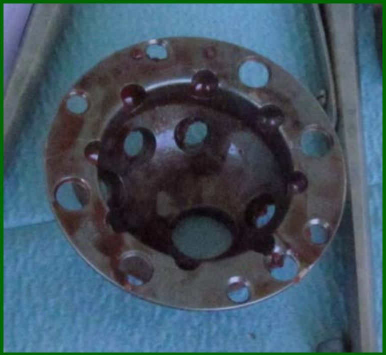
Conoscere l’impianto da rimuovere

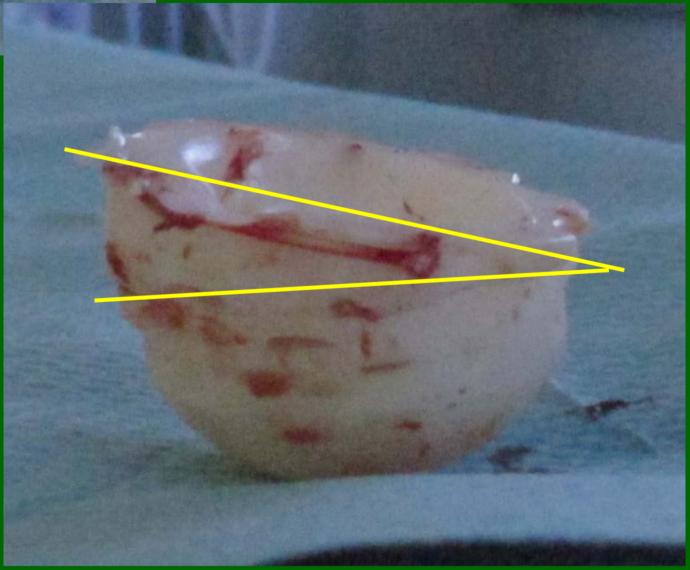
(testina, accoppiamento, diametri, cono-morse)





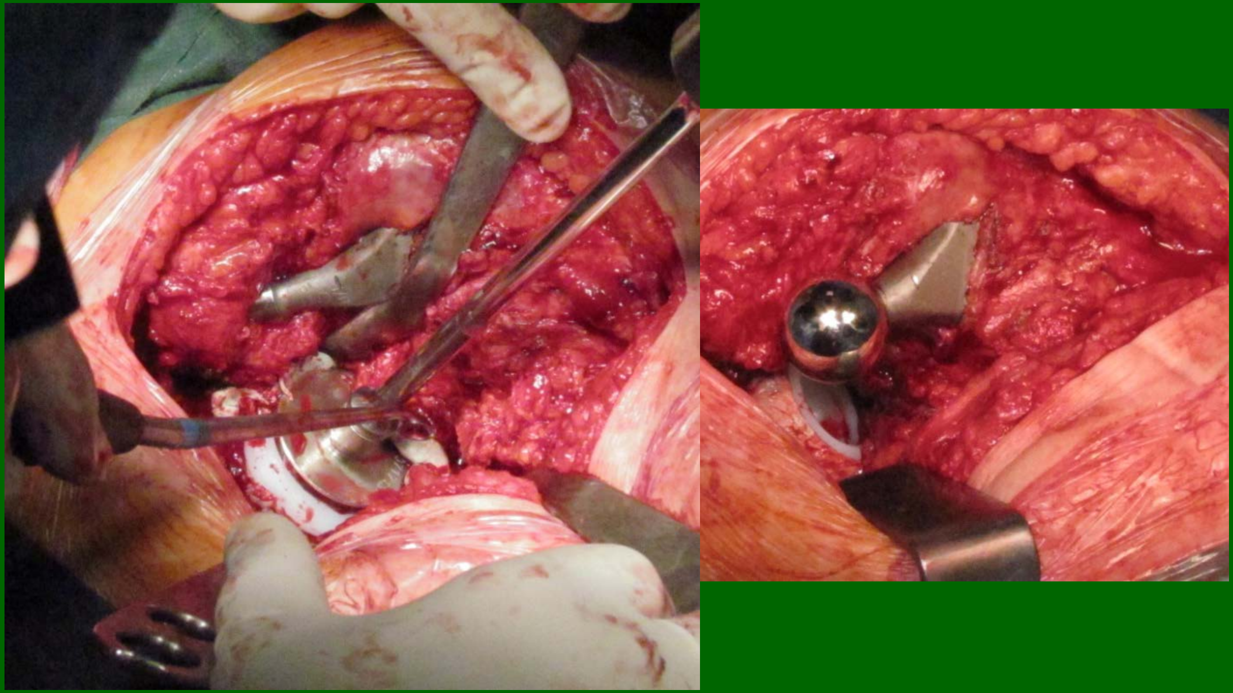
G.T. 85aa.
Lussazione PTA in esiti reimpianto cotile

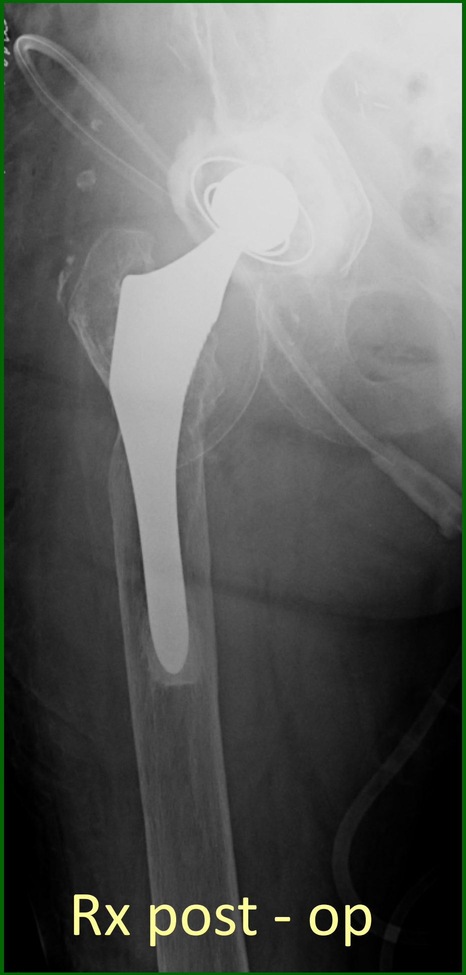




Obiettivo pre-op: sostituire solo inserto PE

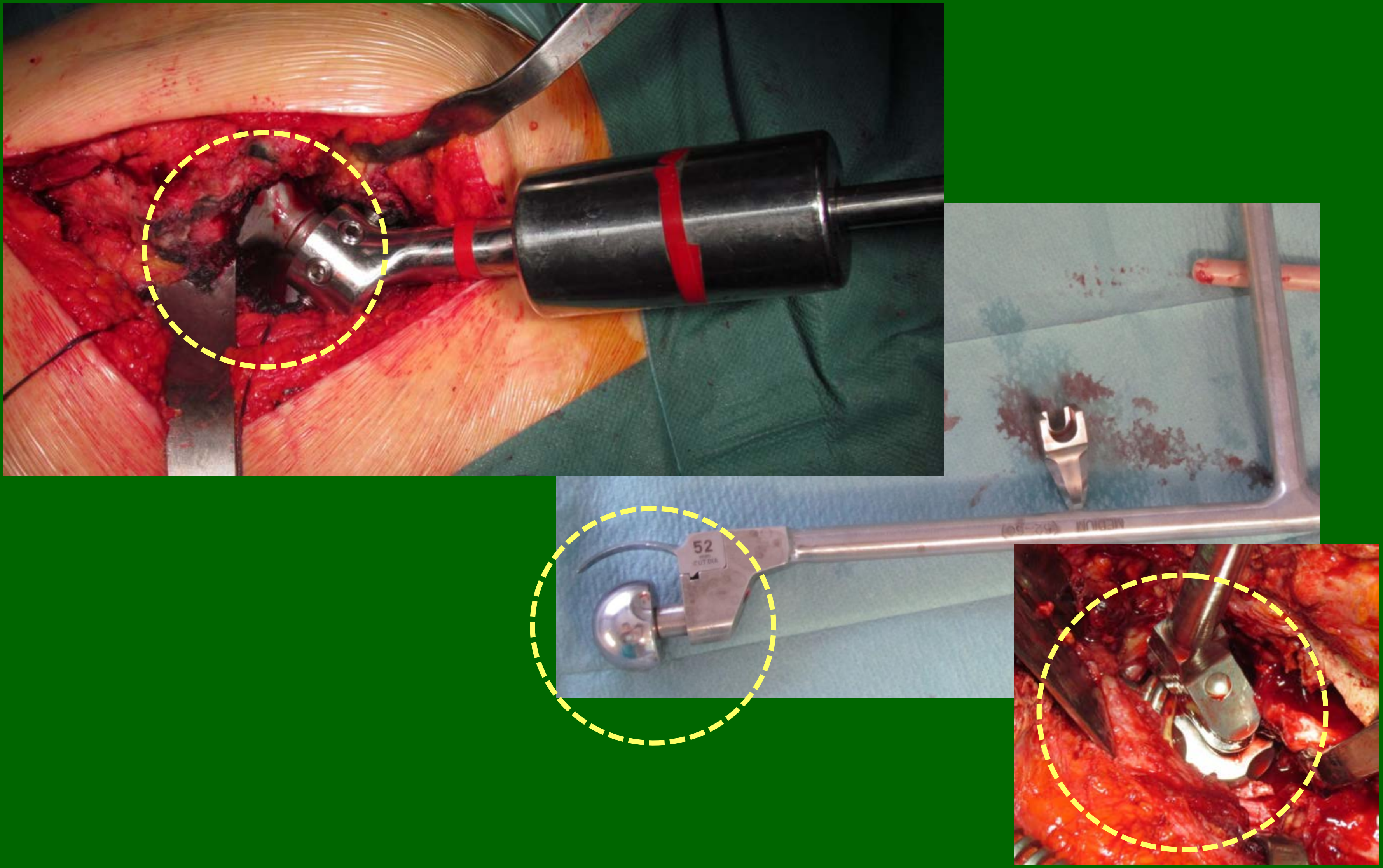
Intervento: rimozione sistema Octopus, sostituzione testina, impianto cotile Lepine cementato.





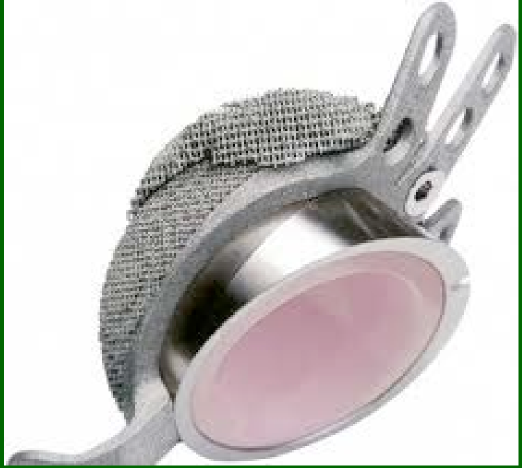
Rx post - op

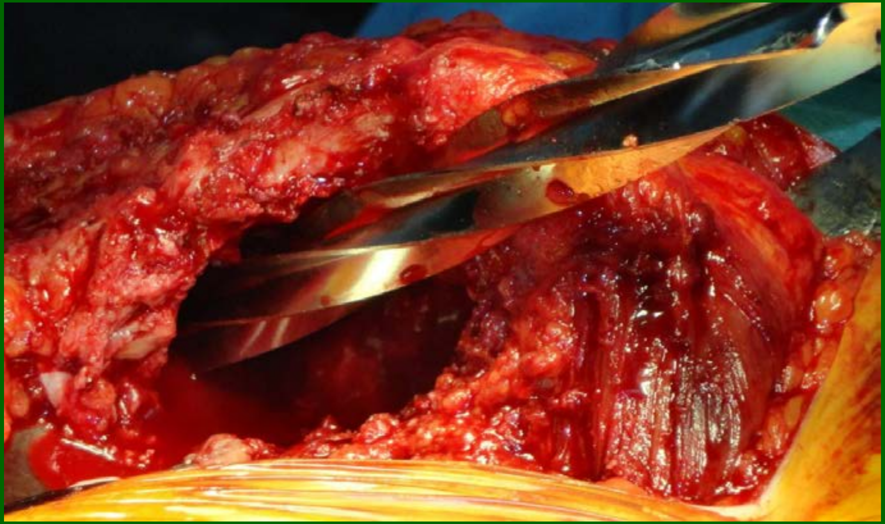
Strumentario per espianto

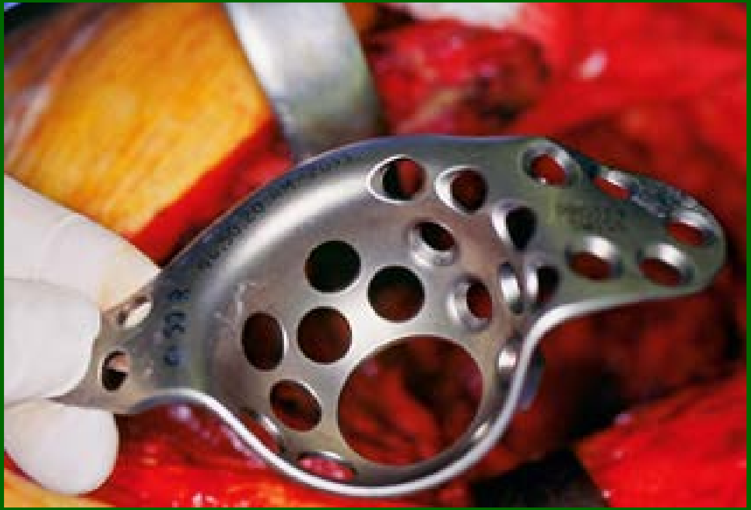


Cotili e steli da revisione

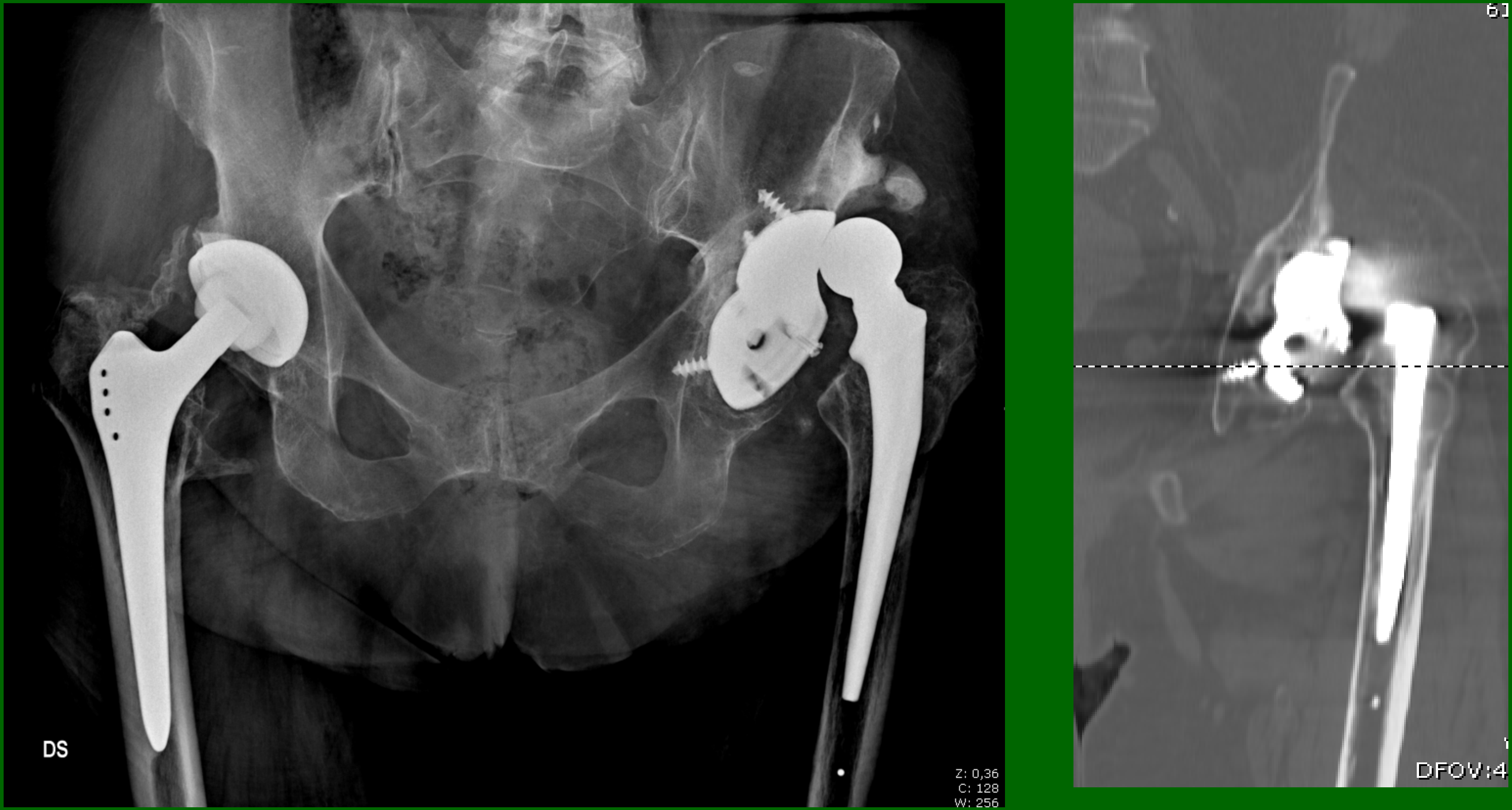
PLACCHE/CERCHIAGGI





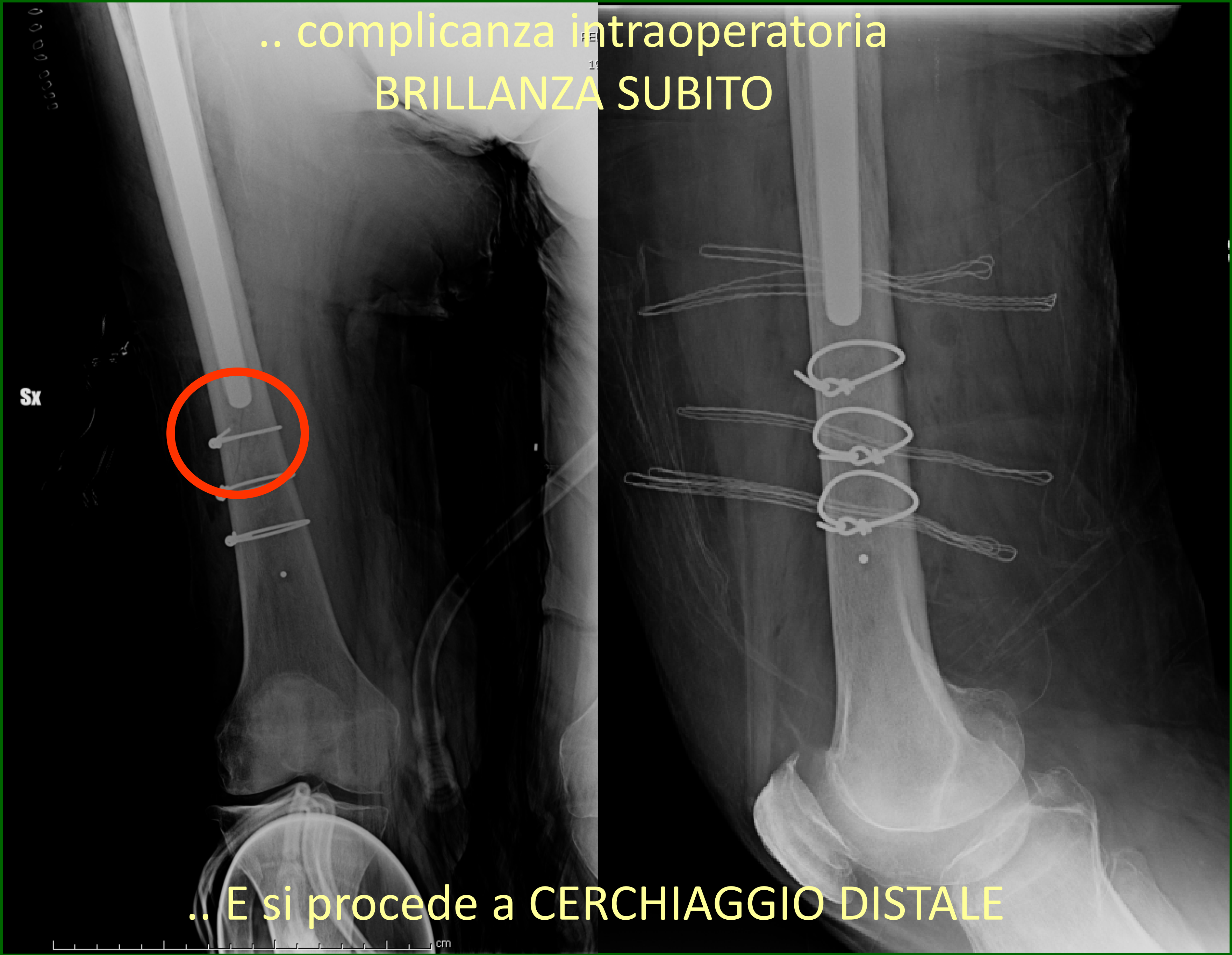


A.E. 82aa. lussazione inveterata stelo PTA sinistra

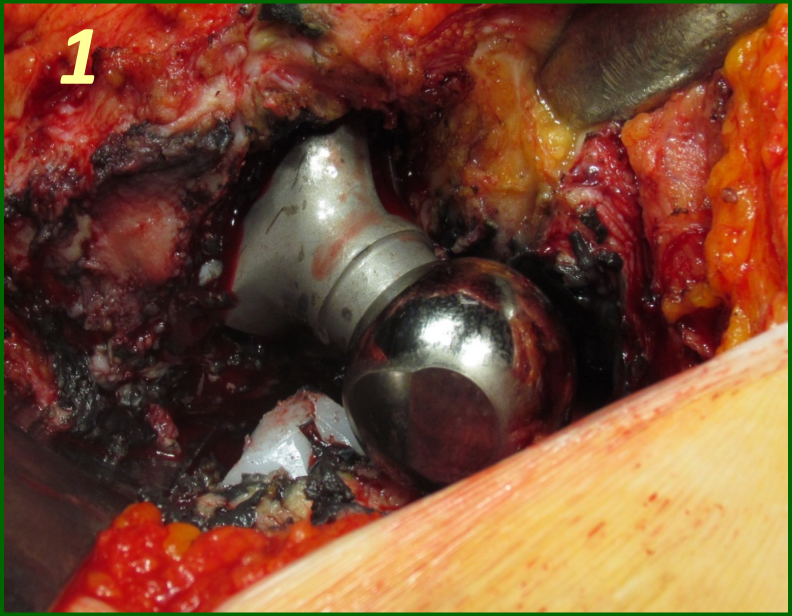

DS
Z: 0,36
C: 128
W: 256
61
DFOV:4

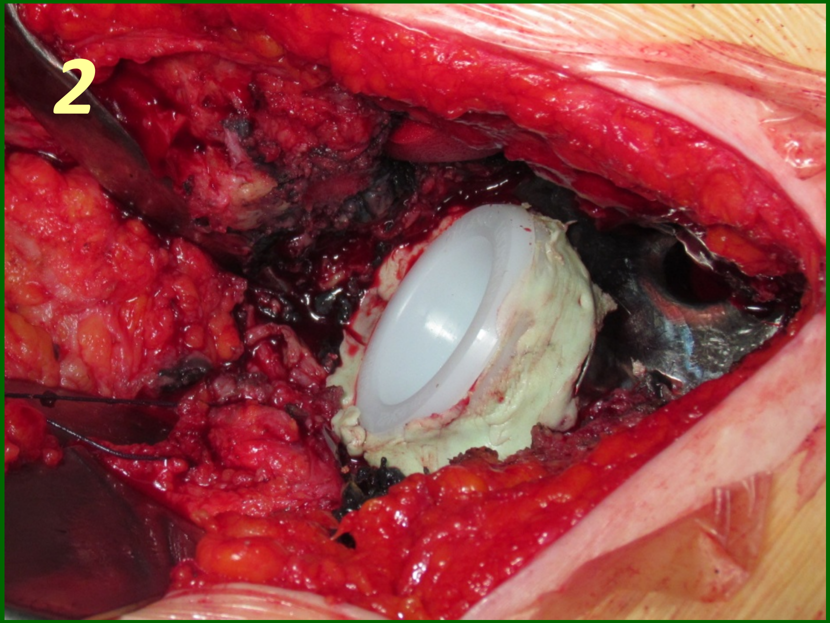
.. complicanza intraoperatoria

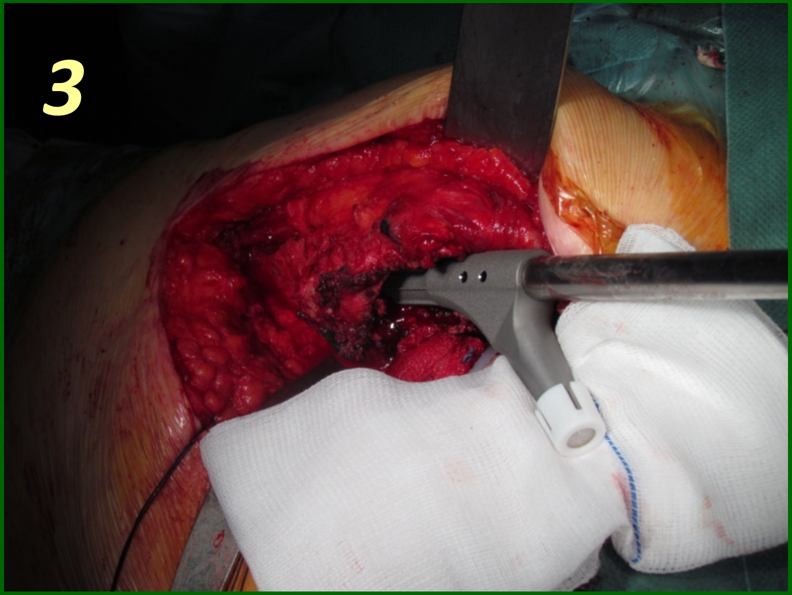
BRILLANZA SUBITO

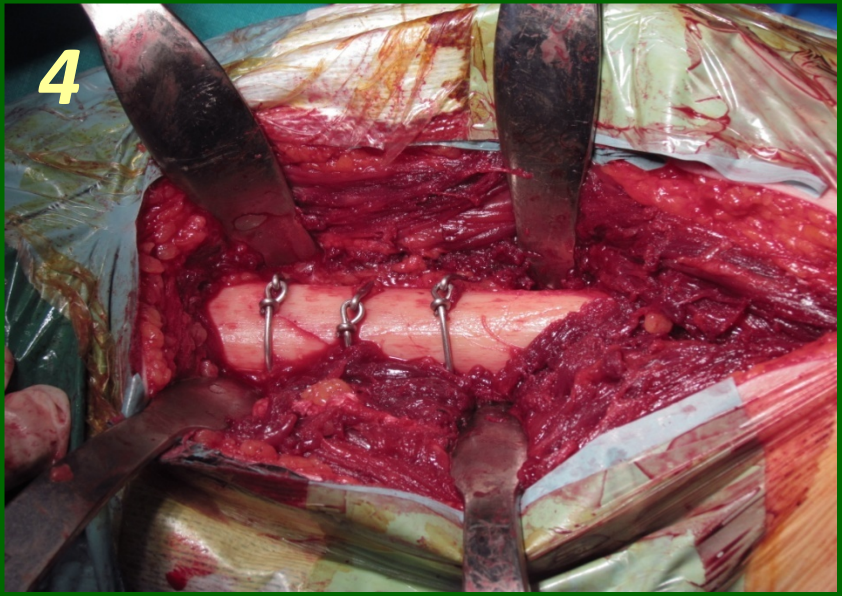


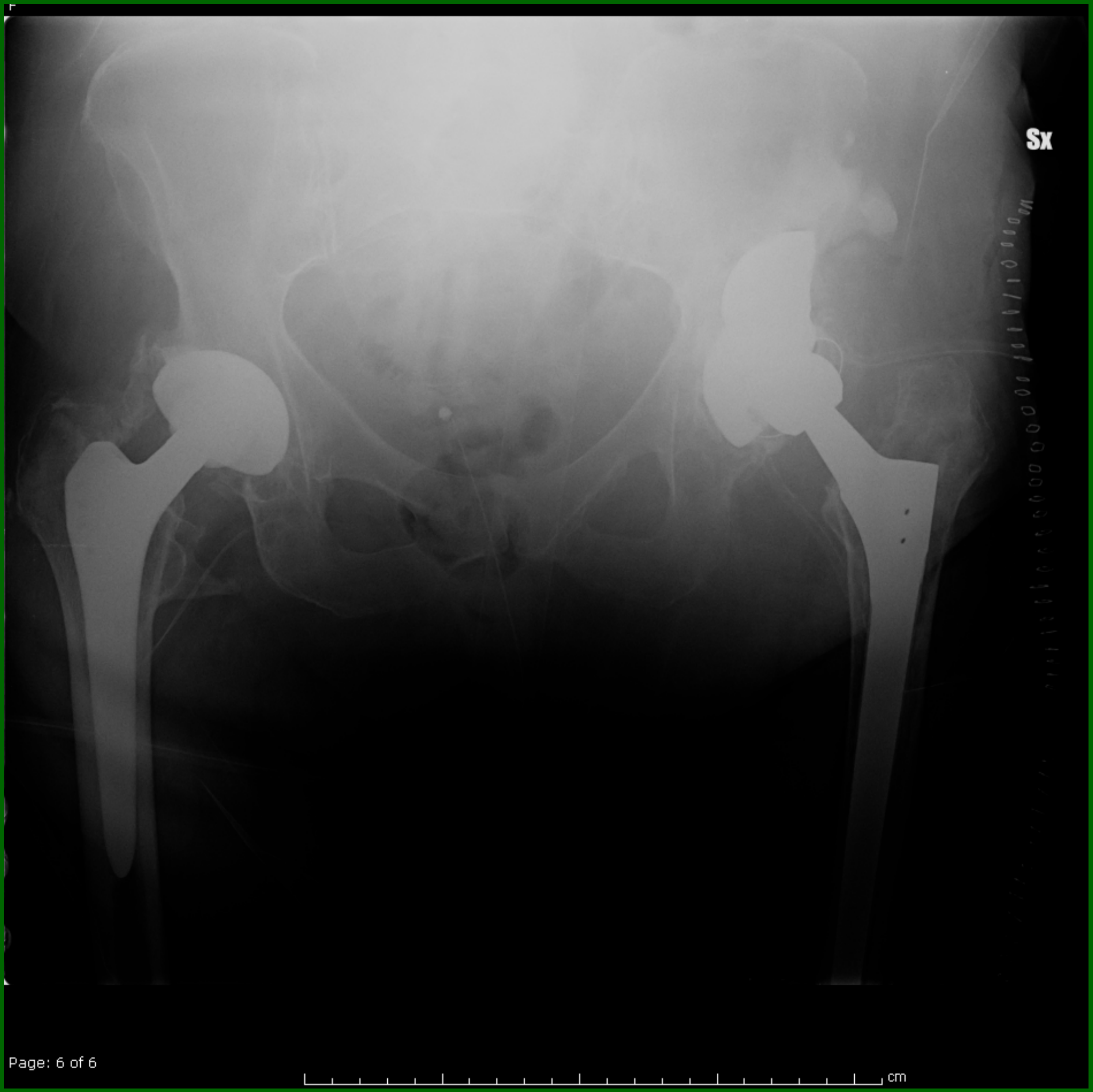
.. E si procede a CERCHIAGGIO DISTALE

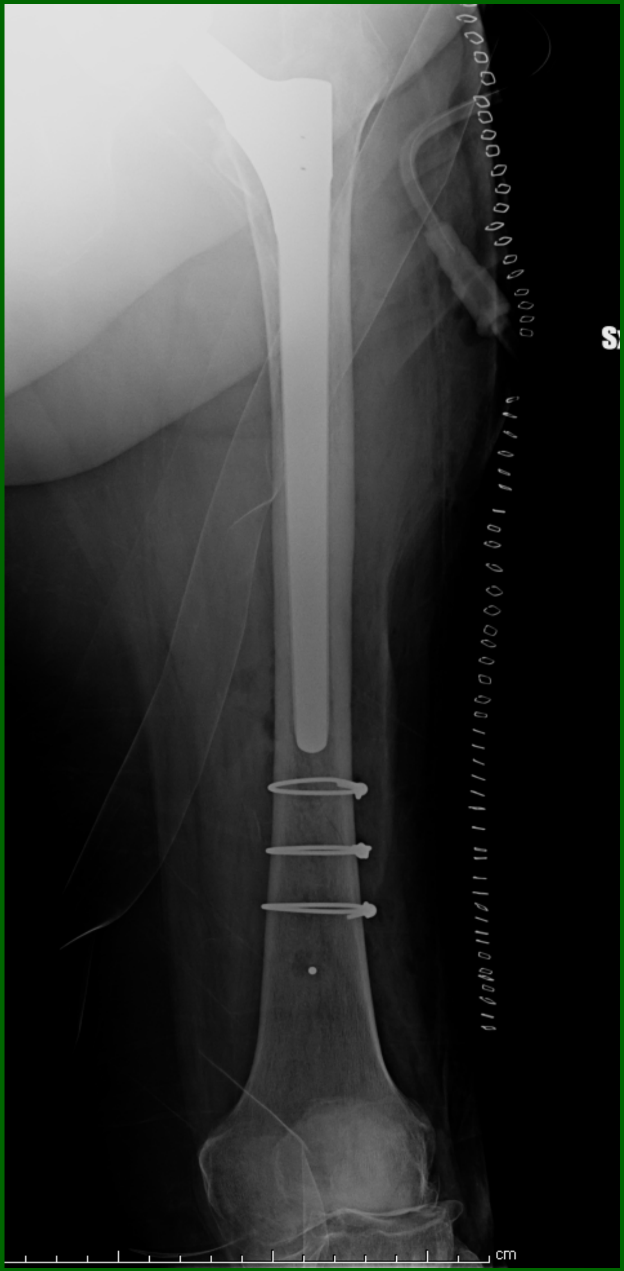

1


2


3

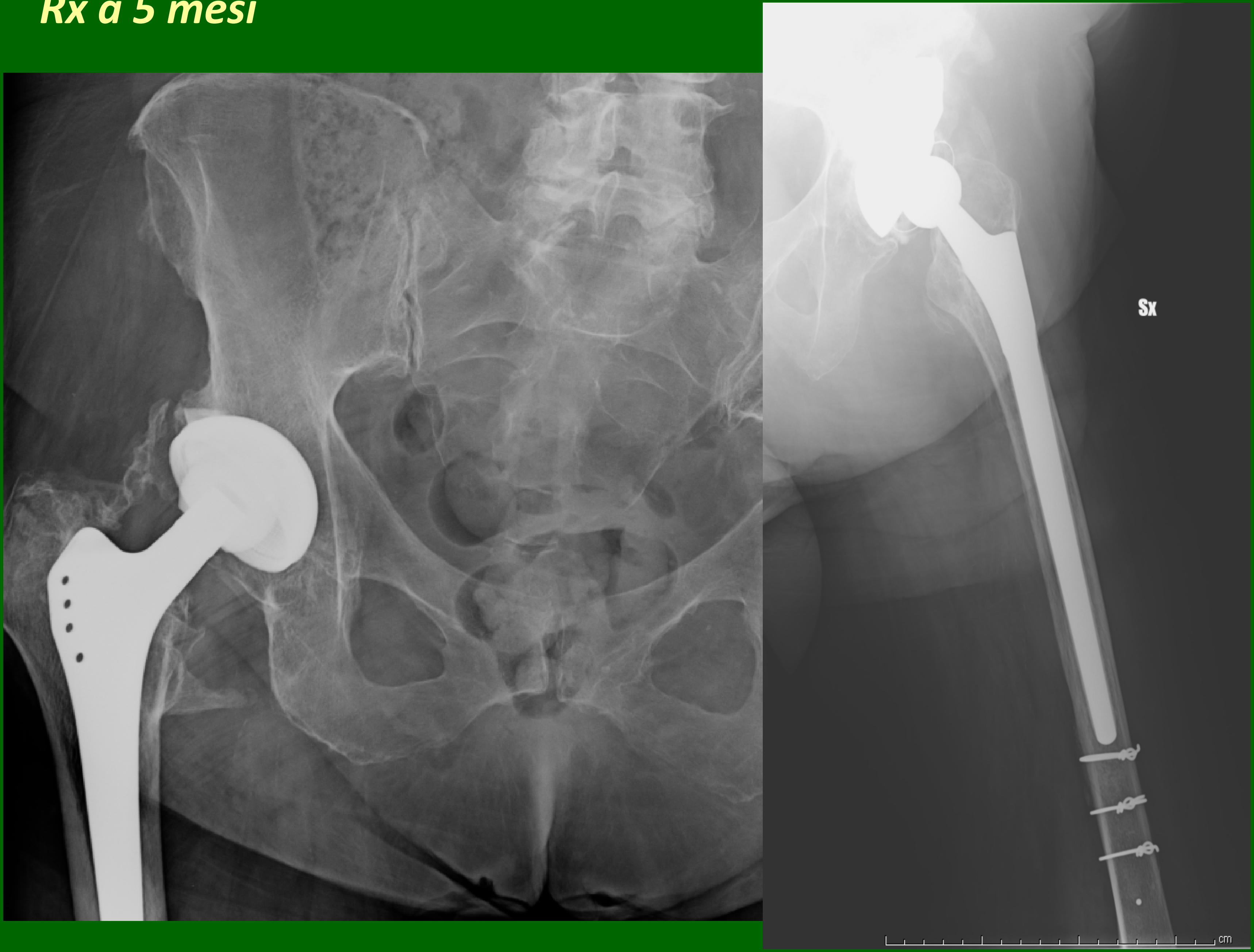

4


Sx
Page: 6 of 6
cm

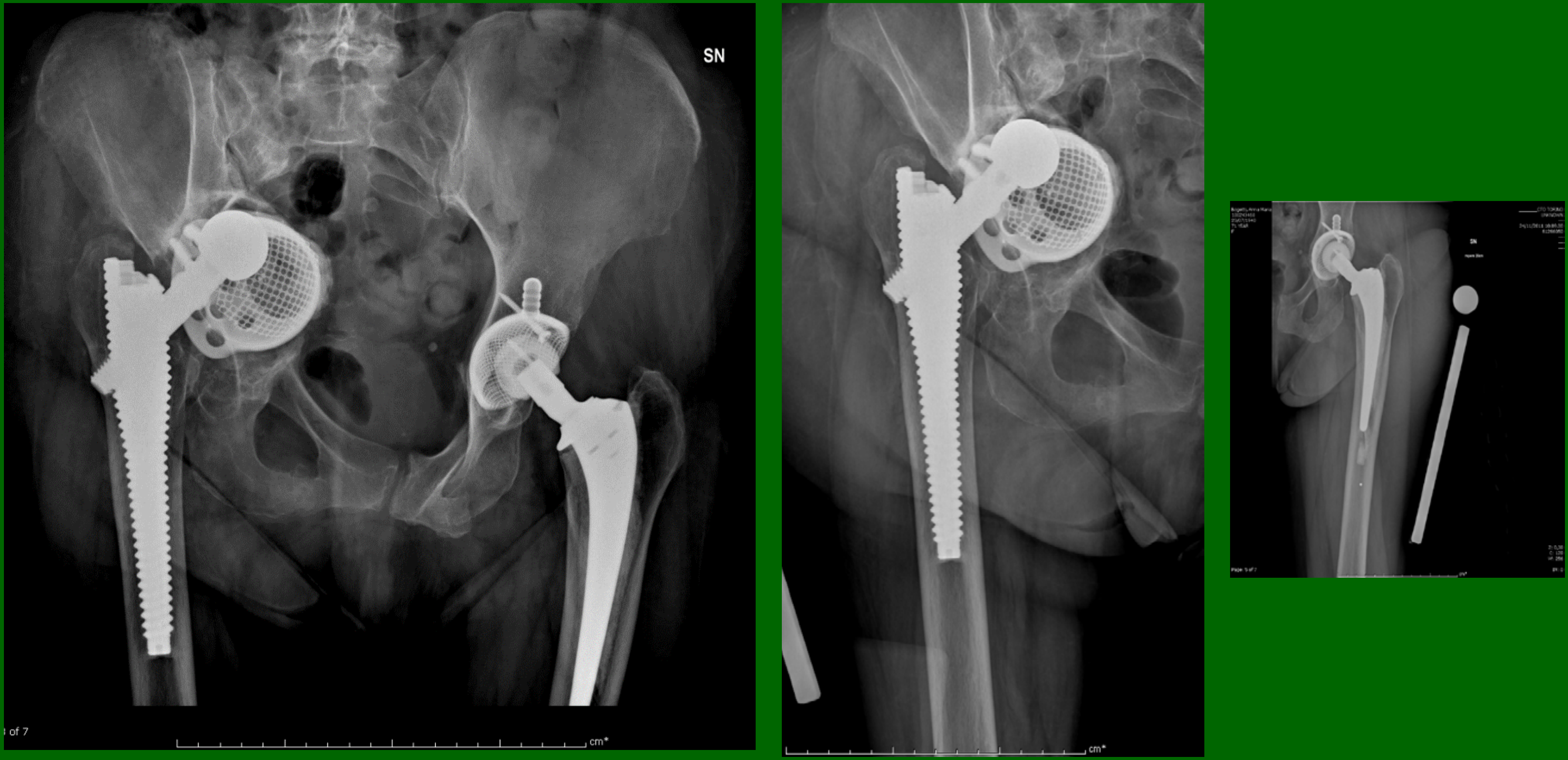


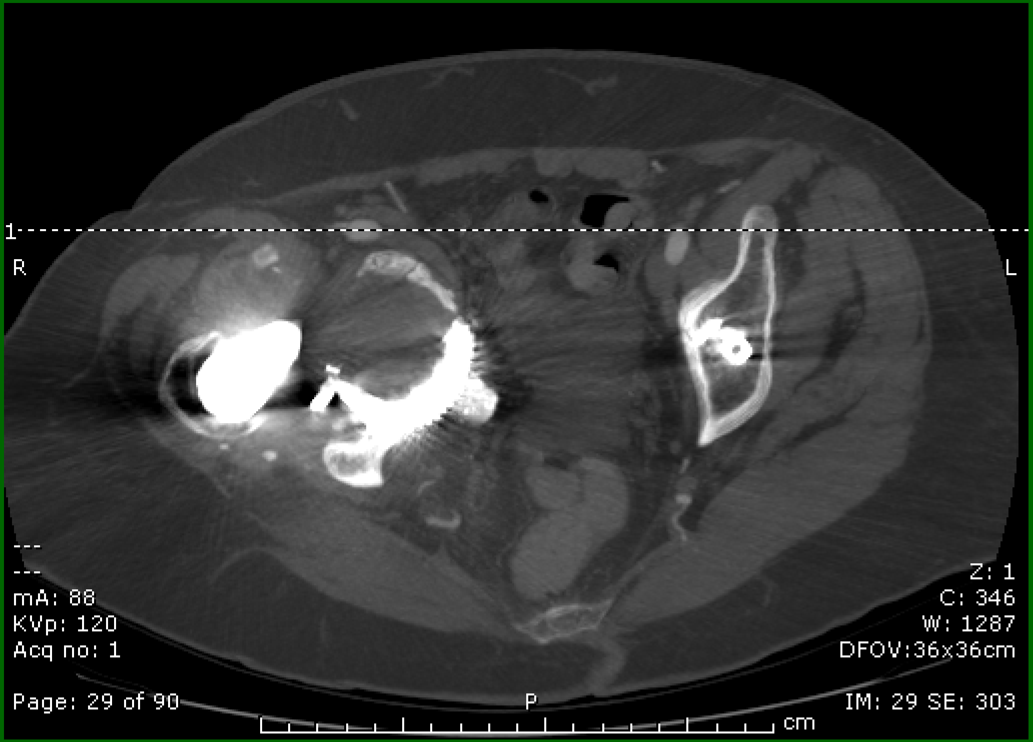
Rx post - op

Rx a 5 mesi

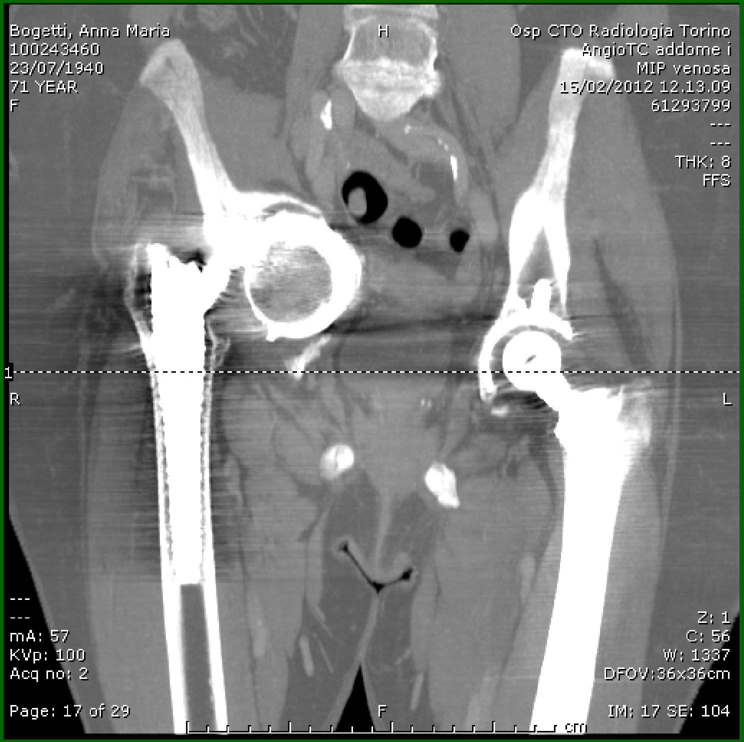


B.A.M. 72aa. mobilizzazione cotile in protesi totale d'anca a destra con protrusione delle componenti protesiche nello scavo pelvico in A.R.



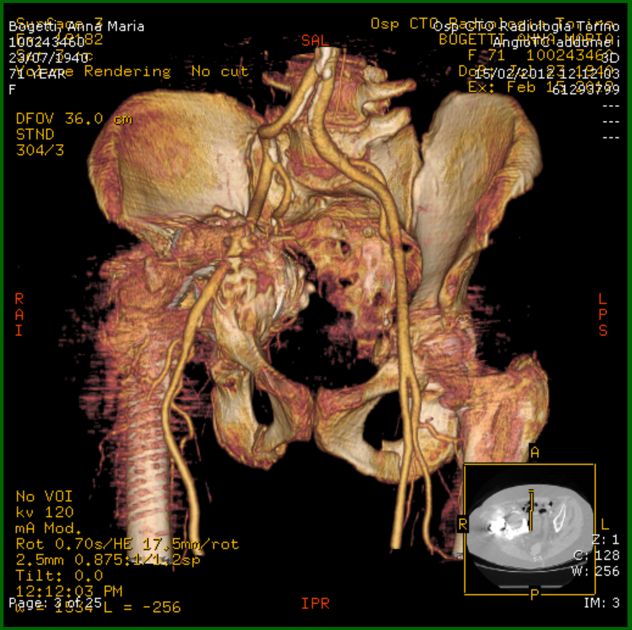

1
R
L

---
mA: 88
KVp: 120
Acq no: 1
Page: 29 of 90
P
cm
Z: 1
C: 346
W: 1287
DFOV:36x36cm
IM: 29 SE: 303


Bogetti, Anna Maria
100243460
23/07/1940
71 YEAR
F
H
Osp CTO Radiologia Torino
AngioTC addome i
MIP venosa
15/02/2012 12.13.09
61293799

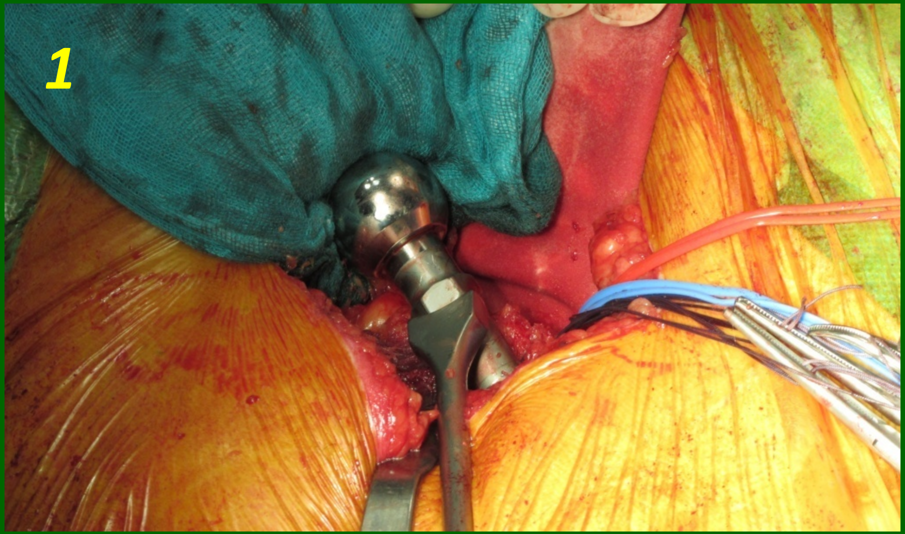
THK: 8
FFS
1
R
L

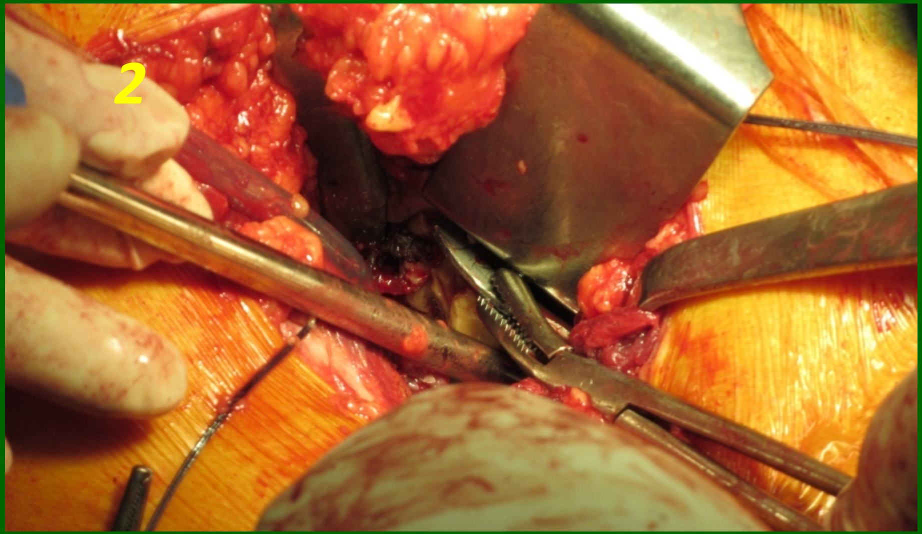
---
mA: 57
KVp: 100
Acq no: 2
Z: 1
C: 56
W: 1337
DFOV:36x36cm
Page: 17 of 29
F
IM: 17 SE: 104
cm

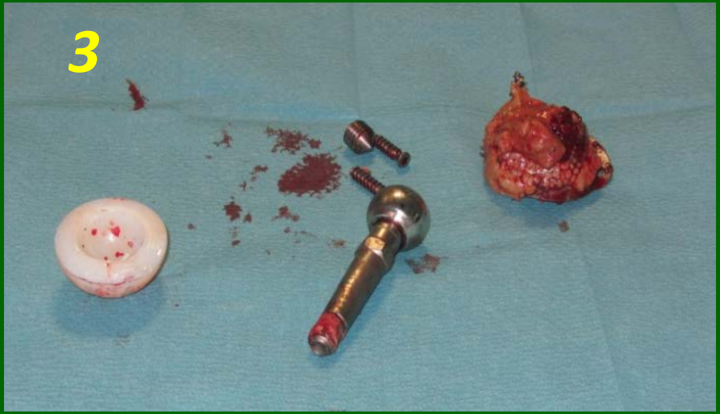

Bogetti Anna Maria
100243460
23/07/1940
71 YEAR
F
Osp CTO Radiologia Torino
AngioTC addome i
3D
15/02/2012 12:12:03
61293799
Volume Rendering No cut
SAL
DFOV 36.0 cm
STND
304/3
R
A
I
L
P
S
No VOI
kv 120
mA Mod.
Rot 0.70s/HE 17.5mm/rot
2.5mm 0.875:1/1.2sp
Tilt: 0.0
12:12:03 PM
Page: 3 of 25
IPR
A
R
L
P
Z: 1
C: 128
W: 256
IM: 3

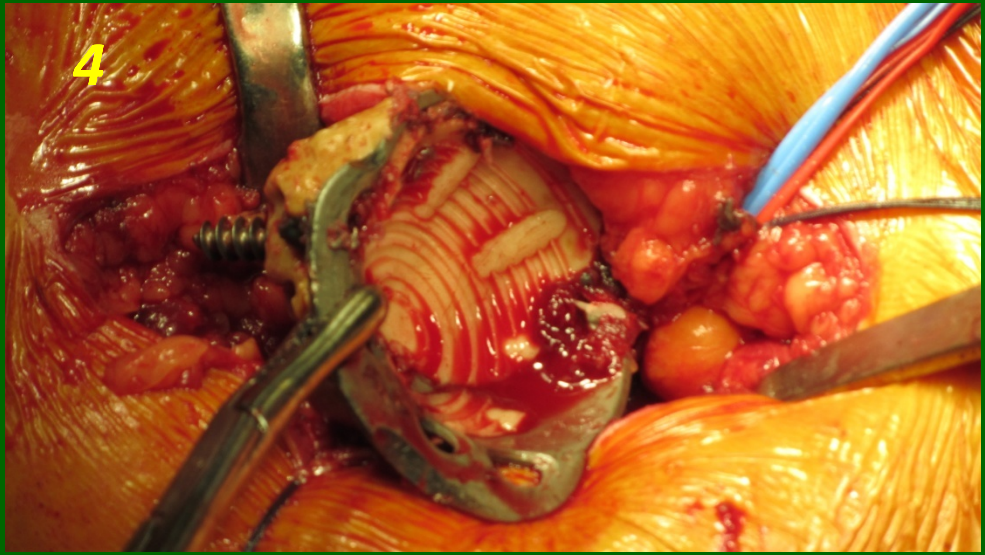
TC + AngioTC

L'esame TC mirato alla valutazione del fascio vascolare iliacofemorale destro in rapporto …
In presenza di lussazione inveterata di PTA dx si conferma dislocazione verso la linea mediana dell'arteria iliaca esterna che passa a ponte sulla componente acetabolare , senza immagini di riduzione del suo lume o di spandimento di mdc ……

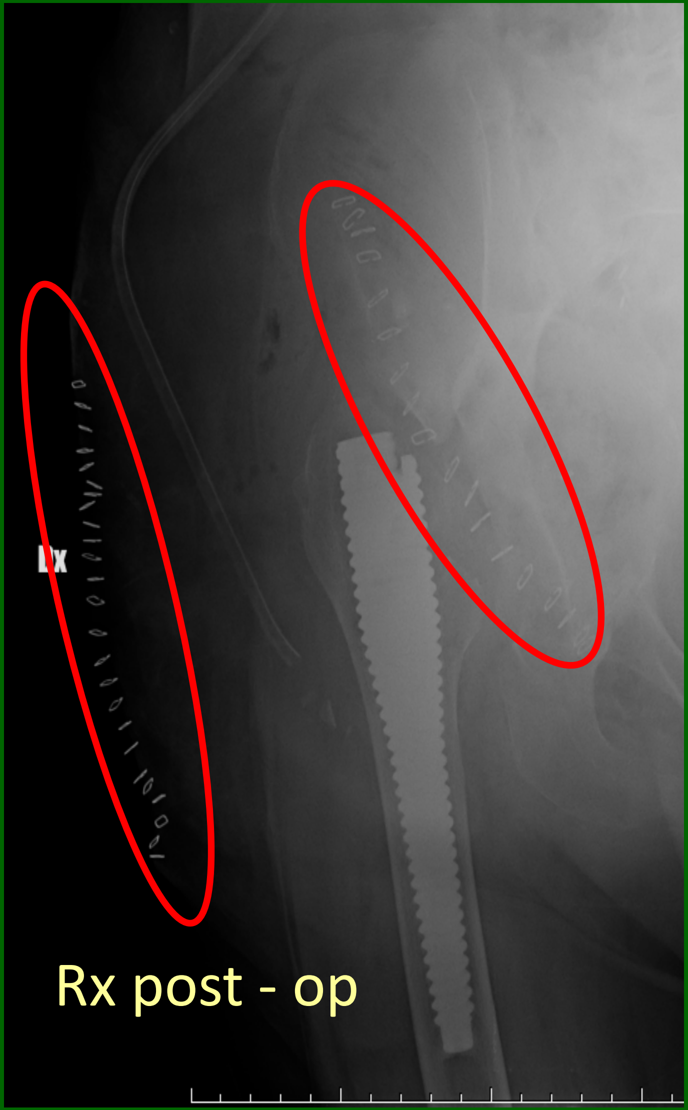

1


2

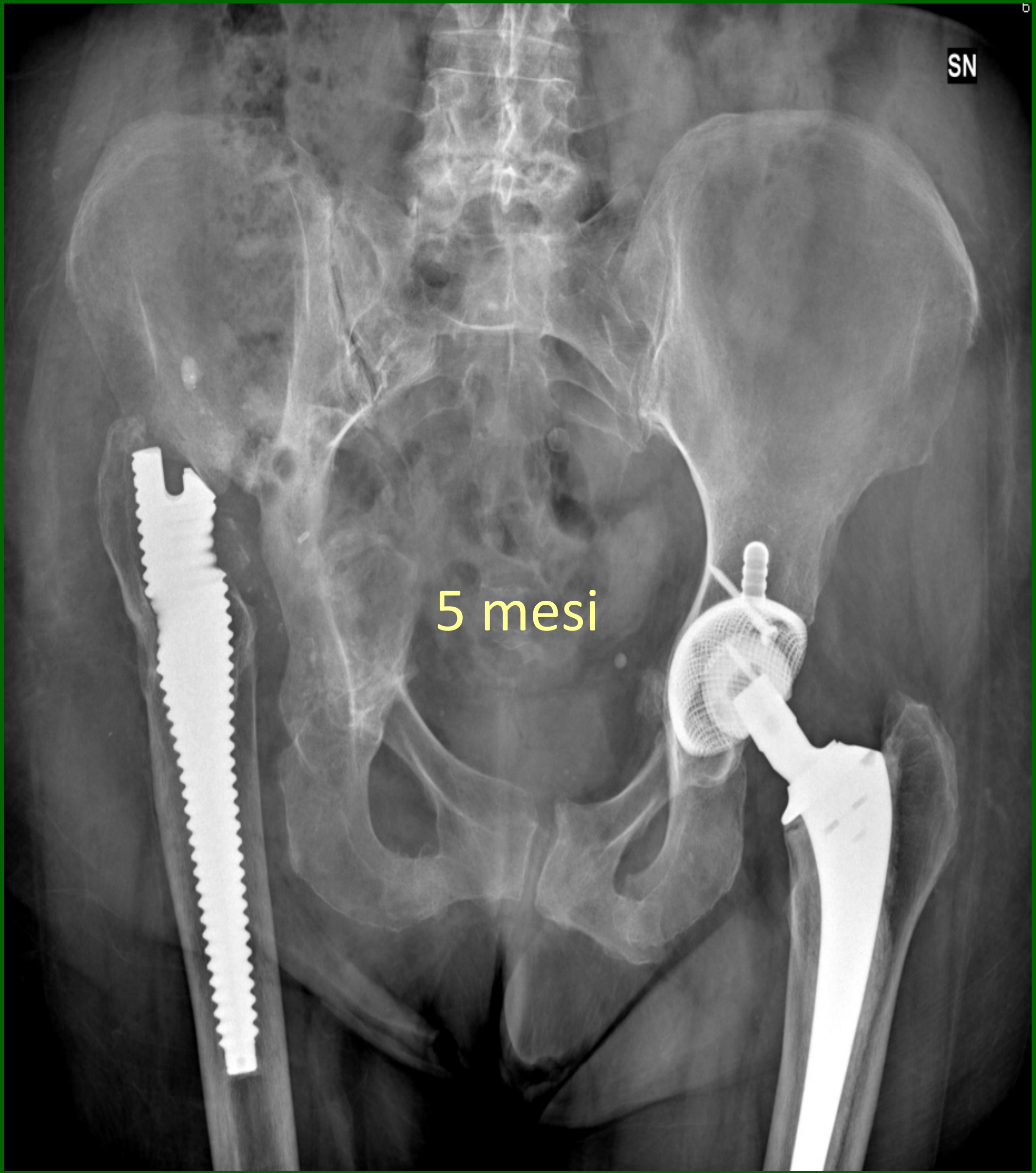

3


4

In relazione al tipo di Pz.. Limitarsi al MINIMO INDISPENSABILE



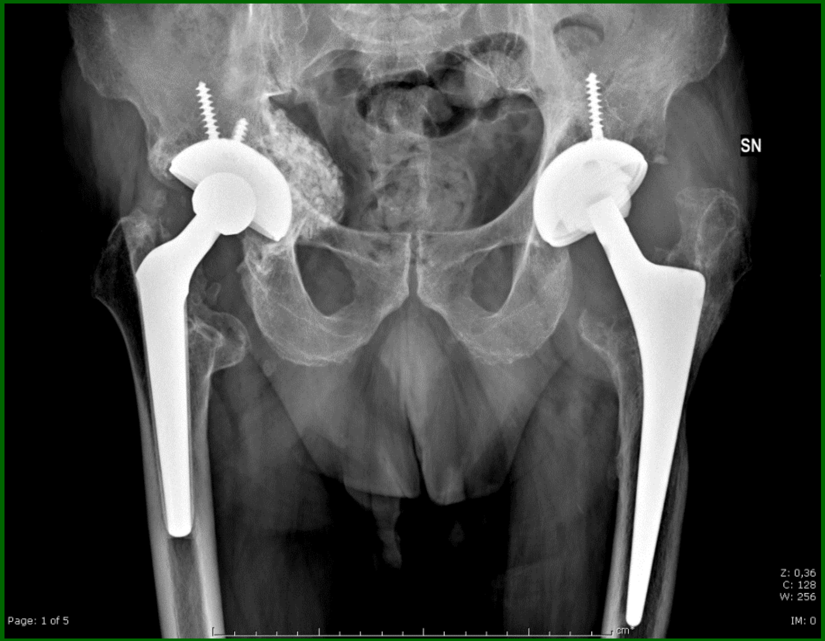
Rx post - op

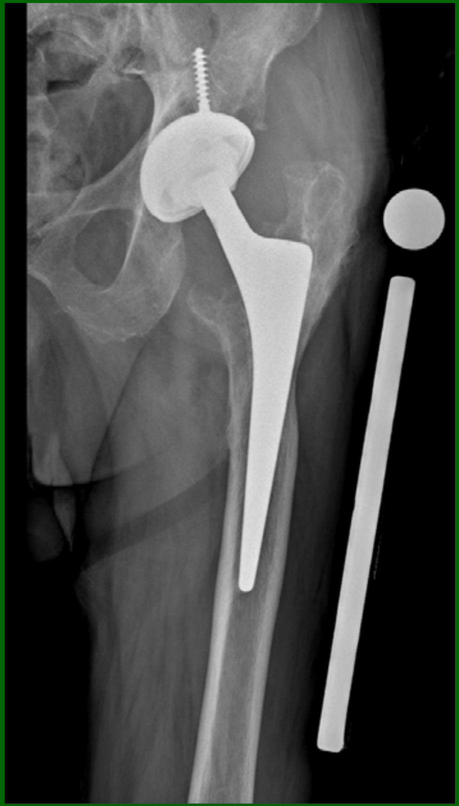


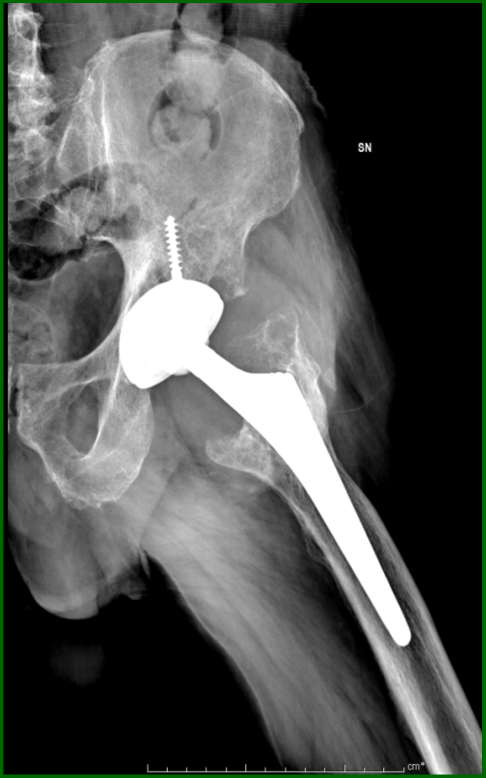
5 mesi

In qualche caso purtroppo siamo costretti a desistere

B.N. 82aa. PTA sin infetta a 5 anni post revisione

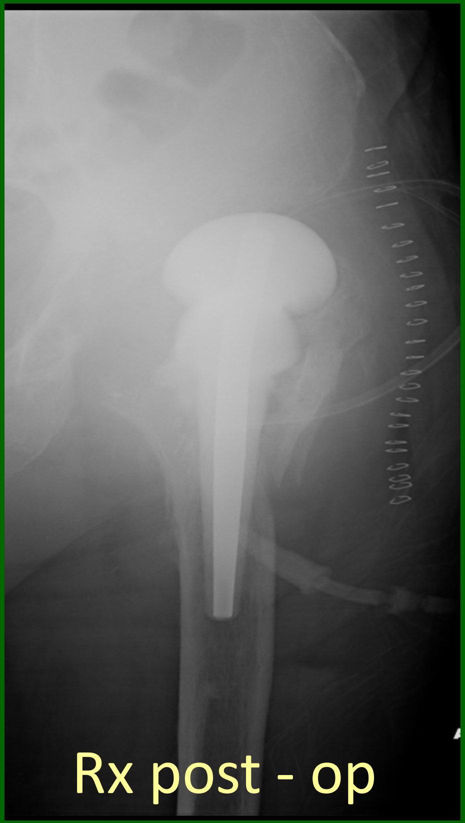

SN
Page: 1 of 5
Z: 0,36
C: 128
W: 256
IM: 0
cm



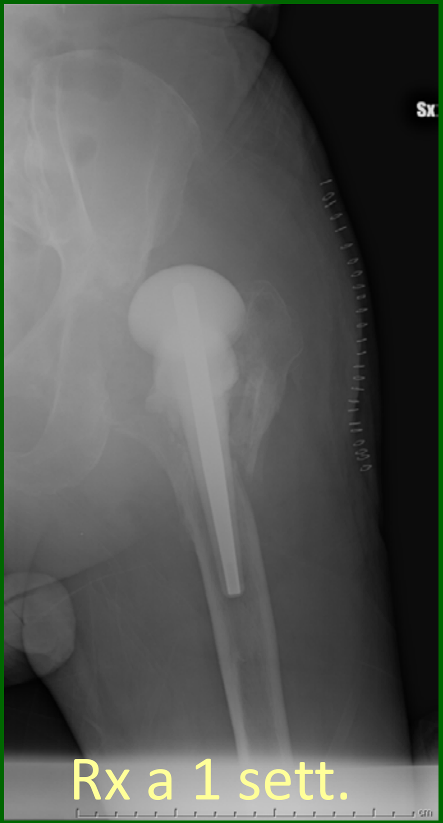


Dalla sala direttamente in Rianimazione per complicanza anestesiologica.

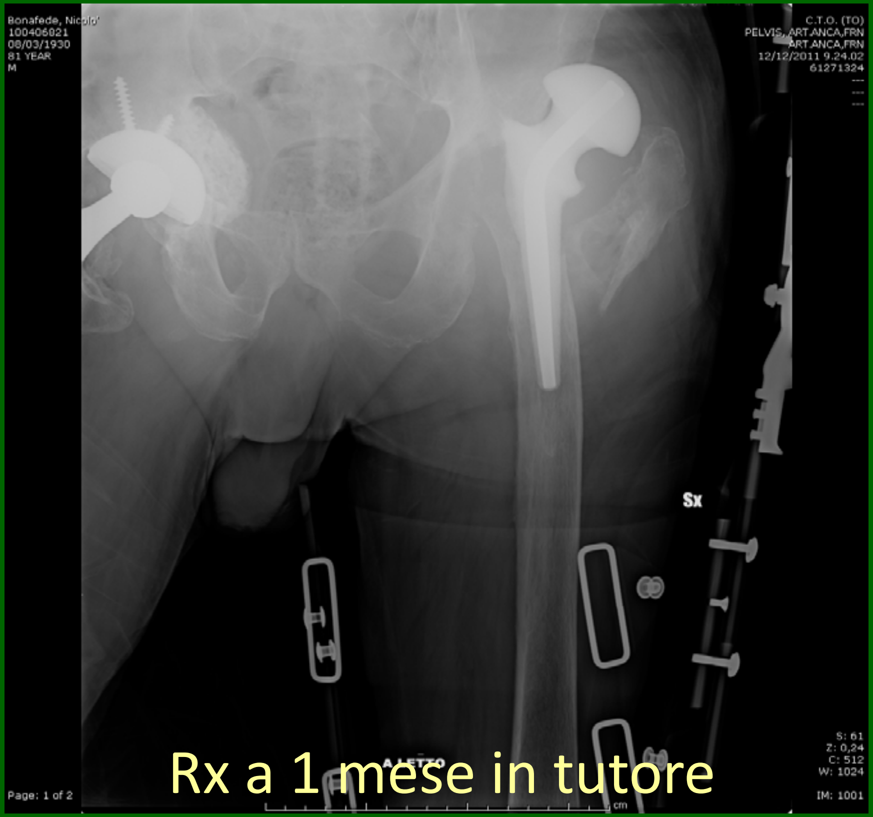
Esegue Rx post op in reparto in II giornata. (lussazione spaziatore, indicazione a trattamento incruento.)



Rx post - op

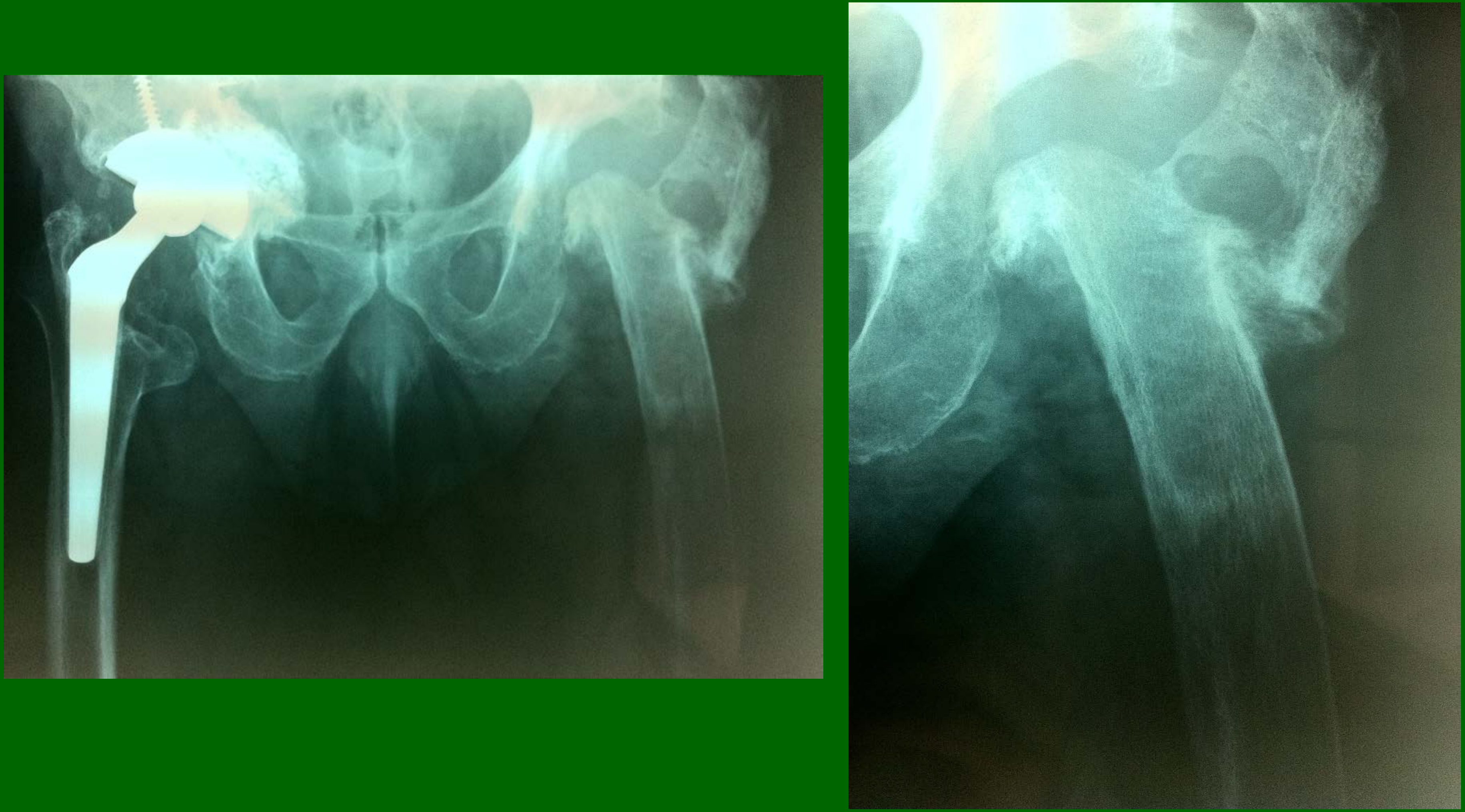


Rx a 1 sett.



Bonafede, Nicolo'
100406021
08/03/1930
81 YEAR
M
C.T.O. (TO)
PELVIS, ART.ANCA,FRN
ART.ANCA,FRN
12/12/2011 9.24.02
61271324
Sx
A LETTO
S: 61
Z: 0,24
C: 512
W: 1024
IM: 1001
Page: 1 of 2
cm

Rx a 1 mese in tutore



Rx a 8 mesi.

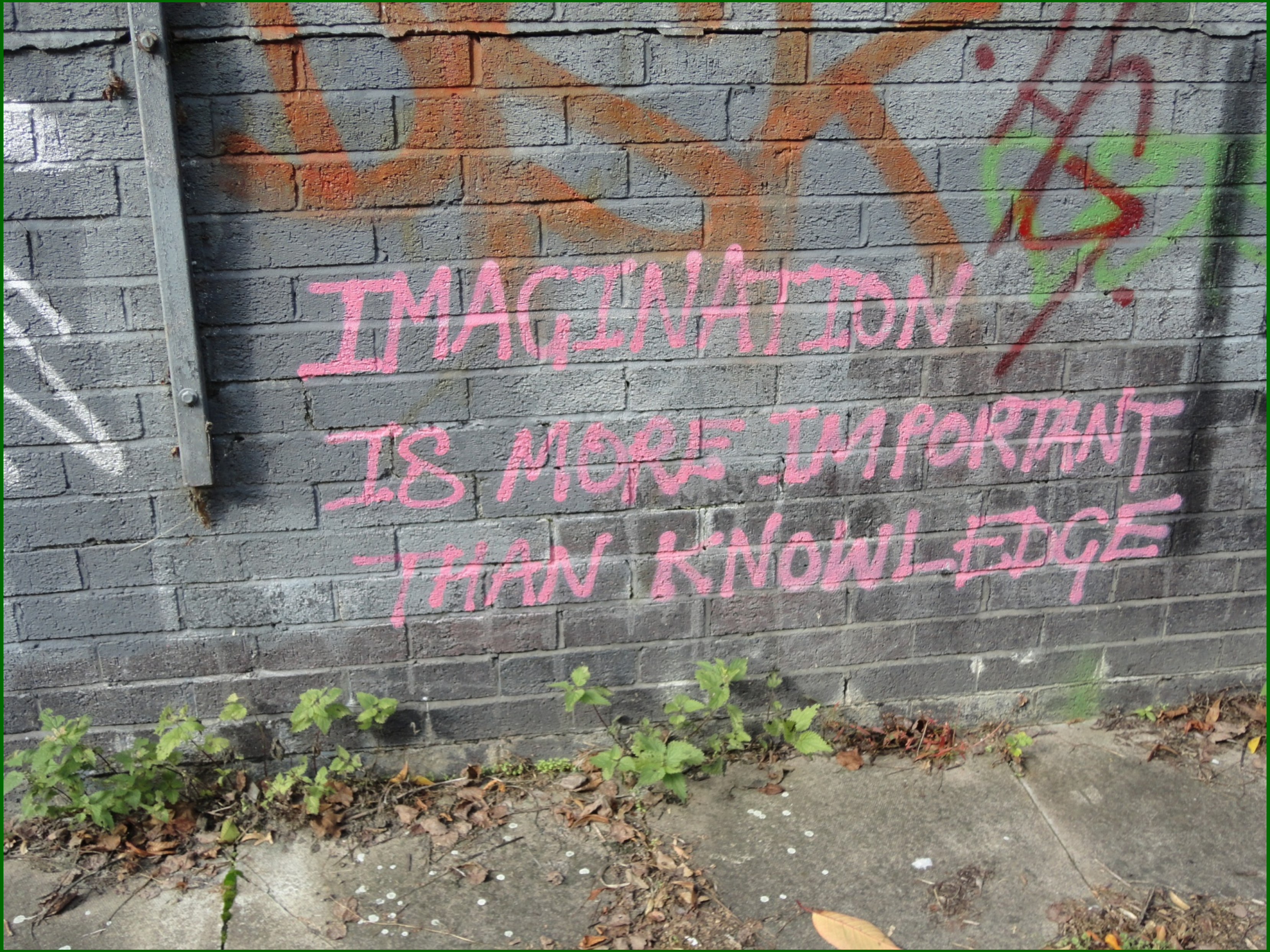
Conclusioni

✓*Il reimpianto d’anca e’ una chirurgia complessa, non sempre prevedibile.*

✓*Una corretta diagnosi, seguendo i percorsi noti, evita complicanze ed errori*

✓ *Se si verificano bisogna saperli gestire*

✓ *Se necessario, sapersi fermare in tempo*


IMAGINATION
IS MORE IMPORTANT
THAN KNOWLEDGE

GRAZIE