



Instabilità (Lussazione-Sub-Impingement) il problema

F. Falez

*Chief Surgeon- Dpt Orthopaedic Surgery
Ospedale Santo Spirito Roma*

Artroprotesi d'anca: Lussazioni

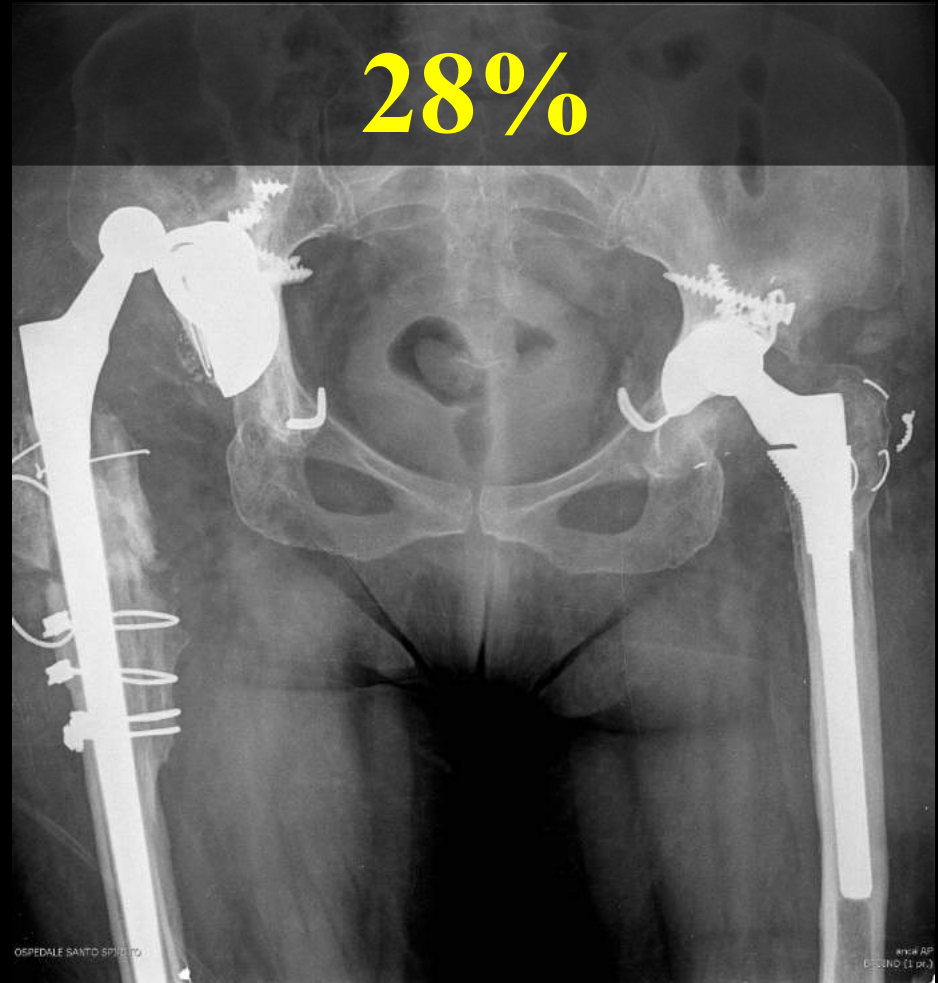
Impianti primari

0.3% - 10%



Impianti di revisione

28%





ricerca di diametri sempre maggiori

Componenti modulari

Z= **Lenght**

y= **Off-set**

x= **Antiversion**



Artroprotesi d'anca: Lussazioni

In Italia 9.3% revisioni per instabilità



Lussazioni ed instabilità: Classificazione

Causa di revisione

Totale 9%

Primi 2 anni 26%

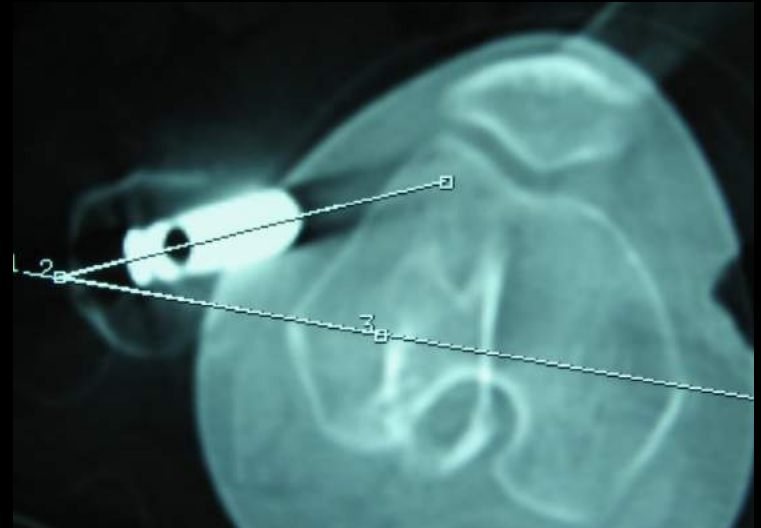


Lussazioni ed instabilità: Classificazione

In relazione alla causa scatenante

Primarie (direttamente correlate alla procedura)

- ❖ Malposizionamento delle componenti
- ❖ Riduzione dell'off-set
- ❖ Ipometrie
- ❖ Impingement delle componenti
- ❖ Impingement osseo
- ❖ Via di accesso
- ❖ Ipotonia marcata degli abduttori
- ❖ Avulsione del GT o disinserzione dei glutei
- ❖ Usura del polietilene
- ❖ Trauma



Lussazioni ed instabilità: Classificazione

In relazione alla causa scatenante

Secondarie(correlate al pziente)

- ❖ Disturbi neuromuscolari
- ❖ Precedenti interventi chirurgici
- ❖ Alcolismo
- ❖ Pregresse patologie locali
- ❖ Sesso
- ❖ Rischio anestesiológico



Lussazioni ed instabilità: Classificazione

In relazione al timing

Precoci



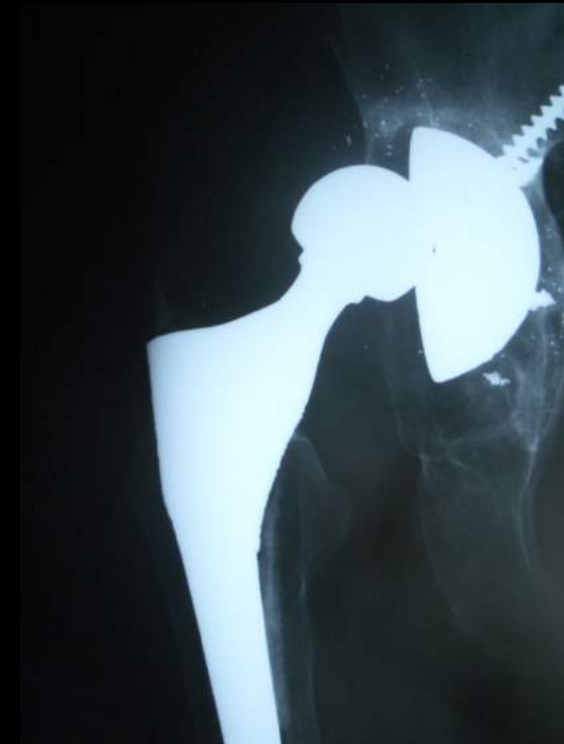
Entro 6 mesi
50-70%

Intermedie



Tra 6 mm e 5 aa
15-20%

Tardive

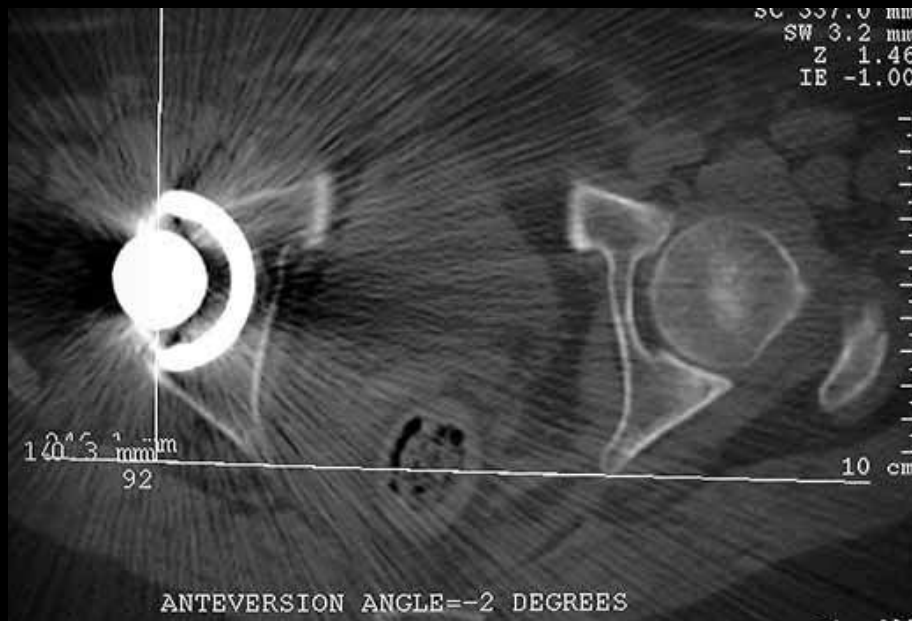


Oltre 5 anni
30-35%

Lussazioni ed instabilità: Precoci - Intermedie

Malposizionamento delle componenti

Acetabolare



Femorale

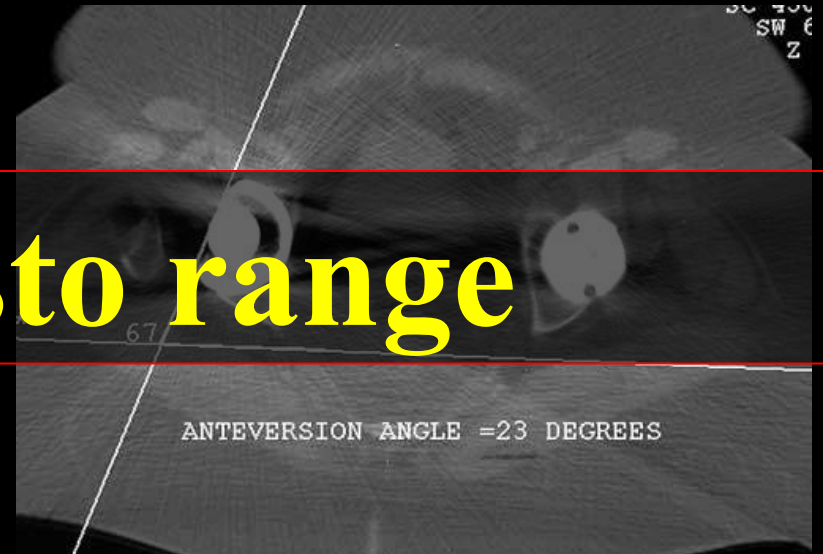
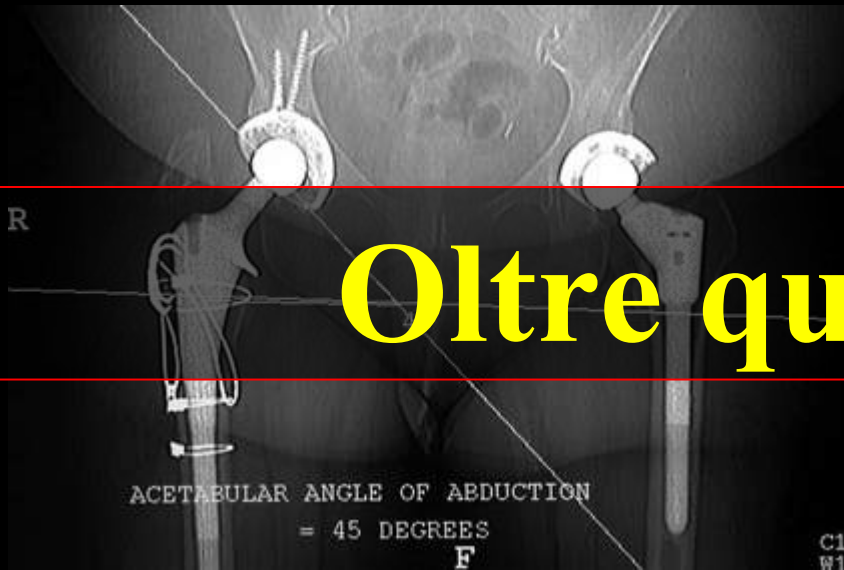


Lussazioni ed instabilità: Precoci - Intermedie

Orientamento acetabolare

Inclinazione: $40 \pm 10^\circ$

Antiversione: $15 \pm 10^\circ$



Oltre questo range

Lussazione: 6.1%

Lussazioni ed instabilità: Precoci - Intermedie

Orientamento acetabolare

Mancato rispetto dei parametri di Lewinnek

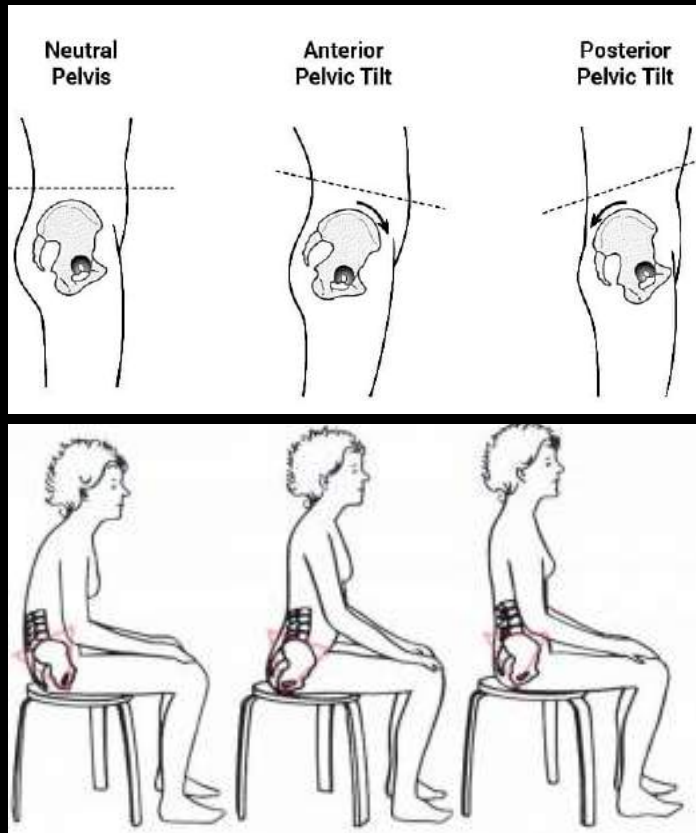


No instabilità

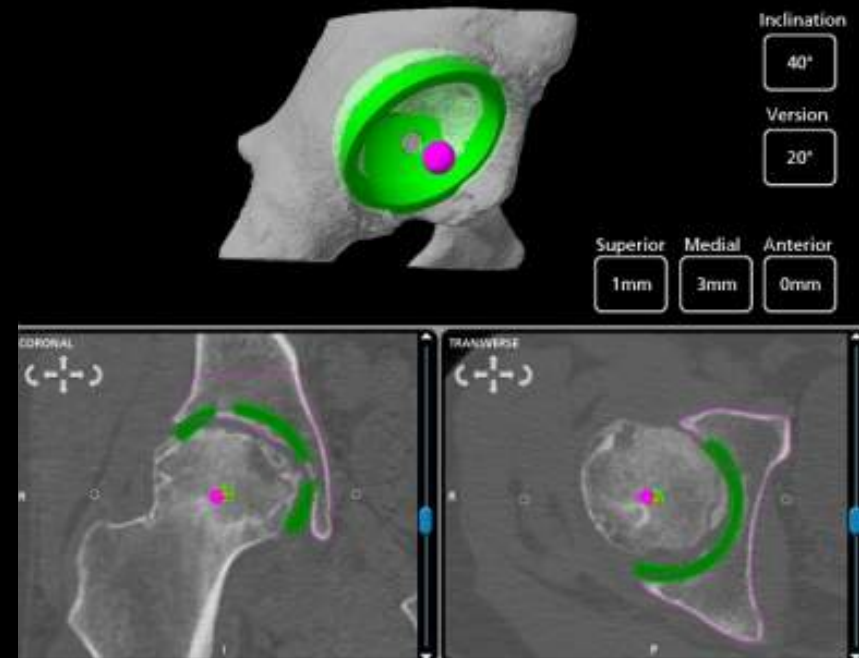
Lussazioni ed instabilità: Precoci - Intermedie

Orientamento acetabolare

Orientamento della pelvi



CAOS



Ala Eddine, Surg Radiol Anat 2001
Puri, J Arthroplasty 2006

Parratte & Argenson, JBJS Am 2007

Lussazioni ed instabilità: Precoci - Intermedie

Orientamento stelo femorale

Antiversione

10 – 15°

16,3°

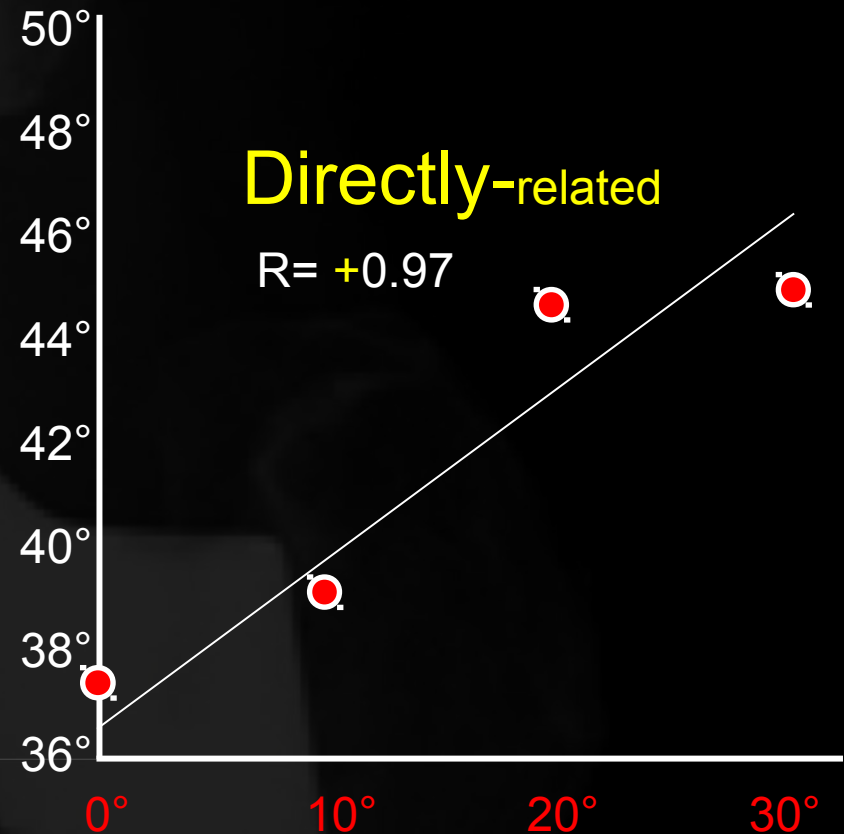
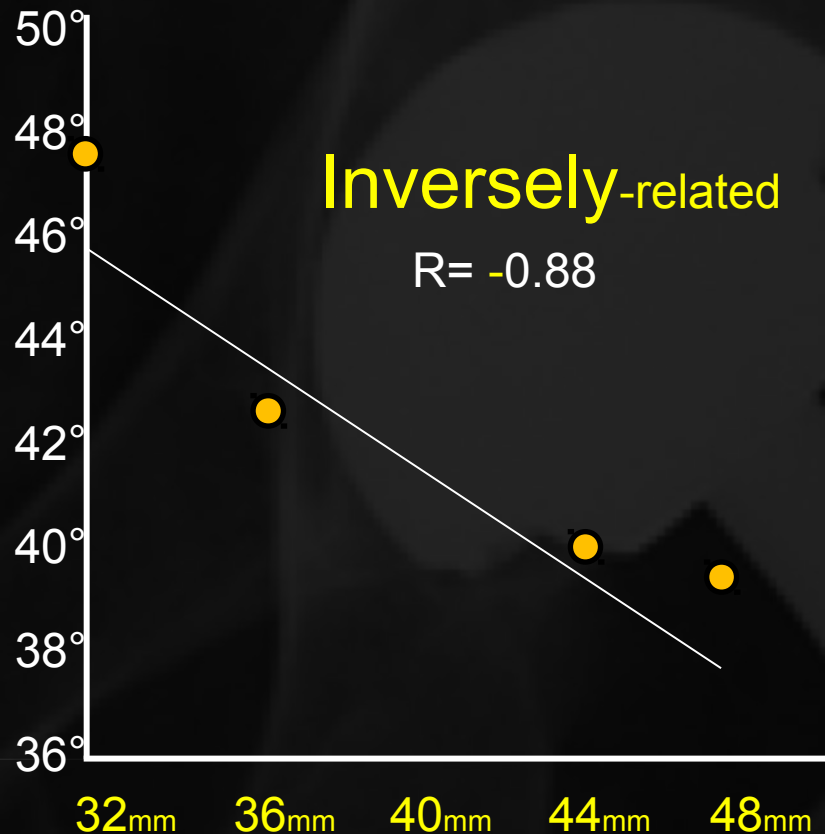
Barrack, JAAOS 2003

Dorr, CORR 2009

Antiversione *combinata*

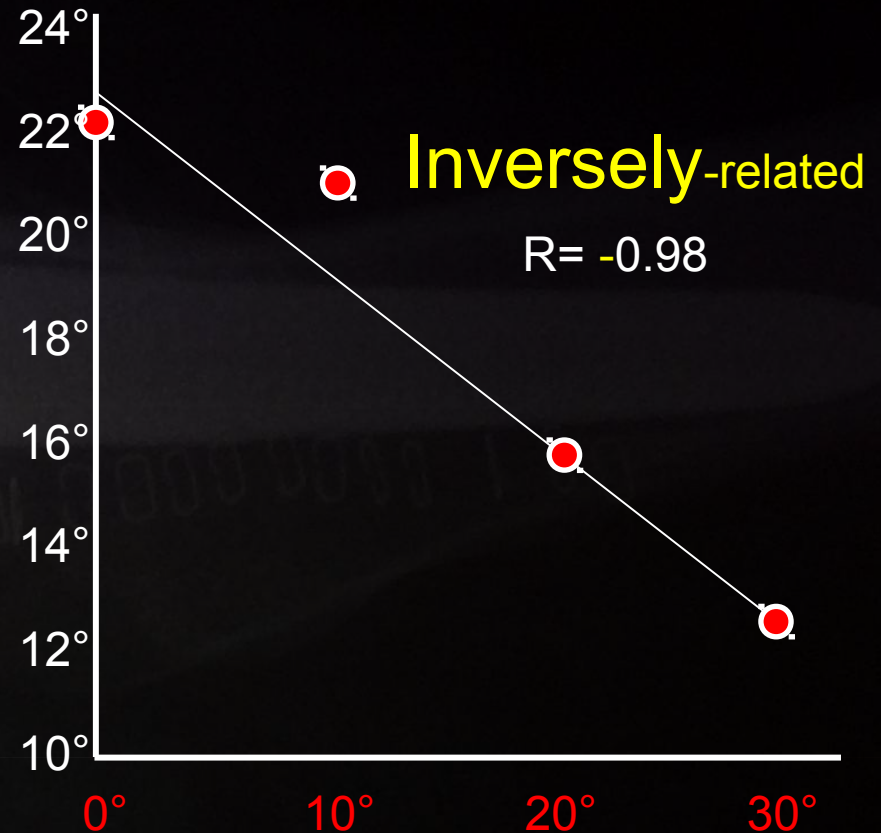
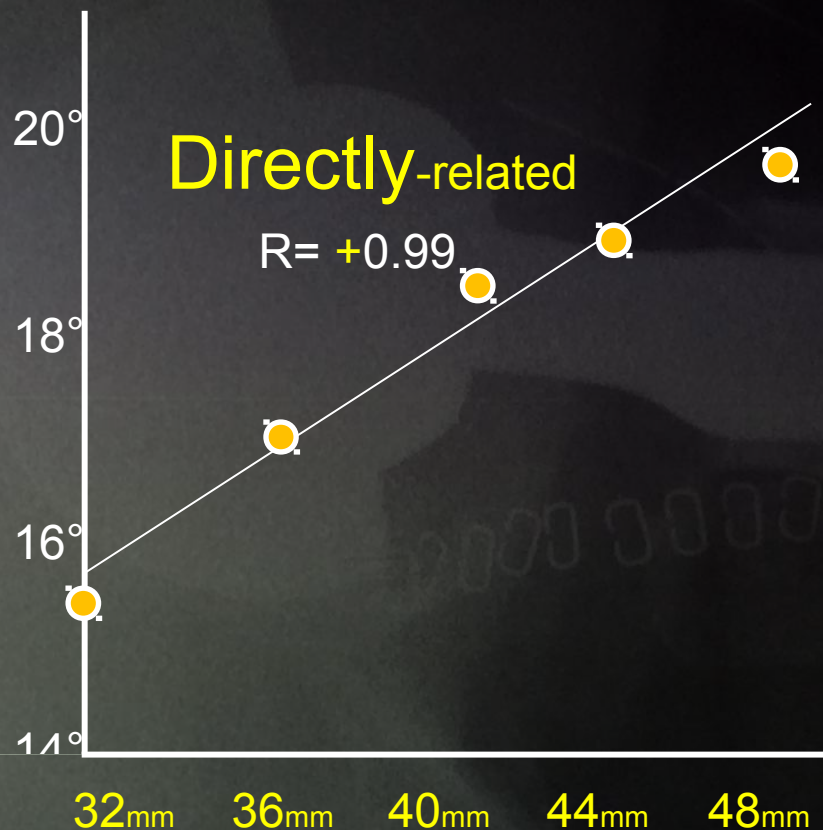


Antiversione *Combinata* stelo/coppa



Optimal **CUP Inclination** influenced by **Head diam** & **Femoral Anteversion**

Antiversione *Combinata* stelo/coppa

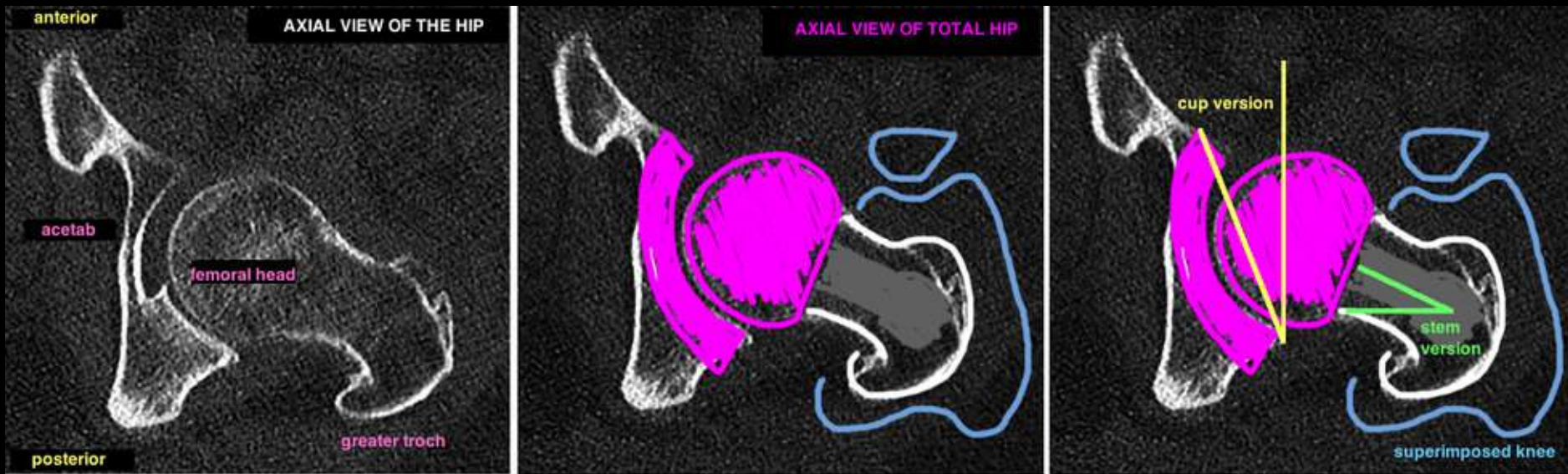


Optimal CUP Anteversion influenced by **Head diam.** & **Femoral Anteversion**

Lussazioni ed instabilità: Precoci - Intermedie

Impingement meccanico

Femur First and Combined Anteversion



Grappiolo, BMC 2017

Lussazioni ed instabilità: Precoci - Intermedie

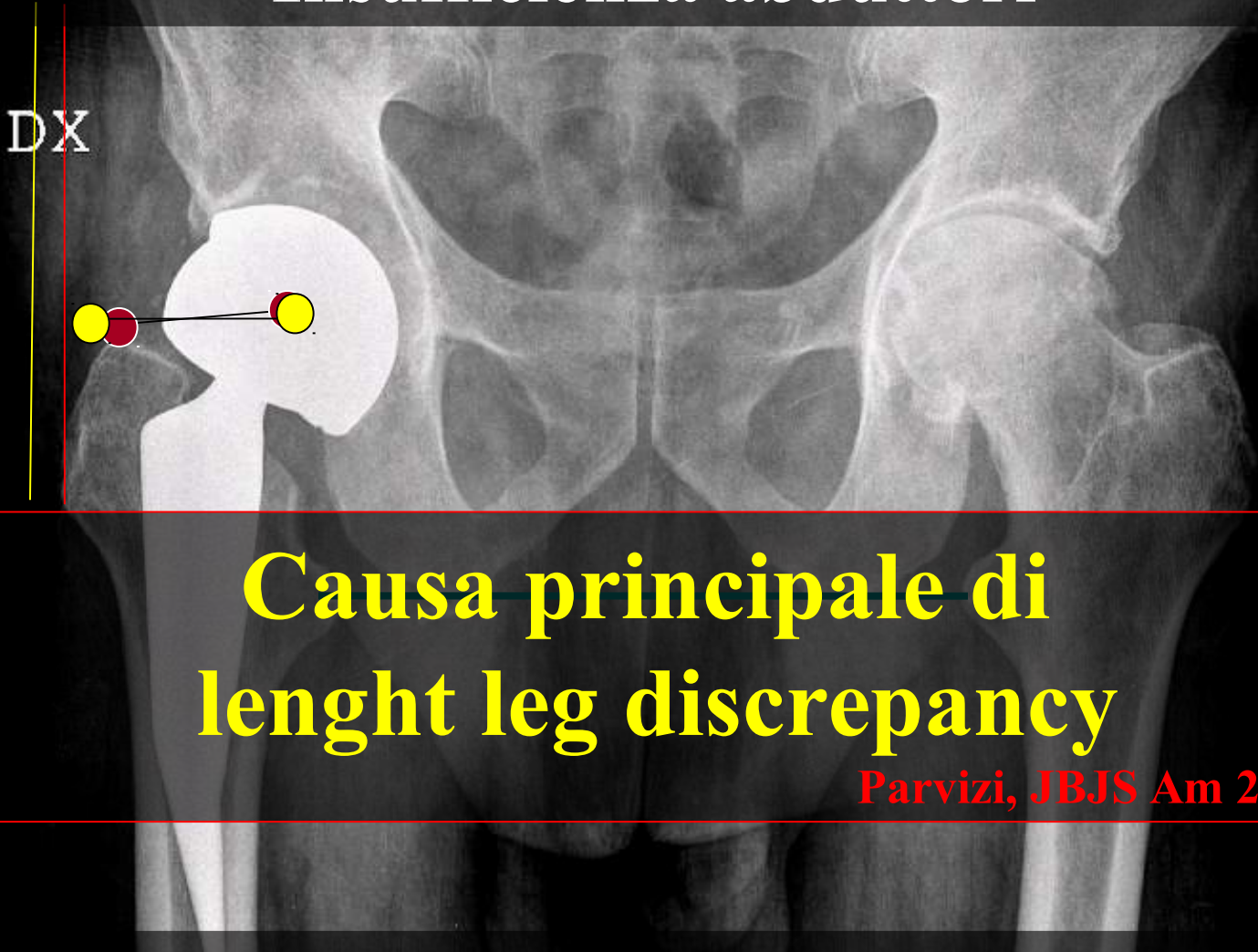
Impingement meccanico

Processo dinamico



Lussazioni ed instabilità: Precoci - Intermedie

Insufficienza abduttori



**Causa principale di
length leg discrepancy**

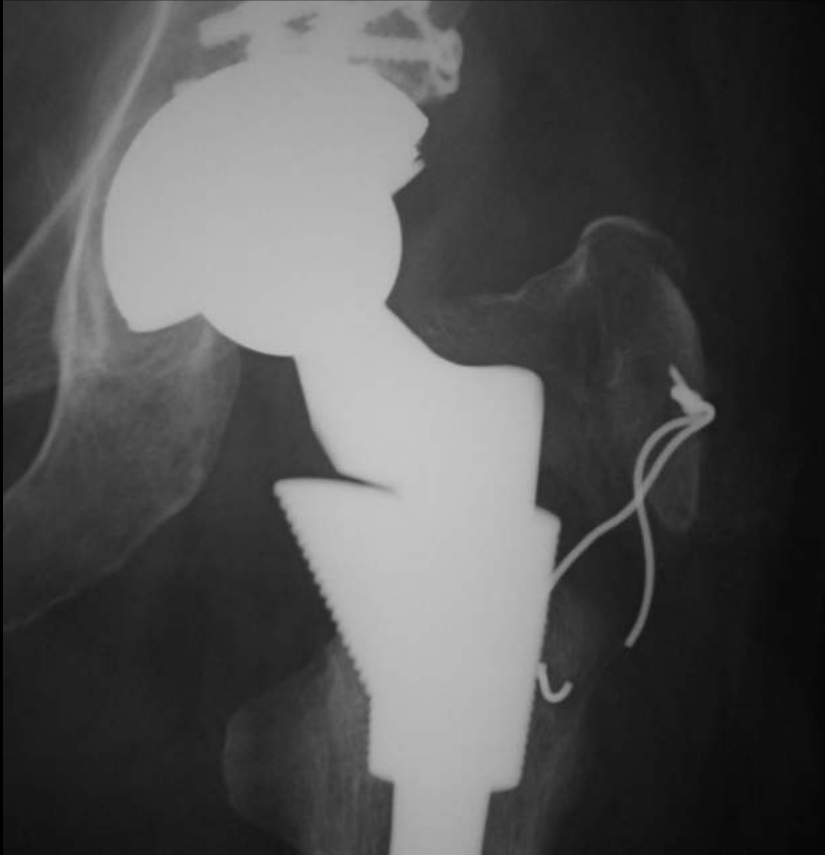
Parvizi, JBJS Am 2012

riduzione dell'off-set laterale

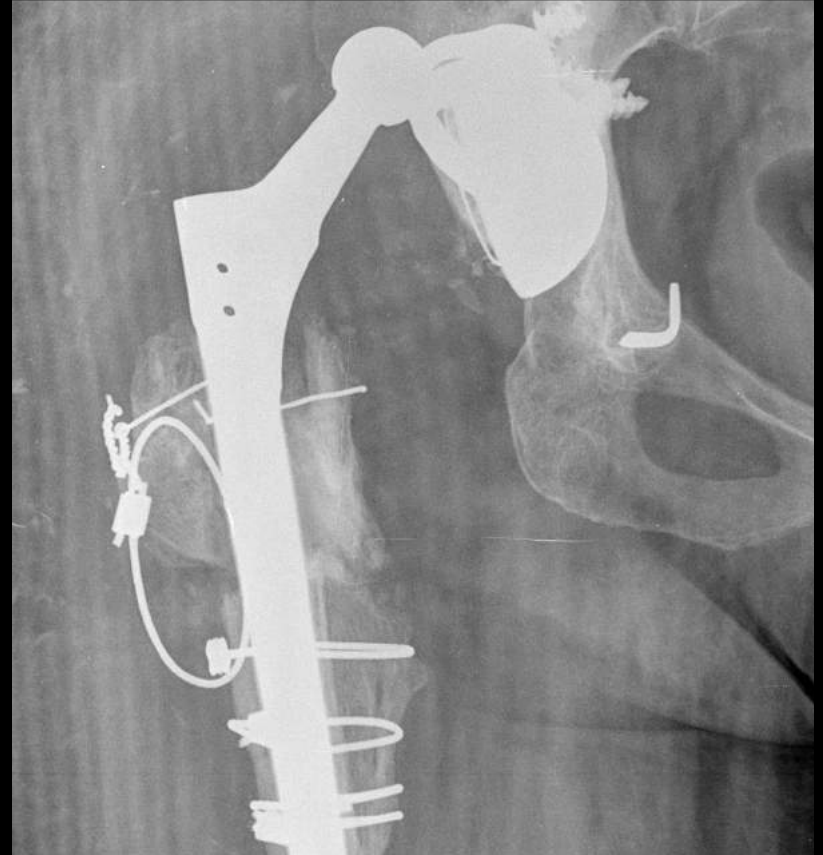
Lussazioni ed instabilità: Precoci - Intermedie

Insufficienza abduttori

problematiche relative al Gran Trocantere



Pseudoartrosi

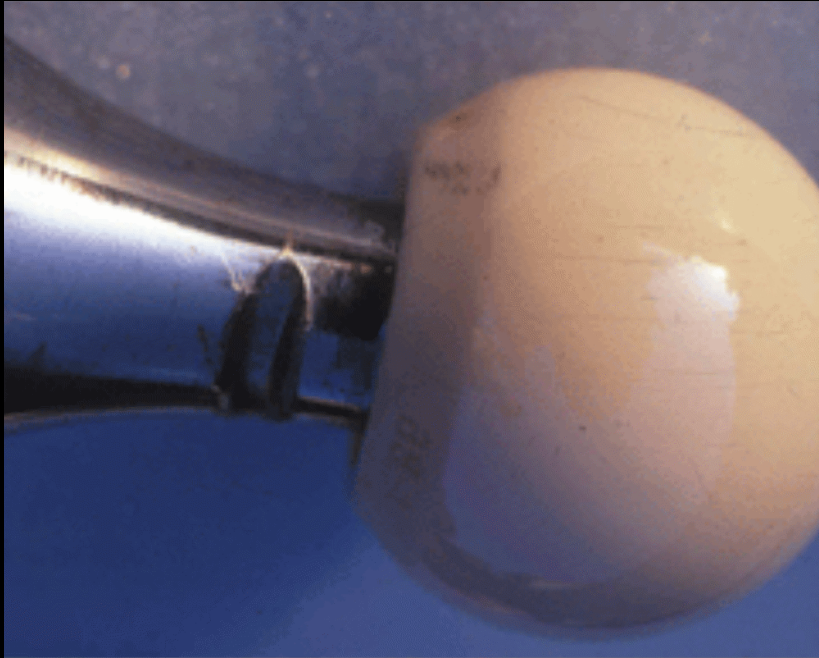


Tecniche di avanzamento

Lussazioni ed instabilità: Precoci - Intermedie

Impingement meccanico

Colletto-coppa



Malposizionamenti

Osseo

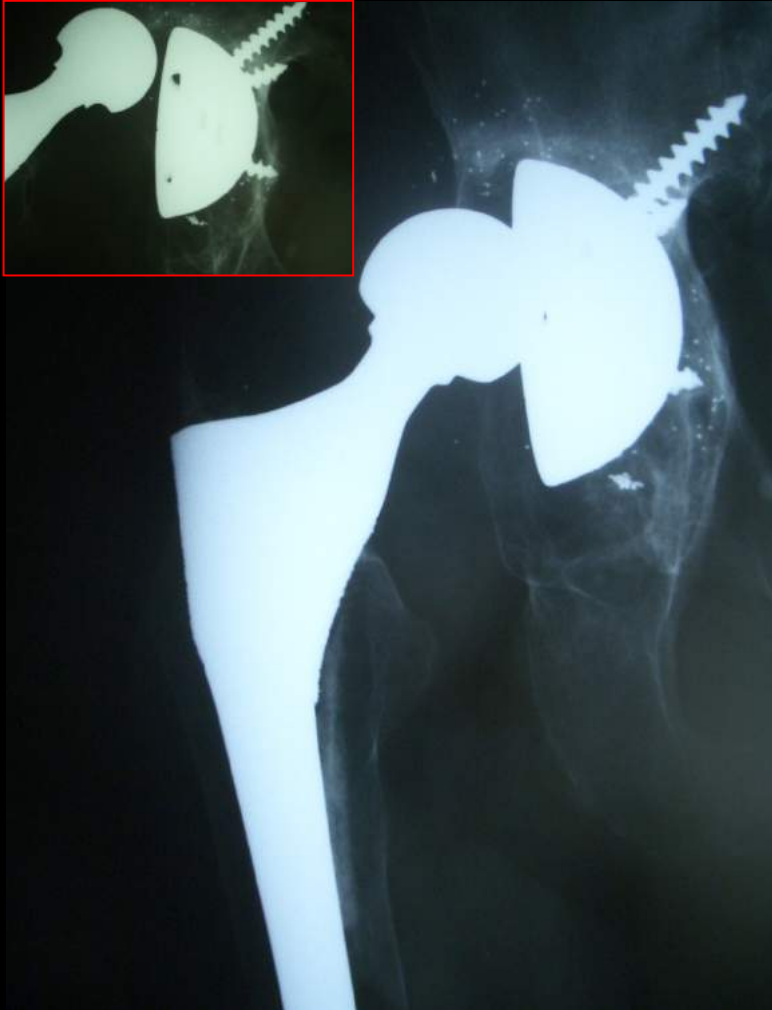


Osteofiti/malposizionamenti

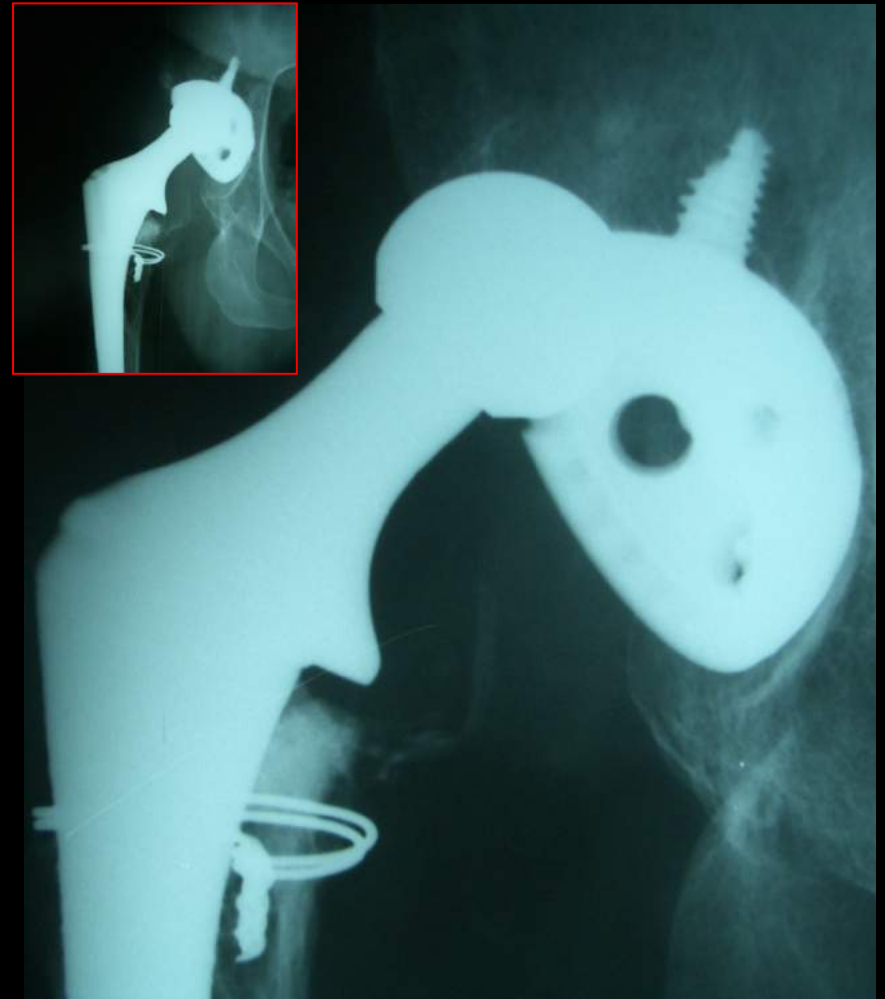
Lussazioni ed instabilità: Tardive

Conseguenza di altre problematiche

Mobilizzazione



Usura



Lussazioni ed instabilità

Evento traumatico



imprevedibile per il paziente e per il chirurgo

Lussazioni ed instabilità: Trattamento

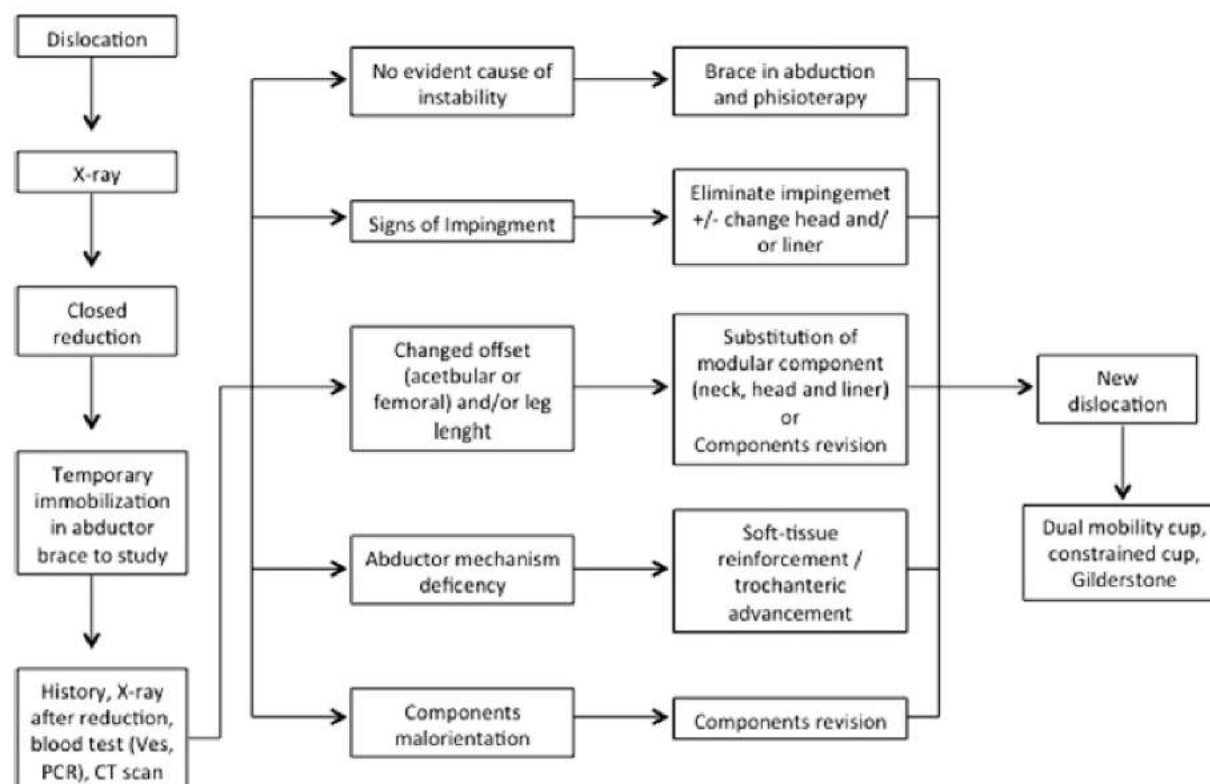
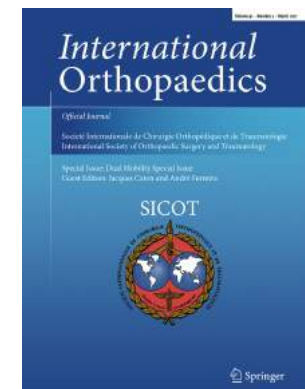


**Come affrontare il
problema?**

REVIEW ARTICLE

Total hip arthroplasty instability in Italy

Francesco Falez¹ • Matteo Papalia² • Fabio Favetti¹ • Gabriele Panegrossi¹ •
Filippo Casella¹ • Gianluca Mazzotta¹



Lussazioni ed instabilità: Trattamento



riduzione incruenta



verifica stabilità

Lussazioni ed instabilità: Trattamento

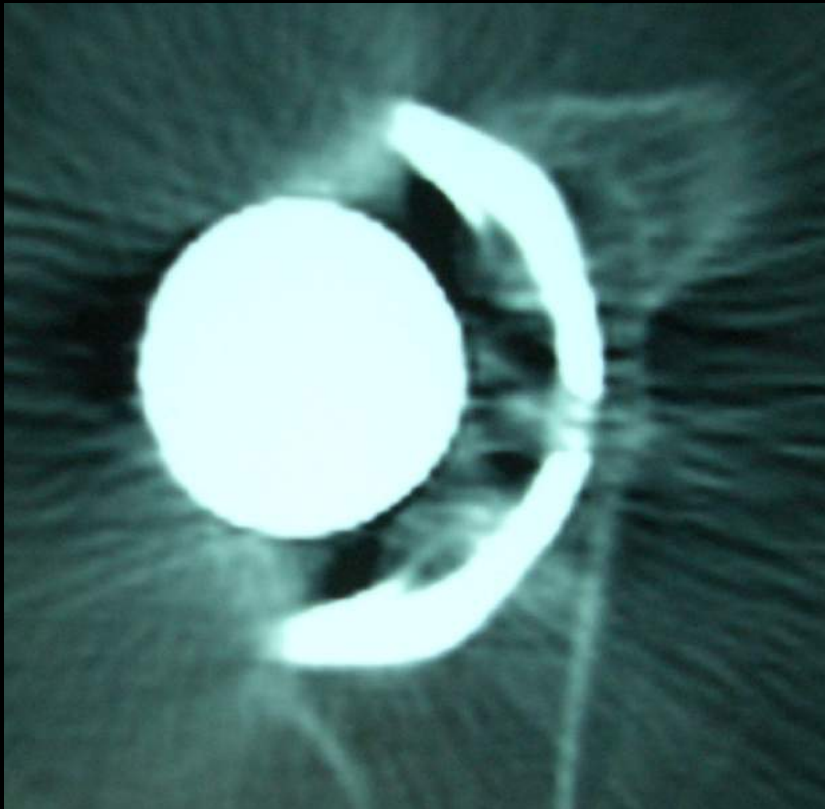
Esame strumentale convenzionale del bacino



valutazione dell'impianto

Lussazioni ed instabilità: Trattamento

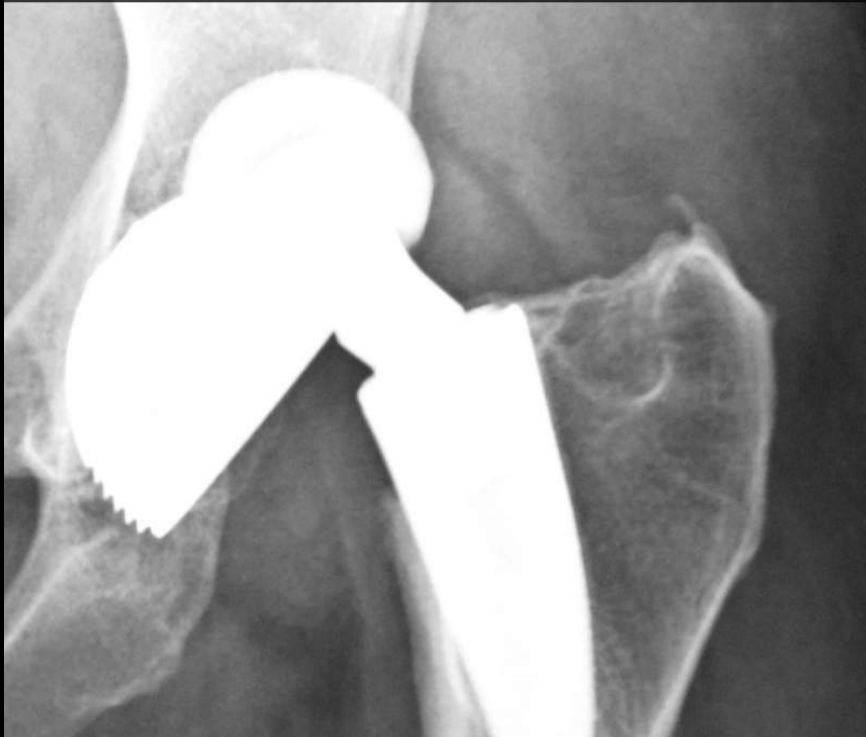
Sempre esame strumentale TC di supporto



valutazione orientamento delle componenti

Lussazioni ed instabilità: Trattamento

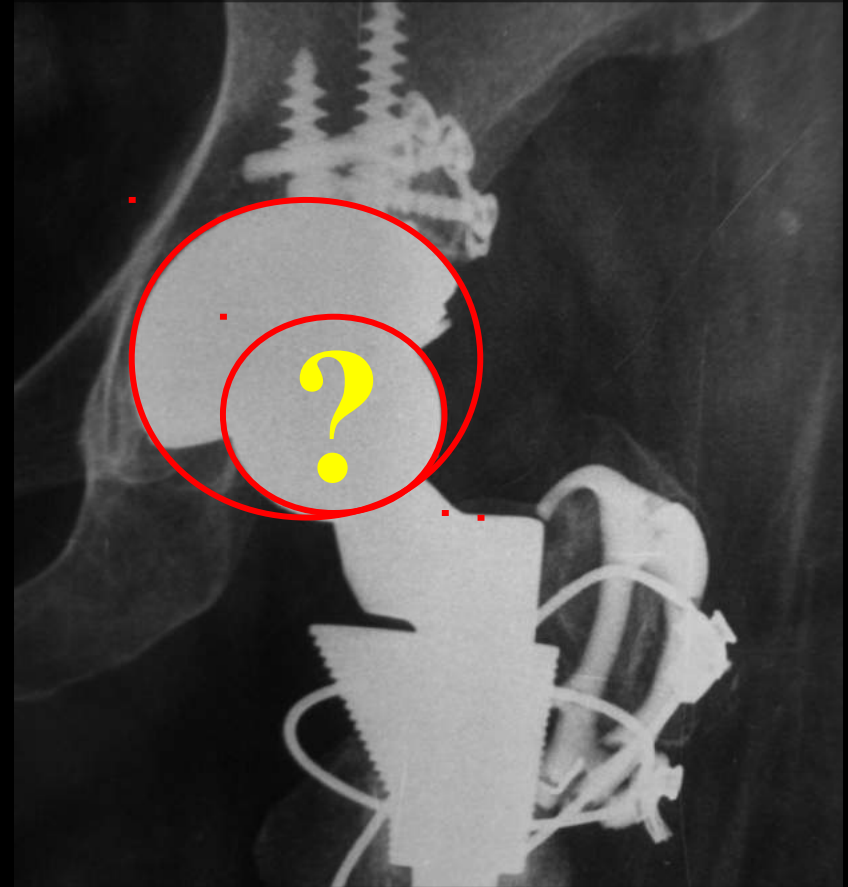
Assenza di malposizionamenti



**Riduzione incruenta
ed immobilizzazione in tutore**

Lussazioni ed instabilità: Trattamento

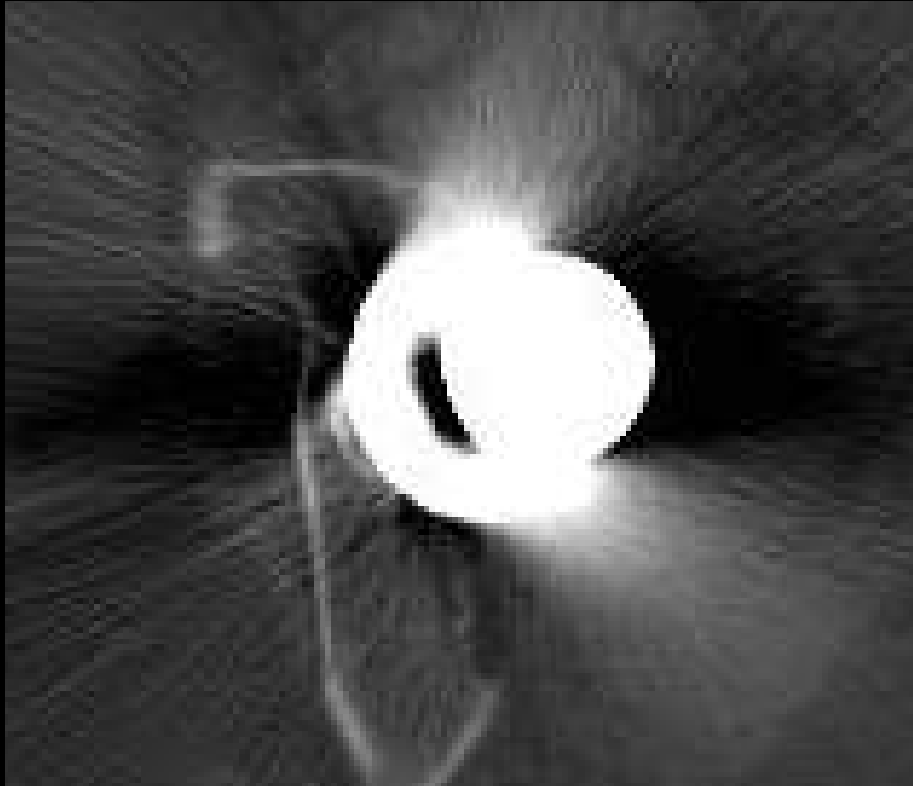
Valutazione radiografica: anomalie



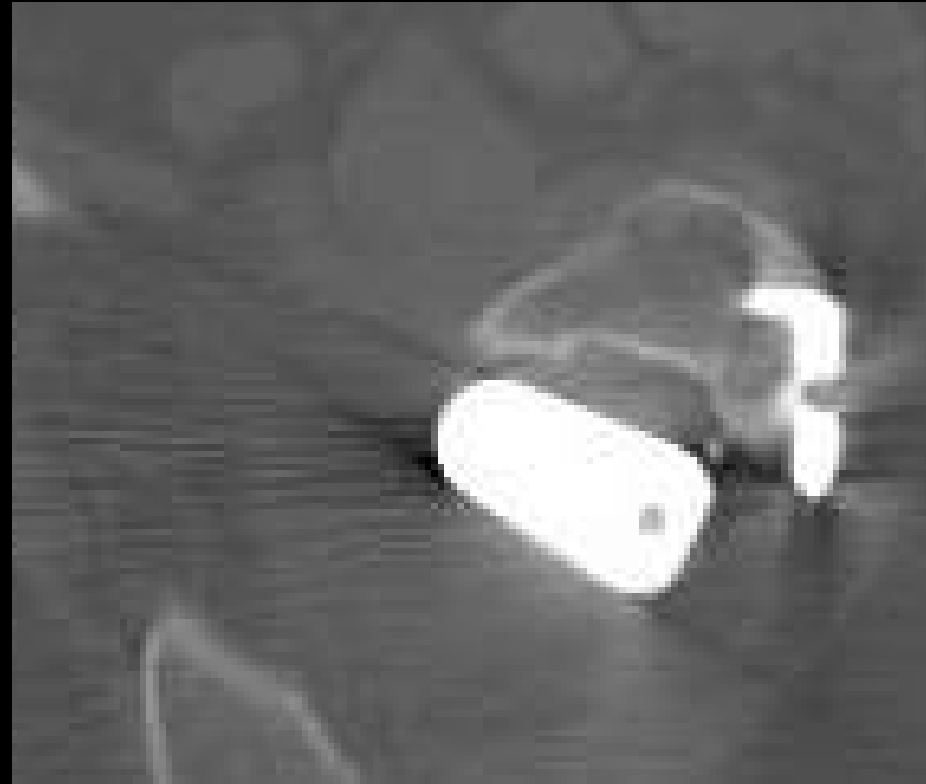
Incongruenza articolare post-riduzione

Lussazioni ed instabilità: Trattamento

Integrazione con esame TC



Riduzione incongruente



Antiversione femorale

Lussazioni ed instabilità: Trattamento

Sostituzione delle componenti modulari



**Buona % di successo
in pazienti selezionati**

Toomey, JBJS Am 2001

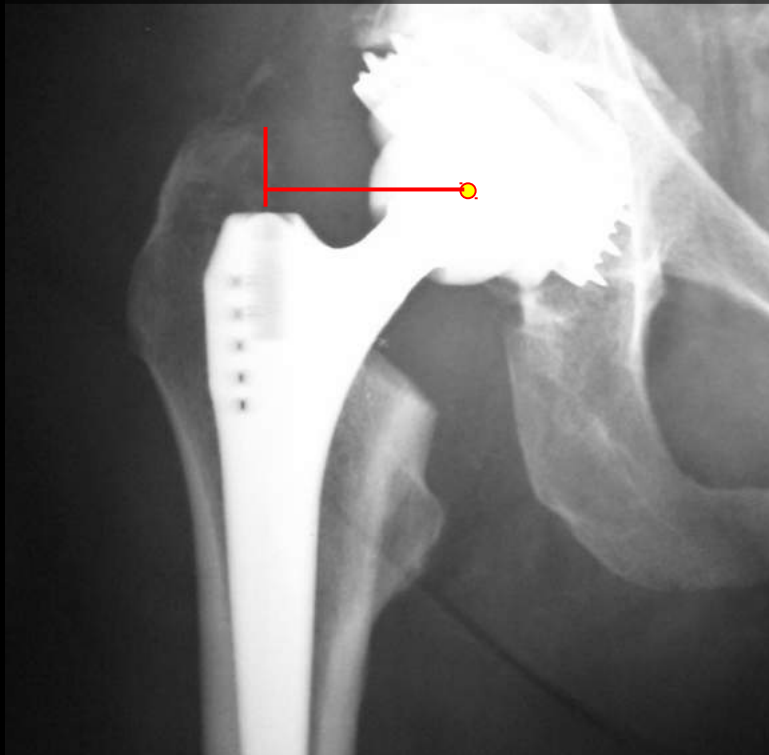
inserto e testina

**Correzione
antiversione femorale**

Lussazione e instabilità: Trattamento

Quando la causa è evidente

(Sublussazione ricorrente precoce)

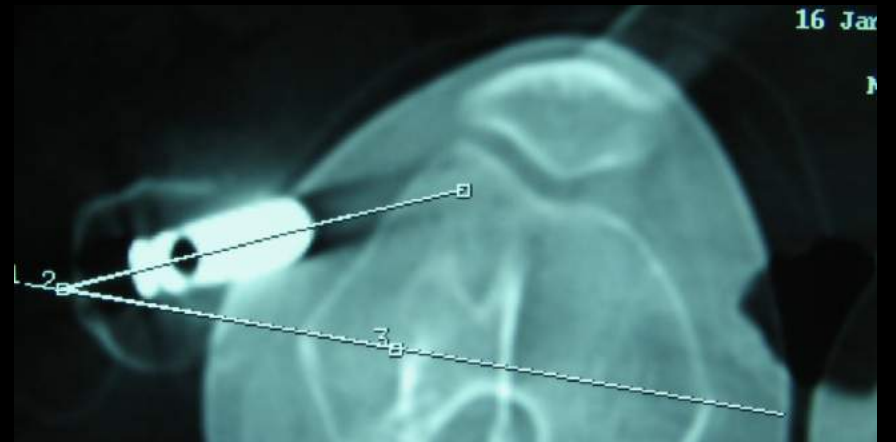


❖ Ipometria

❖ Off-set ridotto



❖ Retroversione acetabolare



❖ Antiversione femorale

Lussazione e instabilità: Trattamento

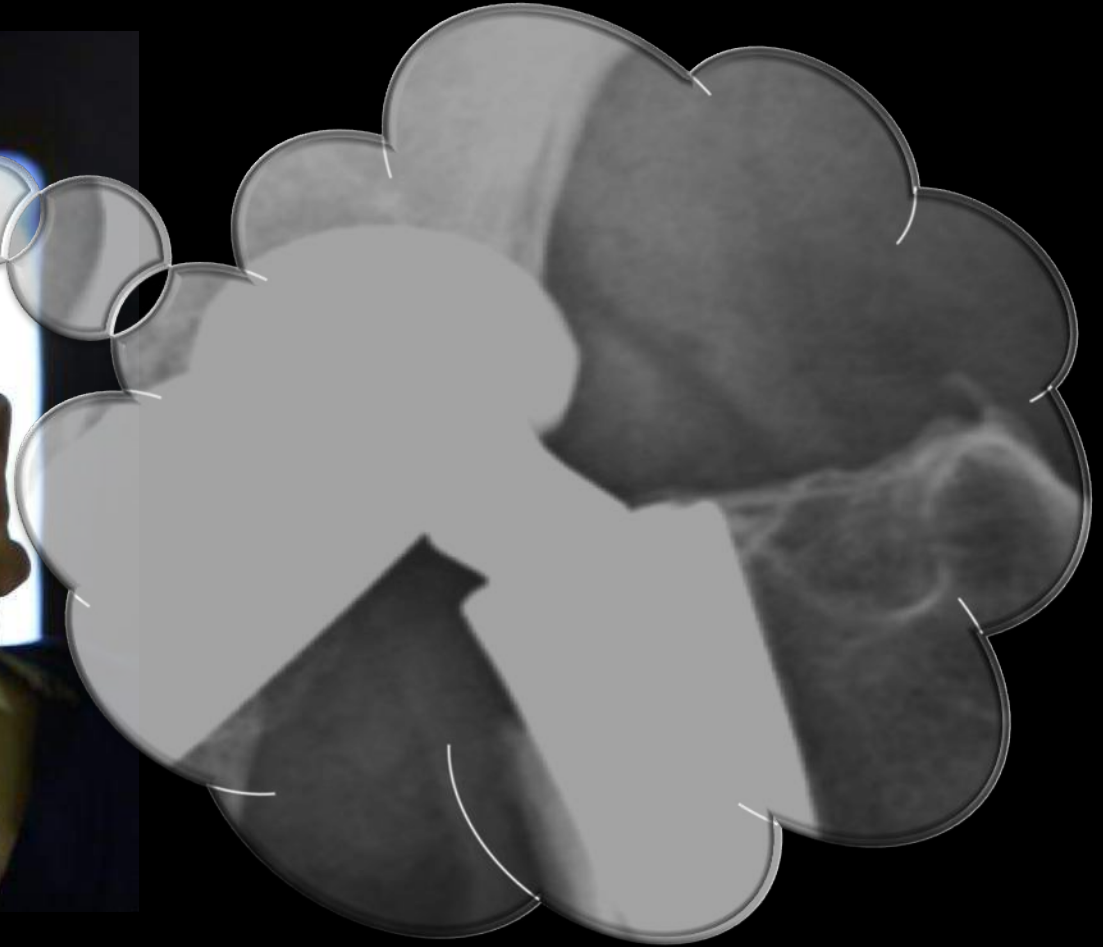
Quando la causa è evidente



Revisione componenti: buona % successo

Lussazione e instabilità: Trattamento

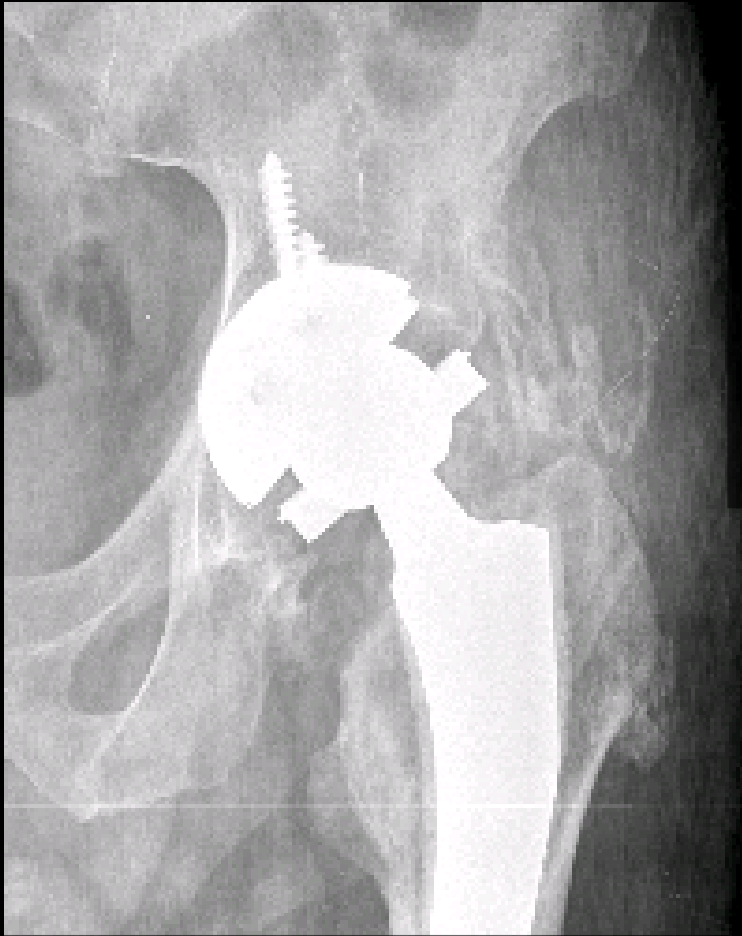
Eziologia non chiara o multifattoriale



% di successo limitata (60-80%)

Lussazione e instabilità: Trattamento

Eziologia non chiara o multifattoriale



Constrained liners

Risultati controversi

Della Valle, J Arthroplasty 2005

Pazienti anziani a basse richieste funzionali

Lussazione e instabilità: Trattamento

Eziologia non chiara o multifattoriale

Dual Mobility Cup



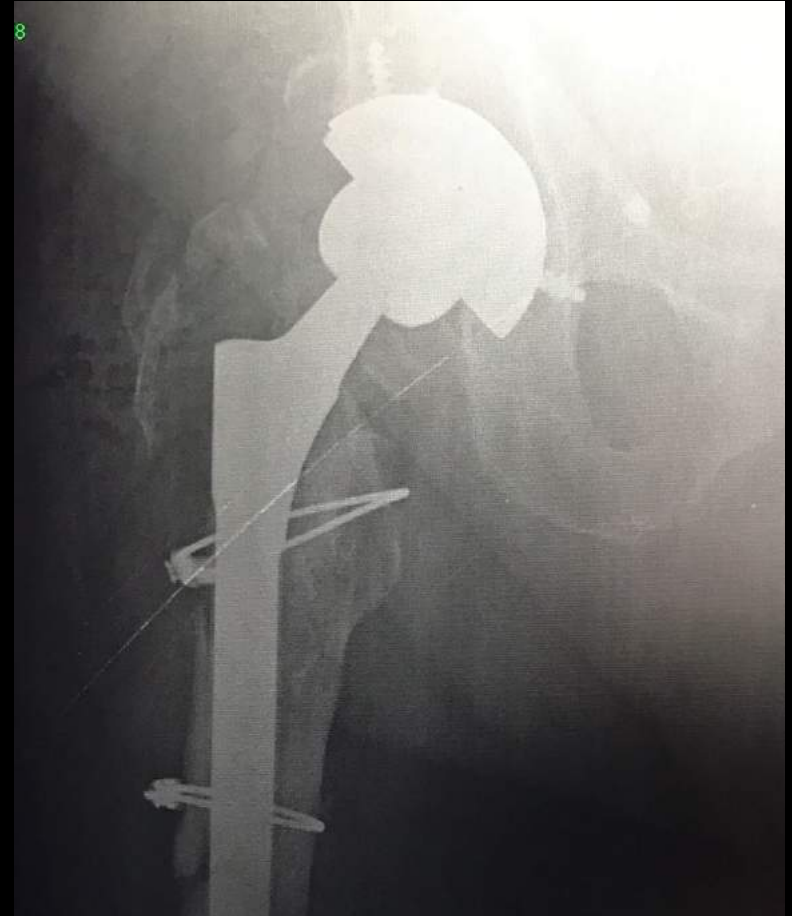
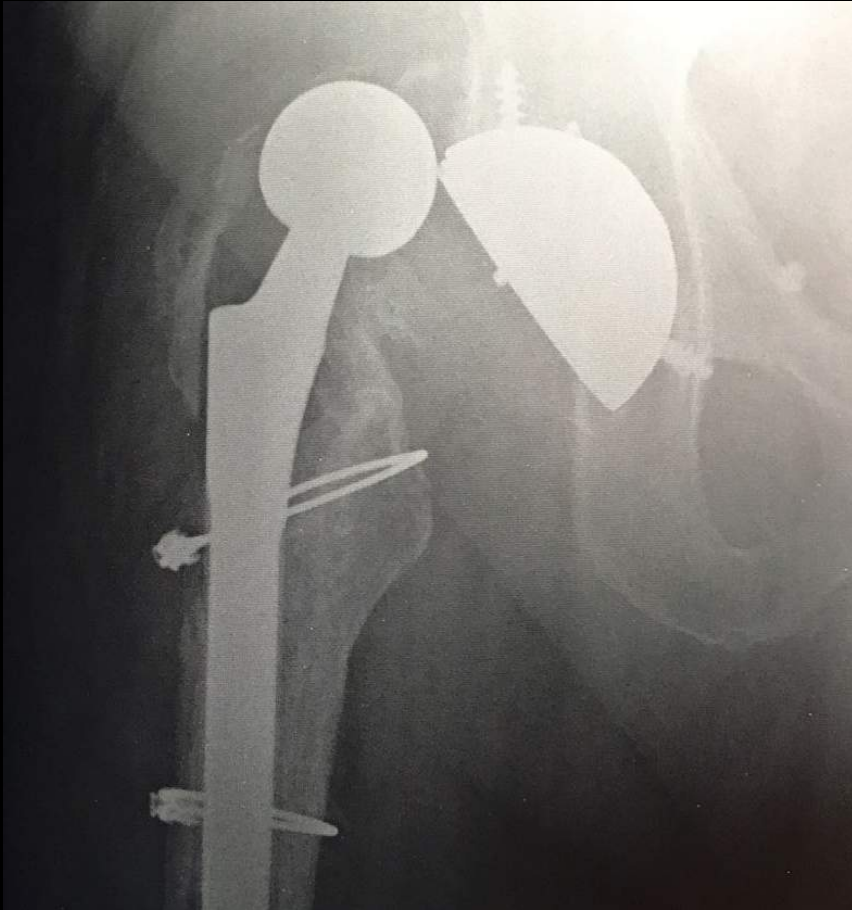
THA primarie in pazienti
ad alto rischio di lussazione

Revision acetabular system



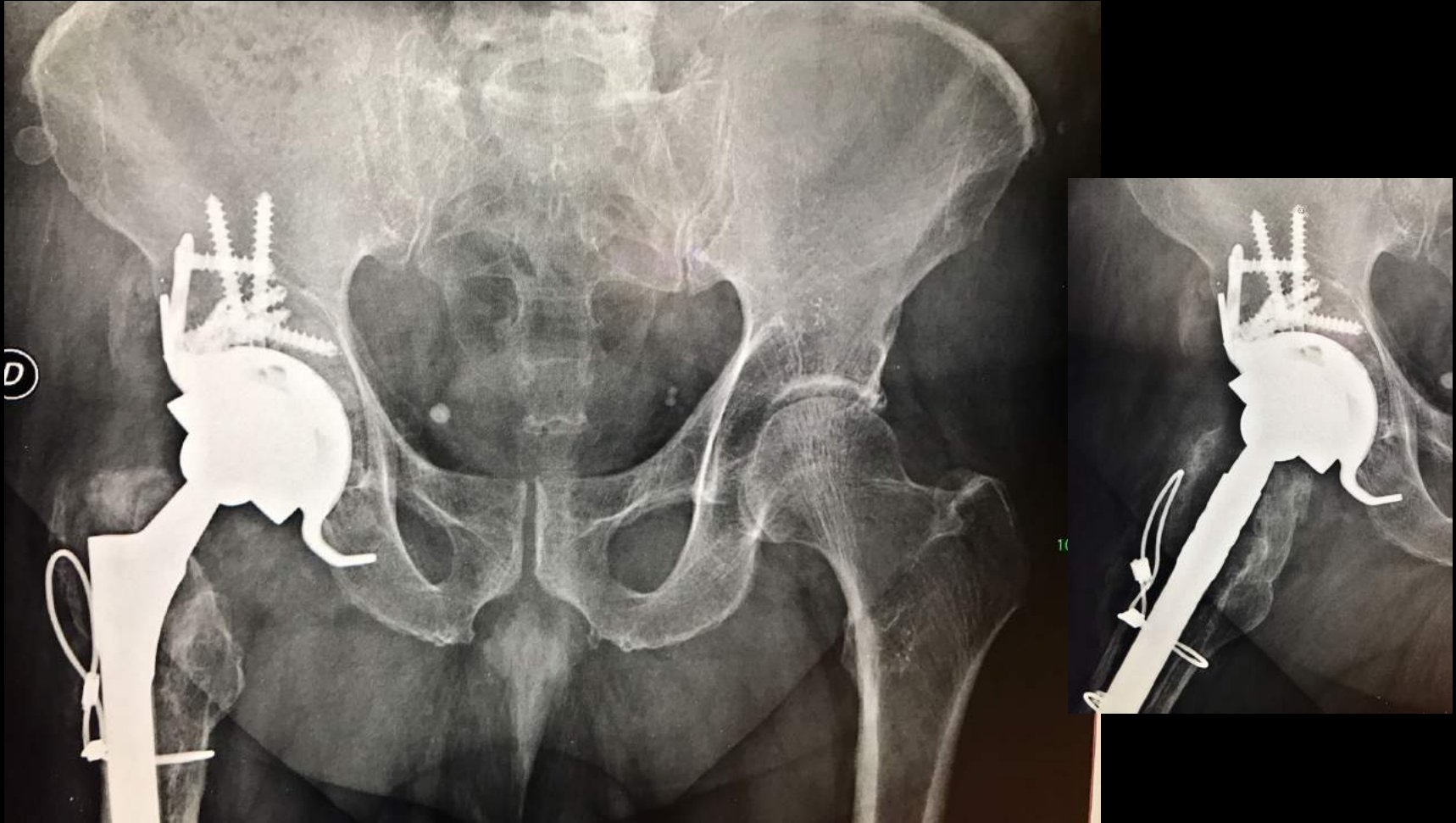
Lussazione e instabilità: Trattamento

Lussazione dopo revisione per pseudotumor



Lussazione e instabilità: Trattamento

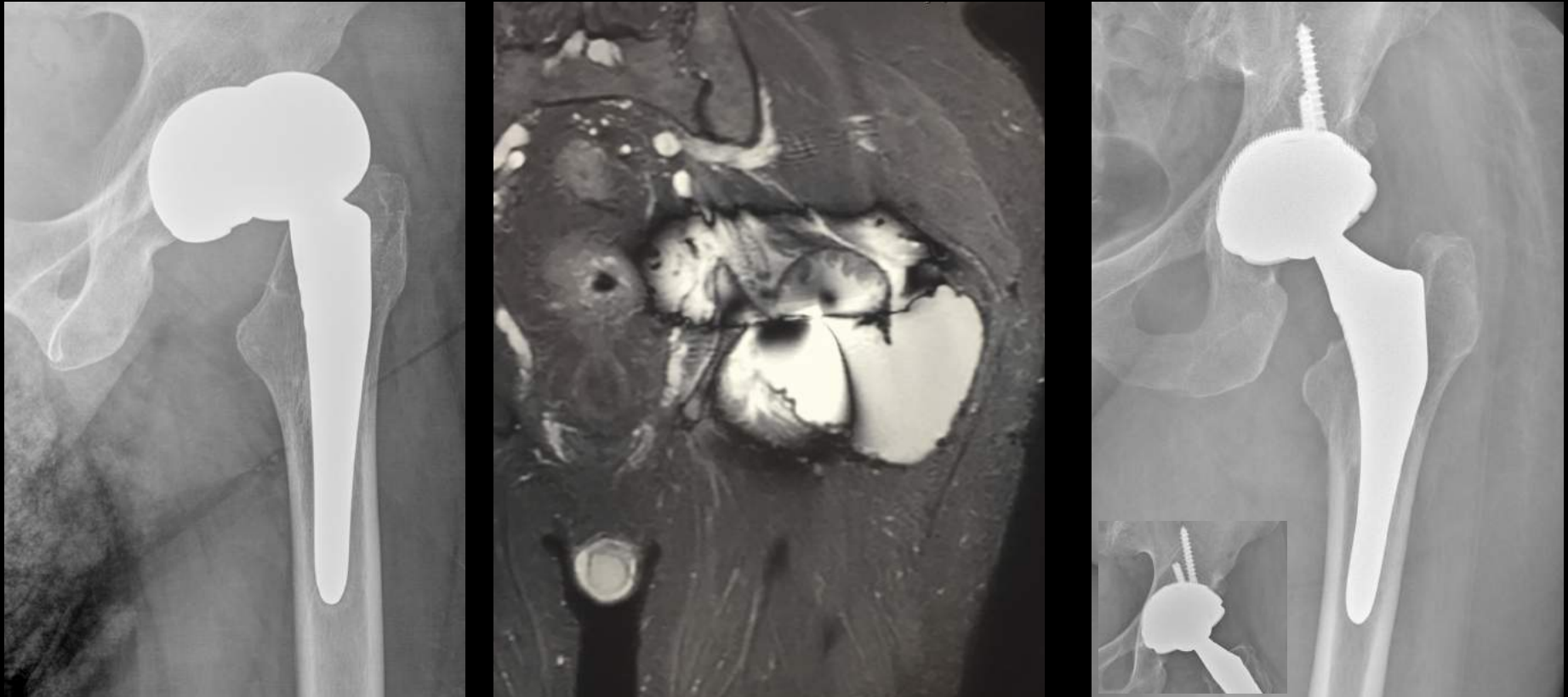
Lussazione dopo revisione per pseudotumor



DMC cementata e riduzione trocantere

Lussazione e instabilità: Trattamento

Lussazione a 2 anni per pseudotumor



DMC non cementata: **FU 3 anni**

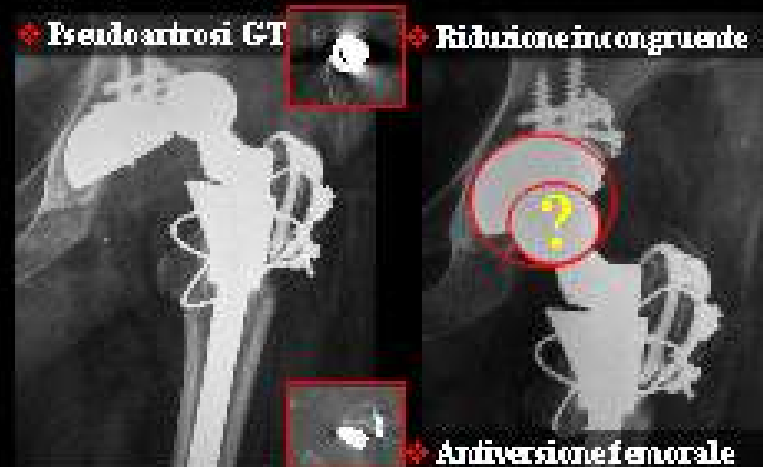
Lussazioni ed instabilità: Conclusioni

Studiare ~~PROBANTEMENTE~~ le cause

Lussazioni ed instabilità: Precoci - Intermedie



Lussazioni ed instabilità: Precoci - Intermedie

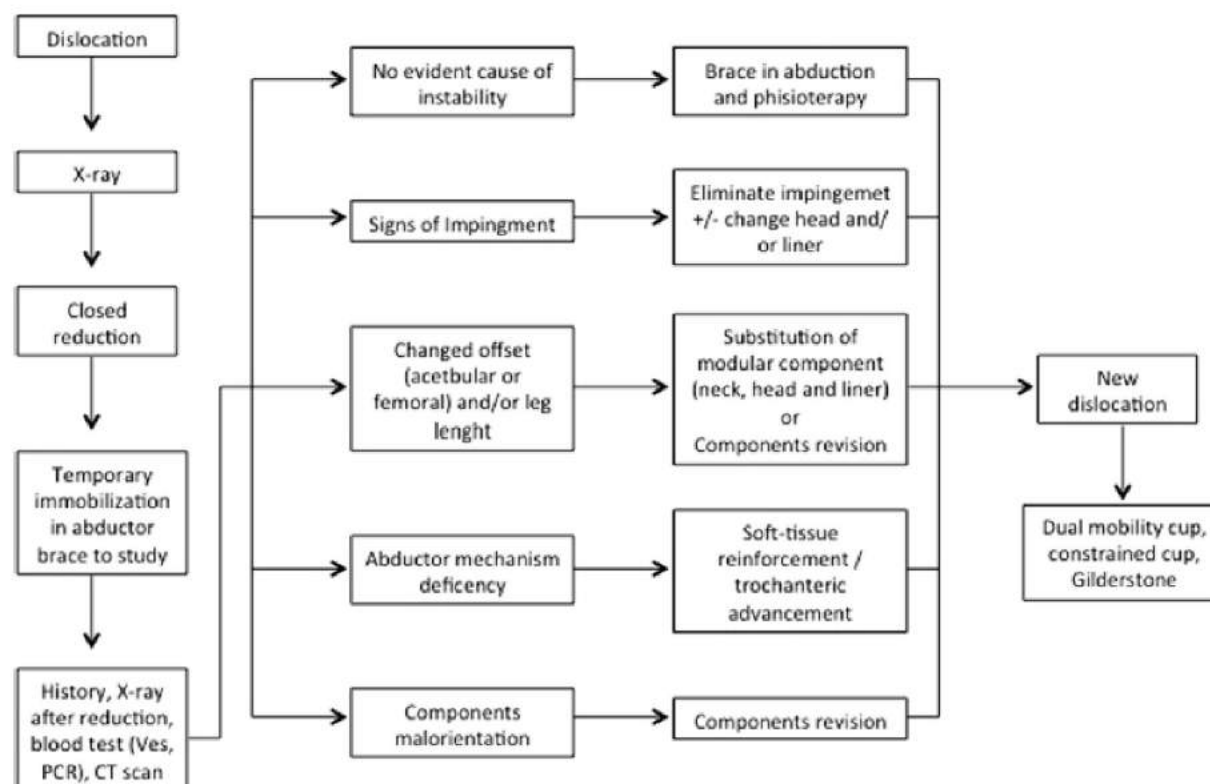
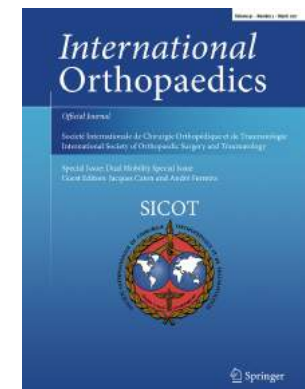


intervenire sapendo cosa
dover correggere

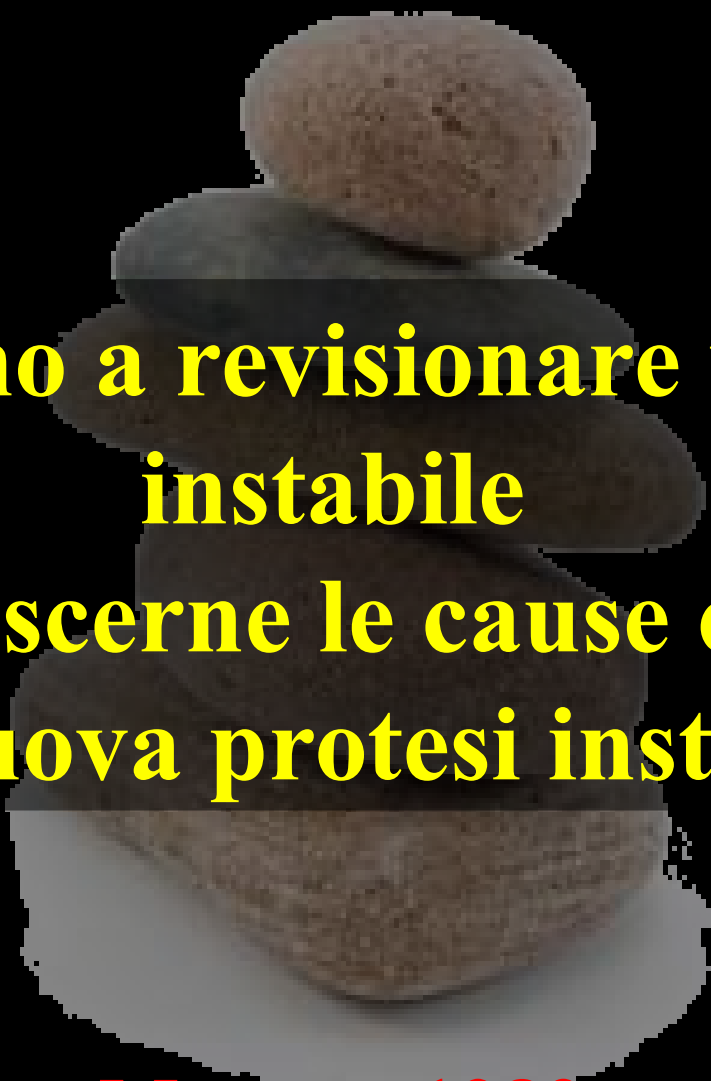
REVIEW ARTICLE

Total hip arthroplasty instability in Italy

Francesco Falez¹ • Matteo Papalia² • Fabio Favetti¹ • Gabriele Panegrossi¹ •
Filippo Casella¹ • Gianluca Mazzotta¹



Lussazioni ed instabilità: Conclusioni



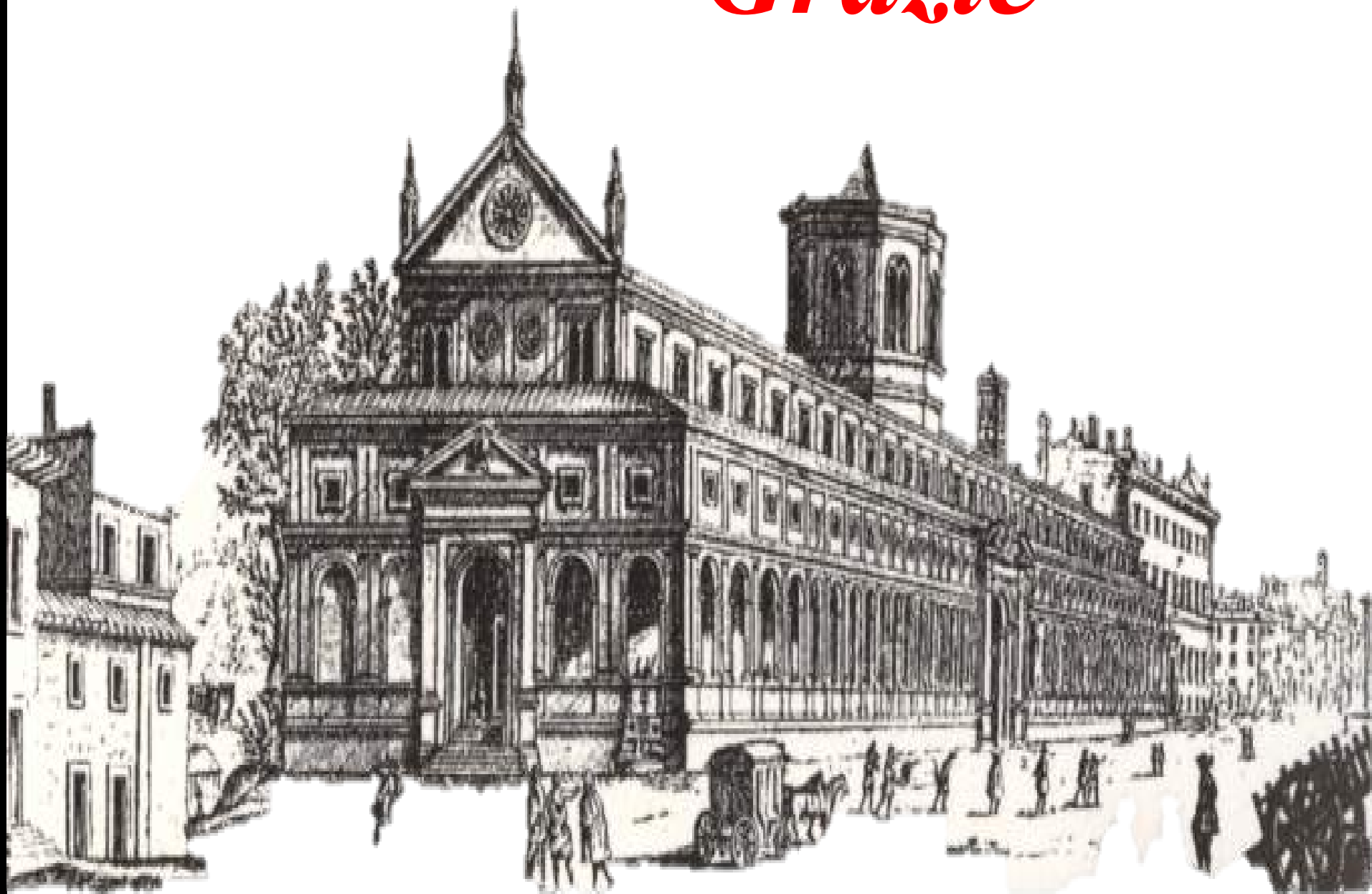
**“Se andremo a revisionare una protesi
instabile
senza conoscerne le cause otterremo
una nuova protesi instabile”**

Morrey, 1982



GRAZIE

Grazie



DMC for Recurrent Instability: Results

Cementless primary acetabular component



Female, 84 y: Late dislocation (8 y)

Compromission of abductor mechanism

DMC for Recurrent Instability: Results

Cemented DMC + cage and impaction grafting



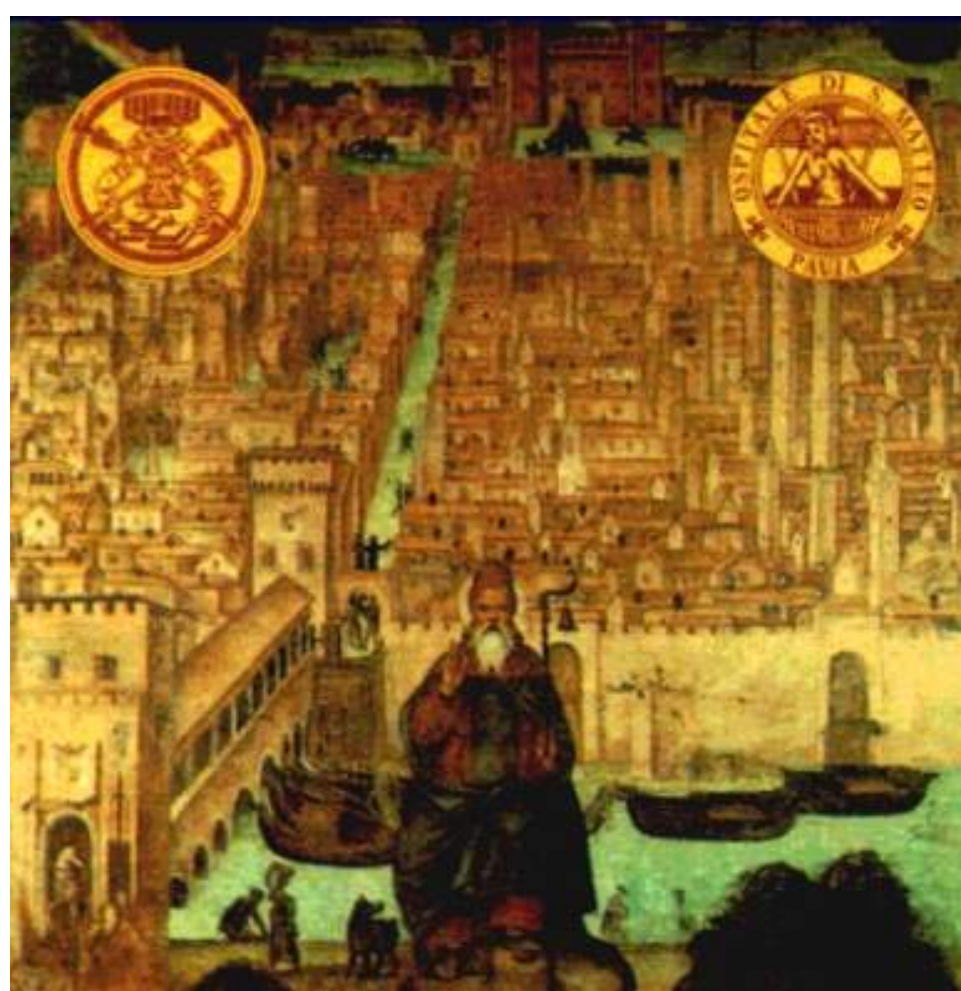
FU: 18 months

Female, 86 y: Late dislocation (12 years)
secondary to wear and osteolysis

**Clinica Ortopedica e
Traumatologica
Università degli Studi di Pavia**

**Fondazione
IRCCS Policlinico
San Matteo**

Direttore: Prof. F. Benazzo



**La modularità (stelo e cotile)
come prevenzione**

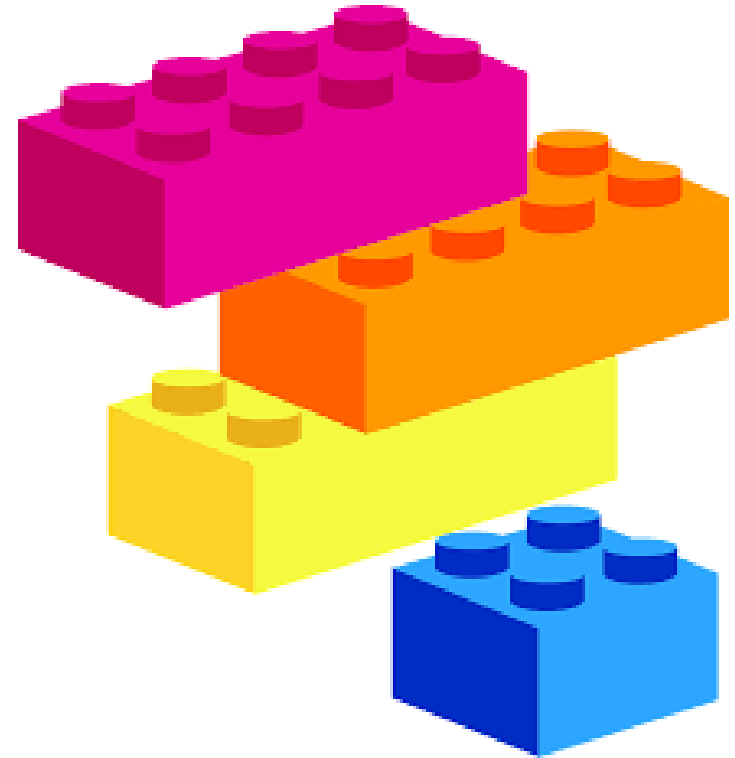
F. Benazzo, L. Perticarini



Modularità

Possibilità di poter costruire intra-operatoriamente, in accordo con un planning pre-operatorio o con uno scenario che si crea “in vivo”, uno stelo protesico e un acetabolo con la possibilità di:

- rispettare/cambiare l'anatomia
- ottenere una corretta biomeccanica
- ottenere una fissazione primaria e secondaria stabile



Possibilità

- Steli standard, conici o retti
- Steli cementati
- Steli a presa diafisaria, conici o retti
- Steli da resezione (megaprotesi)
- Custom made

Modularità



Results
Hip SurHarpal S.
Ronald E.

Rubin Institute f

ARTICLE

Article history:
Received 23 Jan
Accepted 15 Ap
Available onlineKeywords:
revision total hi
cementless stem
implant survivo
clinical outcome
complications

The numl
projected to
doubles the t
surgery is to
biomechanic
revisions, so
fixation sho
further surge
of a broad s
dictated by t
arthroplastie
chanical loos
have become
Distal fix
reconstructi
distally fixe
result in pro
proximal fen
be warranter
femoral stem
bone preserv

The Conflict
dx.doi.org/10.10
Reprint req
dics, Center for J
West Belvedere

0883-5403/0000
http://dx.doi.org

Arch Orthop Tra
DOI 10.1007/s00

HIP ARTH

Three to
prosthesLong Wang ·
Mingqing LiReceived: 5 Aug
© Springer-Verli

Abstract

Purpose Mo
functional distal
being used inc
mal femoral b
evaluated whe
reliable implai
Method This
underwent hip
prosthesis at o
patient age at
Femoral bone
ated using the
followed for a
3–7 years) w
Re-revisions a
Results Two
recurrent deep
follow-up, the
Scores had im
stem migratio
corrected in
occurred in 9
fracture in 1C
(3 %).

Conclusion I
hip function,
and result in
failed femoral

L. Wang · Z. Da
Department of C
University, No. 1
Hunan 410008, I
e-mail: yihehu@

Eur J Orthop S
DOI 10.1007/s

ORIGINA

Porous

Andrej Mol
Zmago KraReceived: 8 Au
© Springer-Ver

Abstract

Purpose TI
functional re
bone loss re
components.
Methods T
loose acetab
with a minir
with PT cup
retrospective
using Harris
Universities
no patient w
Results The
Ontario and
40 and 36
respectively.
functional o
with modera
or more) acc
graphic eval
and 1 cup h
cup was rev
well fixed a
aseptic failu

A. Molićnik · I
S. K. Fokter (✉
Department of
Maribor, Ljubl
e-mail: samo.f

M. Rupreht
Department of
Maribor, Slove



Contents lists available at ScienceDirect
The Journal of Arthroplasty
journal homepage: www.arthroplastyjournal.org



Midterm Outcomes of Revision Total Hip Arthroplasty Using a Modular Revision Hip System

Marie Anne Smith, BN, Angela H. Deakin, PhD, David Allen, FRCSEd (Tr & Orth), Joe Baines, LMS FRCSEd (Tr & Orth)

Department of Orthopaedics, Golden Jubilee National Hospital, Clydebank, West Dunbartonshire, UK

ABSTRACT

Background: The growth in hip arthroplasty surgery has meant a corresponding escalating revision burden with increasing challenges for the orthopaedic surgeon. The purpose of this study was to review clinical outcomes of a modular revision hip system within a single institution.

Methods: We retrospectively reviewed a cohort of modular revision hip system stems performed in our institution between January 2005 and October 2012 giving a potential minimum follow-up of 2 years. Clinical outcomes data on complications, Oxford Hip Score (OHS, 0–48) and patient satisfaction were collected. Radiographic outcomes including subsidence were assessed. Implant survival was estimated using Kaplan Meier analysis.

Results: 115 stems in 106 patients were identified. All cause survival was 82% (95%CI: 73%–89%) at 6.1 years; survival excluding infection being 99% (95%CI: 93%–100%). There was a low incidence of subsidence (seven stems) and no peri-prosthetic fractures. Primary cause of re-revision in this series was re-infection with only one re-revision for mechanical failure. Median Oxford Hip Score at mean follow up 4.1 years (2–9) was 40 (14–48) and 93% of patients reported being satisfied with their revision surgery.

Conclusion: This study showed good clinical outcomes and survival using a modular revision stem with low mechanical failure and subsidence. Recurrence of infection remains a challenge in revision surgery.

Article history:

Received 30 April 2015

Accepted 24 August 2015

Available online xxx

Keywords: revision hip arthroplasty; modular; femoral stem; failure; survival

© 2015 Elsevier Inc. All rights reserved.

Total hip arthroplasty (THA) is a successful and cost-effective treatment with more than 80,000 THA surgery performed annually in the UK, with this number increasing by around 6000 surgeries per year [1]. This growth in THA surgery has led to a revision burden which presents increasing challenges for the orthopaedic surgeon [2,3]. One challenge in performing revision surgery is achieving fixation of the femoral implant in compromised proximal bone stock, with aseptic loosening being the most common cause of failure in revision hip surgery and subsidence frequently reported in revision series [3–5]. Modular revision stems may provide a solution for bridging of gaps in defective bone to achieve good distal fixation to reduce the risk of subsidence, while the modular design allows some flexibility intraoperatively to address leg length discrepancy and anteversion [6]. A recent North American series reported successful results with this type of implant, both with patient-reported outcome measures (PROMs) and clinical outcomes [5]. However, concerns remain over the risk of fracture using modular stems where there is severe bone loss [7]. The purpose

One or more of the authors of this paper have disclosed potential or pertinent conflicts of interest, which may include receipt of payment, either direct or indirect, institutional support, or association with an entity in the biomedical field which may be perceived to have potential conflict of interest with this work. For full disclosure statements refer to <http://dx.doi.org/10.1016/j.arth.2015.08.029>.

Reprint request: Joe Baines, Department of Orthopaedics, Golden Jubilee National Hospital, Agamemnon Street, Clydebank, West Dunbartonshire, G81 4DY, UK.

<http://dx.doi.org/10.1016/j.arth.2015.08.029>
0883-5403/© 2015 Elsevier Inc. All rights reserved.

of this study was to review the survival and clinical outcomes of a modular revision hip system within a single UK institution with a minimum of 2-year follow-up. The aim was to add to the available evidence on this type of implant and, therefore, to further assist in implant selection.

Materials and Methods

This was a retrospective cohort study. Our institutional database was reviewed to identify revision hip arthroplasty using the Restoration Modular Stem system (Stryker, Newbury, United Kingdom) from July 2005 to November 2012. The restoration stem is the only modular stem in use in our institution and is our stem of choice for revision for proximal femoral bone loss that requires distal fixation. It is used in revision and occasionally in complex primary surgeries. Although most modern stems have some element of modularity in their design, the restoration modular stem system combines a proximal body with an independently selected distal portion which provides rotationally and axially stable distal fixation. It provides good proximal fill, leg length, and offset. It allows fine tuning of version and minimizes proximal-distal mismatch, which can occur with monoblock designs. The cone conical design is primarily used in this institution as this is a familiar design with evidence of successful outcomes with full weight bearing after surgery. Follow-up data up until November 2014 were used to give a minimum potential follow-up of 2 years. Departmental and institutional

Total hip arthroplasty instability in Italy

Francesco Falez¹ • Matteo Papalia² • Fabio Favetti¹ • Gabriele Panegrossi¹ •
Filippo Casella¹ • Gianluca Mazzotta¹

Modular components exchange

Several studies have demonstrated success with the use of modular component exchange for correction of recurrent dislocation after THA [48, 49]. This surgical treatment involves exchanging the acetabular liner and the femoral head with the main intention being to “upsized” the femoral head and/or use an elevated liner. This treatment can be successful only if the patient has well-positioned and well-fixed acetabular and femoral components.

Modularità / Prevenzione instabilità

Primary

Cotile:

- Liner
- Doppia mobilità/constrained
- Custom made

Stelo:

- Teste
- Modularità Collo
- Modularità Metafisi



Revisioni

Cotile:

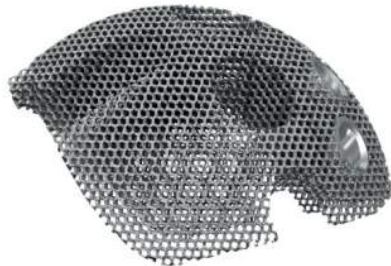
- Modularità Interna
- Modularità Esterna
- Liner
- Doppia mobilità/constrained
- Custom made

Stelo:

- Teste
 - Modularità collo
 - Metafisi
 - Diafisi
 - Megaprotesi
- } Corpo

Modularità: componenti

- Cotile:
 - **Esterna:** augments, cementati o non cementati, diversi materiali con capacità di favorire l'osteointegrazione



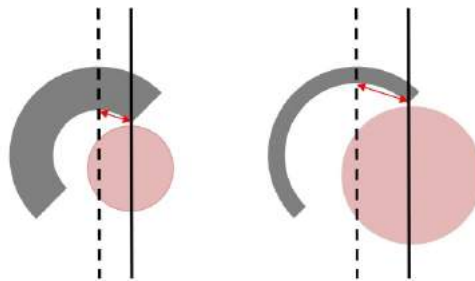
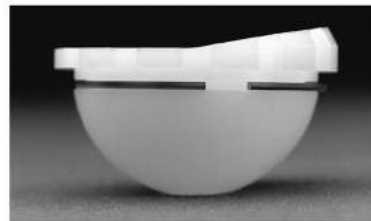
Modularità: componenti

- Cotile:
 - **Interna:** possibilità di moduli distanziatori, con diversa copertura, in grado di ripristinare il corretto centro di rotazione/posizionamento cotile; caratteristico solo di alcuni sistemi



Modularità: componenti

- Tribologia:
 - **Testa**: diverse lunghezze, diametri, possibilità di offset
 - **Liner**: diversi materiali, possibilità di rebord
 - Doppia mobilità
 - Constrained



Modularità: componenti

- Stelo:
 - **Collo:** diverse lunghezze, angolo cervico-diafisario, versioni
 - **Metafisi:** possibilità di sleeve

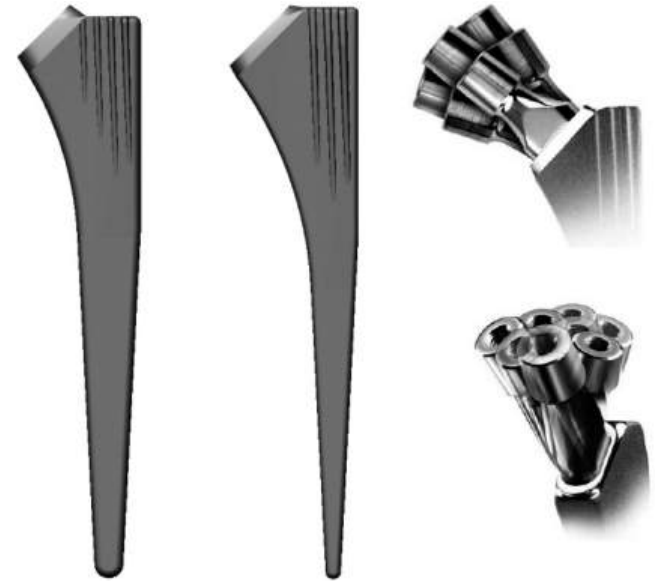


Modularità: componenti

- Stelo:
 - **Corpo:** diverse lunghezze, diametri, design



È utile per
“compensare” un
malposizionamento?



È utile per “ottimizzare”
il posizionamento



SYMPOSIUM: 2015 HIP SOCIETY PROCEEDINGS

Is There a Benefit to Modularity in ‘Simpler’ Femoral Revisions?

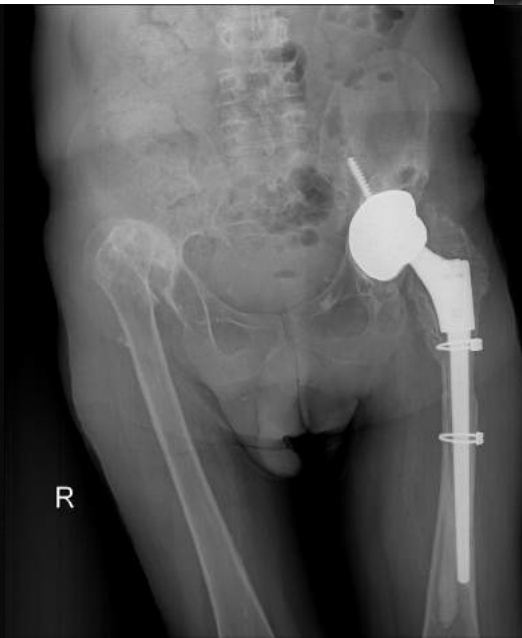
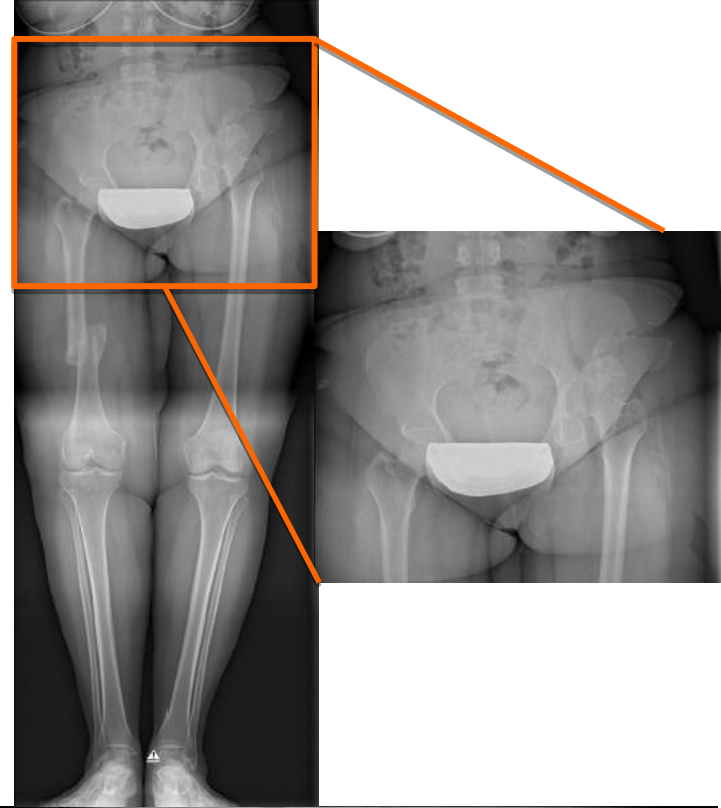
James I. Huddleston III MD, Matthew W. Tetreault MD, Michael Yu MD,
Hany Bedair MD, Viktor J. Hansen MD, Ho-Rim Choi MD,
Stuart B. Goodman MD, PhD, Scott M. Sporer MD,
Craig J. Della Valle MD

L'utilità di un impianto **modulare** aumenta in base a:

- Difetto osseo
- Stato muscolare
- Comorbilità
- Numero di pregressi interventi
- Eventuali dismetrie da correggere
-

Anca complessa:

- DDH
- Post-traumatica
- Deformità femorali o acetabolari
- Neoplasie
- Revisioni



Modularità / Instabilità

- **Vantaggi:**
 - Customizzazione intraoperatoria (supportata da planning)
 - Sostituire solo parte delle componenti / cambiare versione del collo in caso di instabilità
- **Svantaggi:**
 - Trunionosi
 - Rotture
 - Disassemblaggi



[J Orthop Traumatol](#). 2016 Mar; 17(1): 1–6.

PMCID: PMC4805640

Published online 2016 Feb 11. doi: [10.1007/s10195-016-0391-1](https://doi.org/10.1007/s10195-016-0391-1)

Trunnionosis in total hip arthroplasty: a review

[Jaydev B. Mistry](#), [Morad Chughtai](#), [Randa K. Elmallah](#), [Aloise Diedrich](#), [Sidney Le](#), [Melbin Thomas](#), and [Michael A. Mont](#)

[Author information](#) ► [Article notes](#) ► [Copyright and License information](#) ►

This article has been [cited by](#) other articles in PMC.

Eighty-six Percent Failure Rate of a Modular-Neck Femoral Stem Design at 3 to 5 Years

Lessons Learned

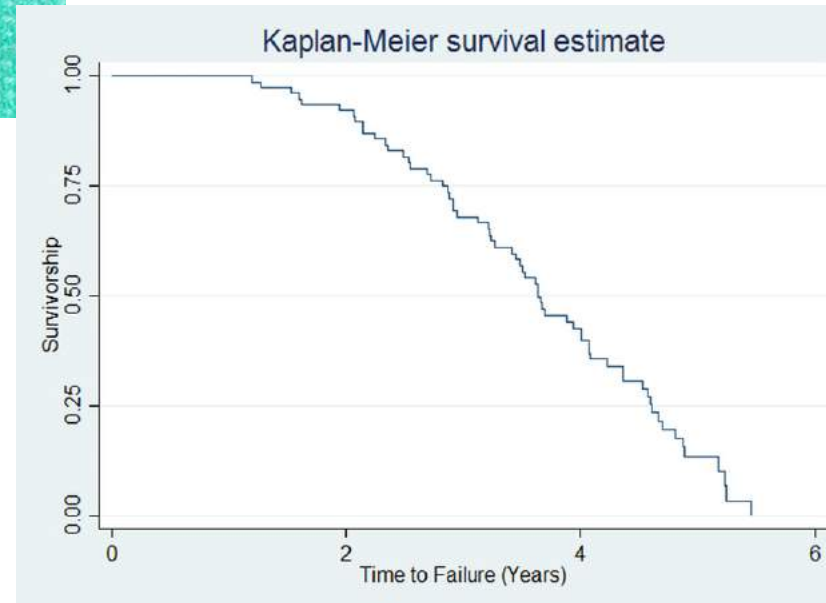
Derek T. Bernstein, MD, Morteza Meftah, MD, Jaya Paraniham, PhD, and Stephen J. Incavo, MD

*Investigation performed at the Department of Orthopaedic Surgery and the Institute for Academic Medicine,
Houston Methodist Hospital, Houston, Texas*

J Bone Joint Surg Am. 2016;98:e49(1-7) • <http://dx.doi.org/10.2106/JBJS.15.01082>



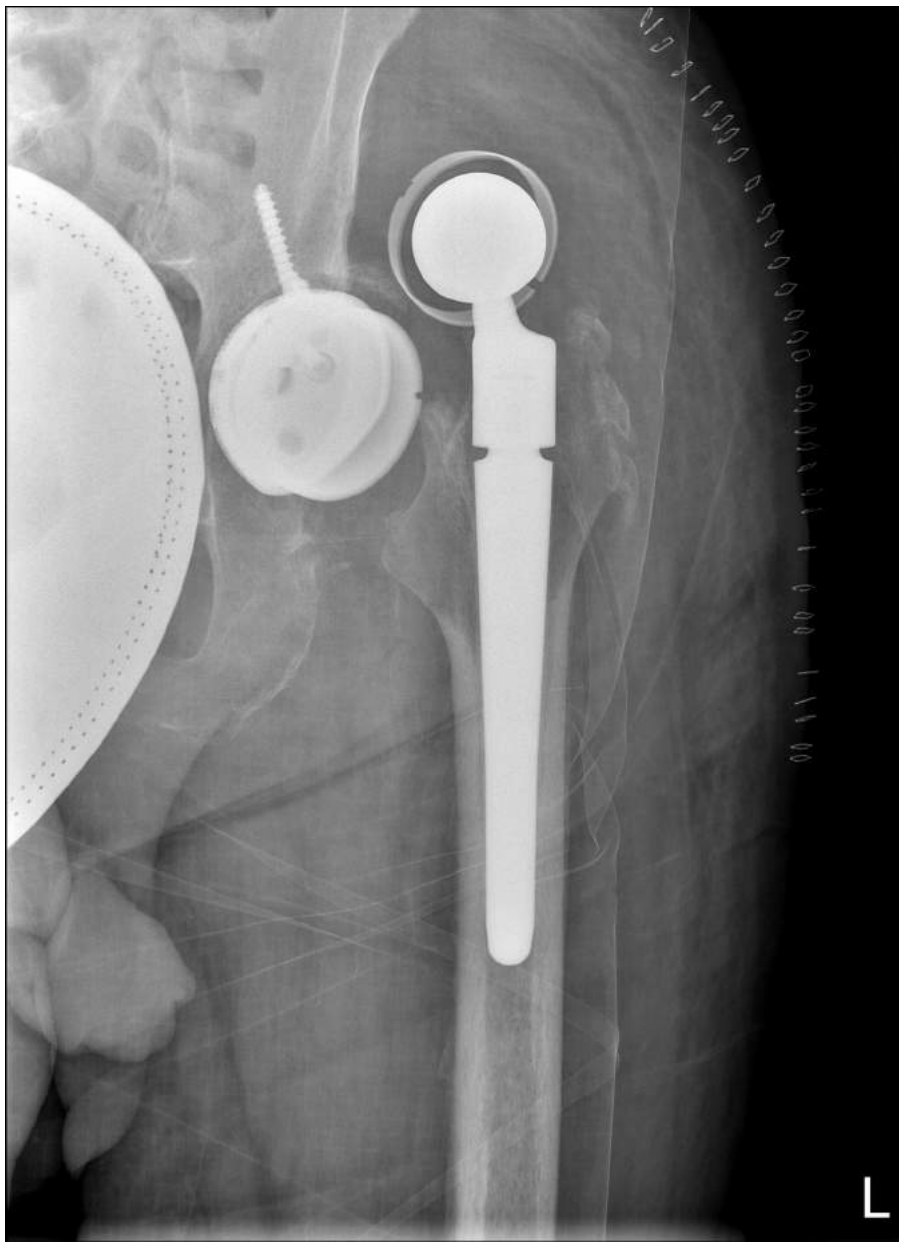
Rejuvenate modular-neck stem implant:
86% clinical failure rate (63 of the 73 hips)
was observed at a mean follow-up of 4.2 ± 0.6 years (range, 3.0 to 5.5 years)



Rottura componenti



Disassemblaggio

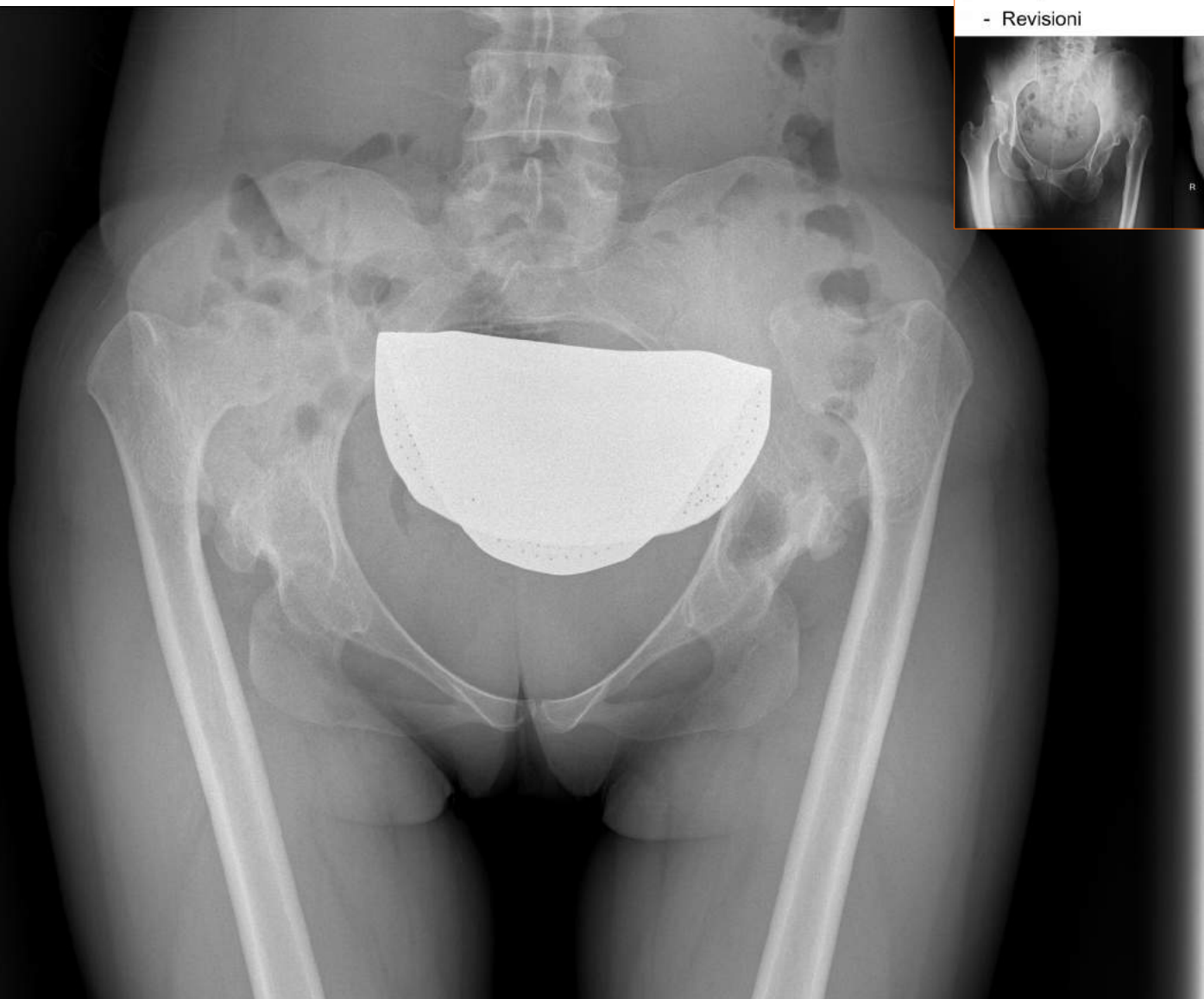
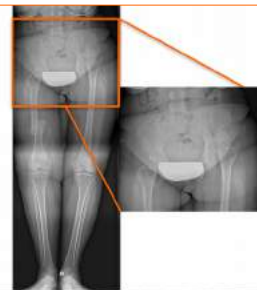


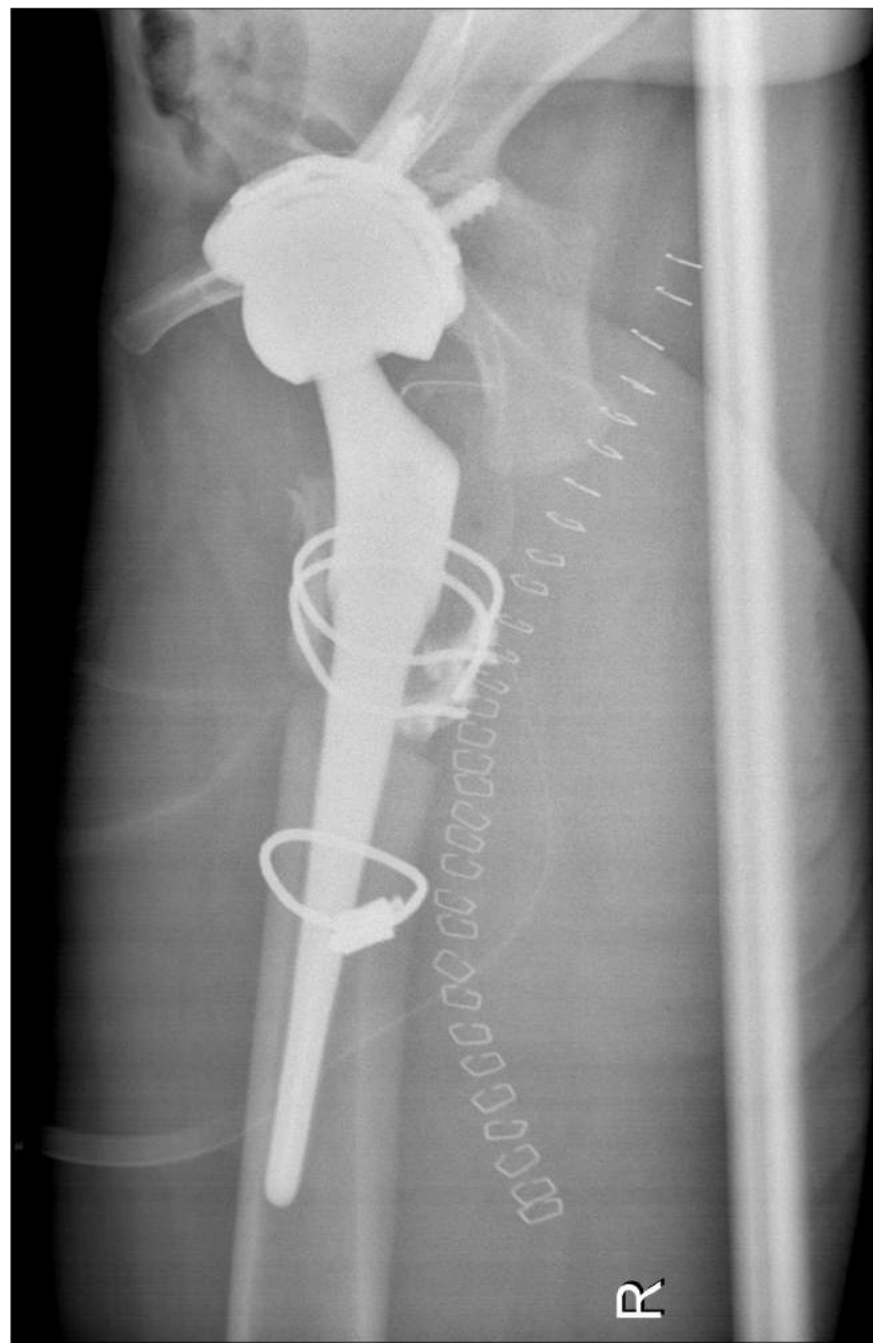
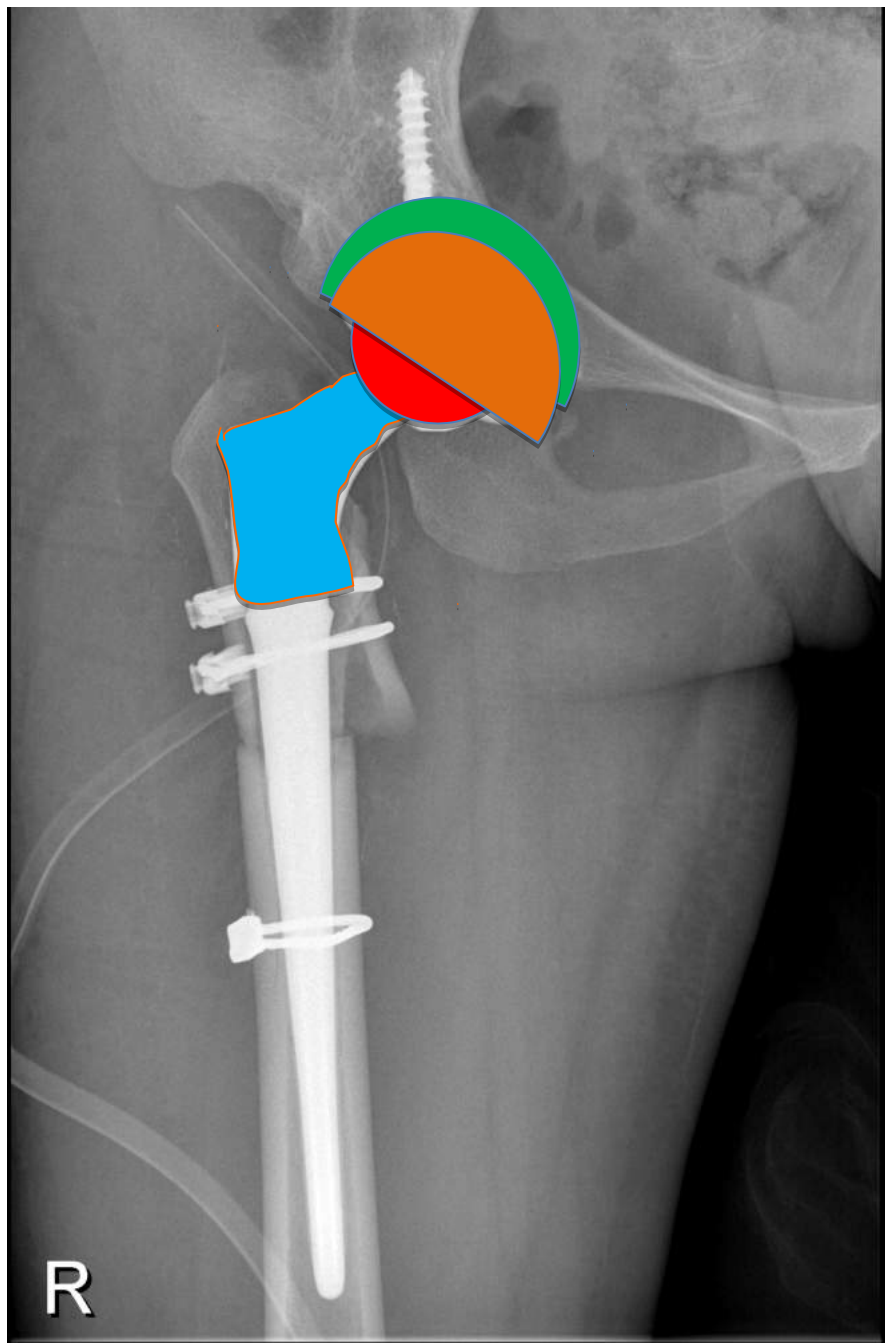
M.E., D, 29aa

R

Anca complessa:

- DDH
- Post-traumatica
- Deformità femorali o acetabolari
- Neoplasie
- Revisioni

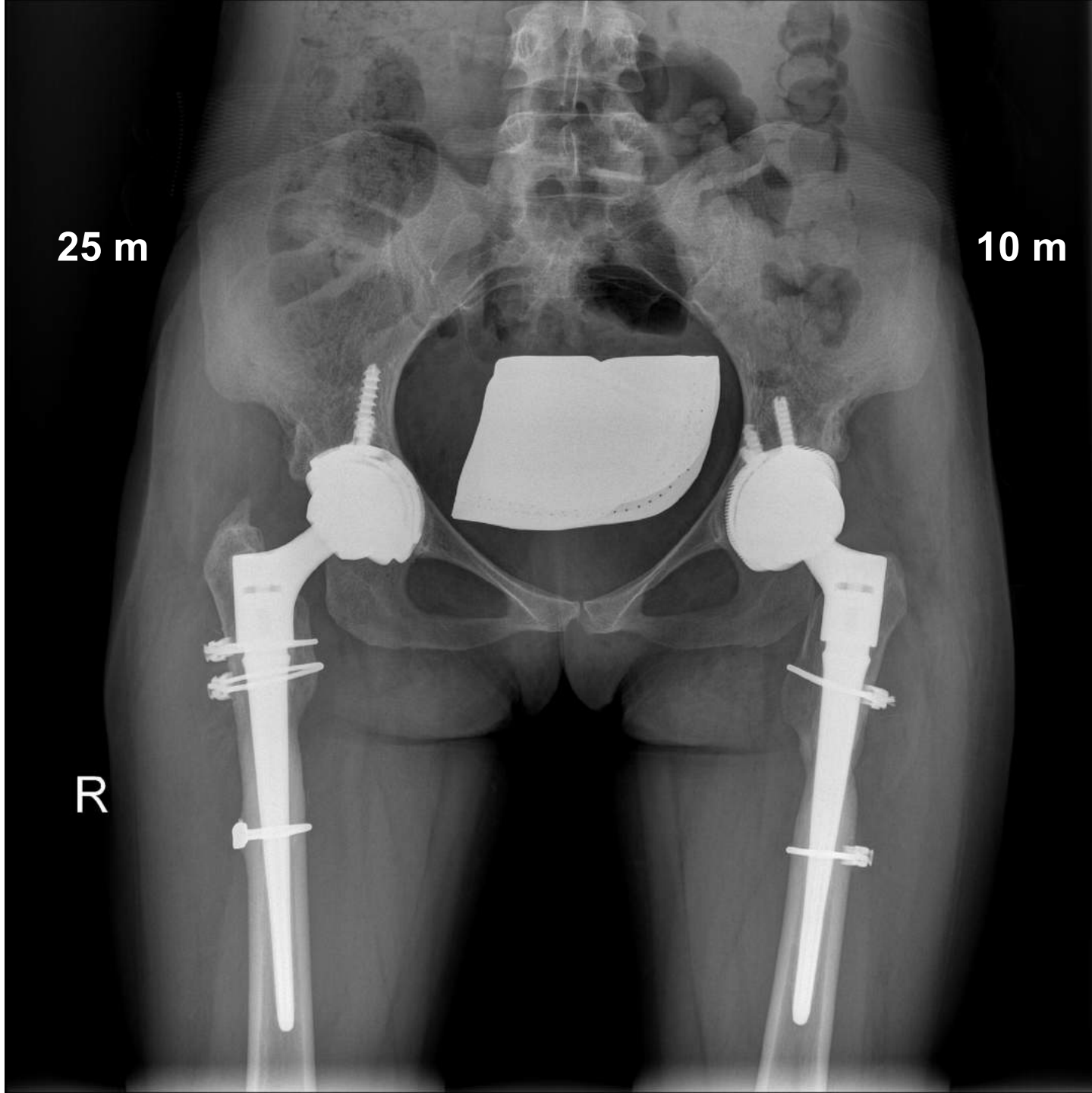




25 m

10 m

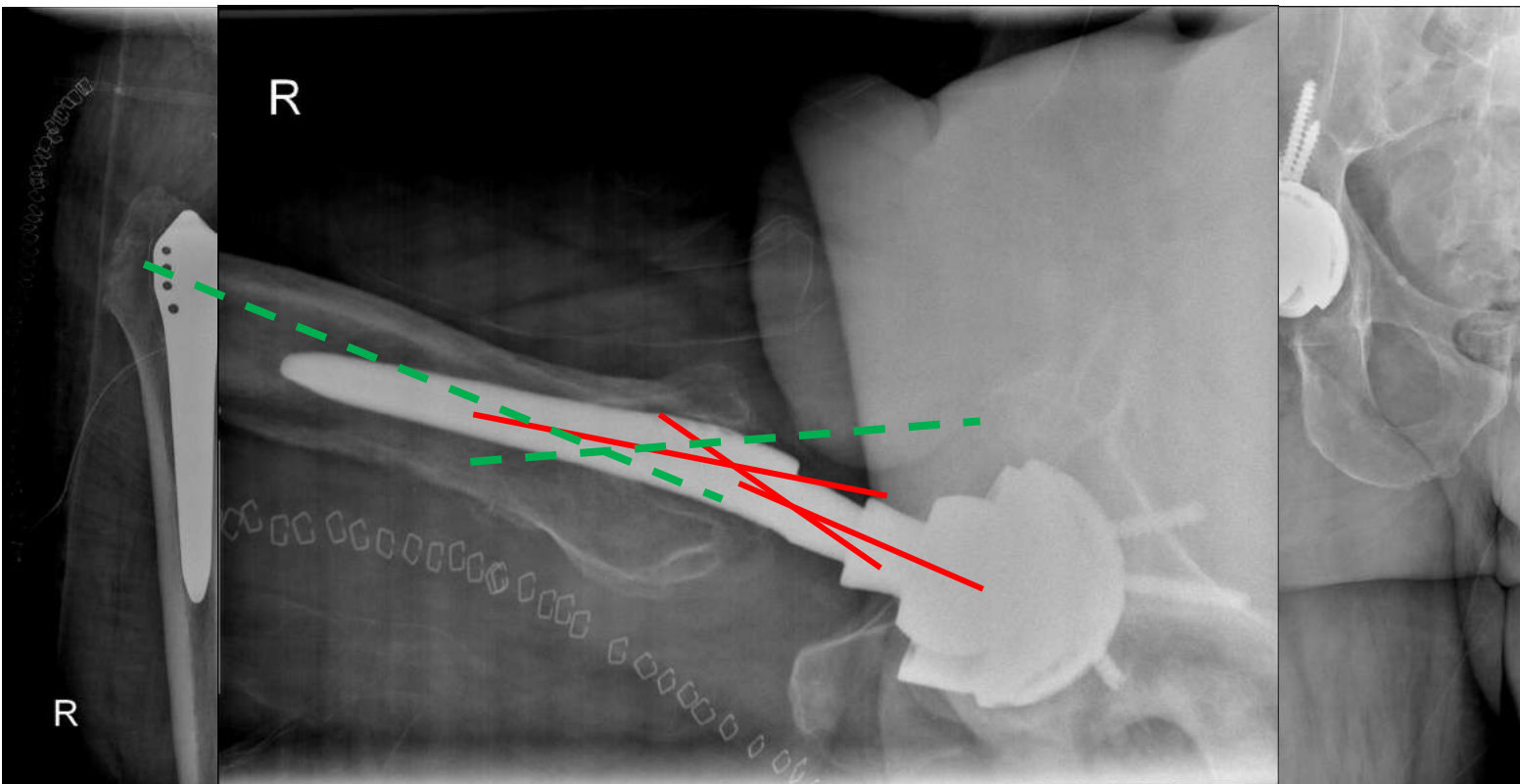
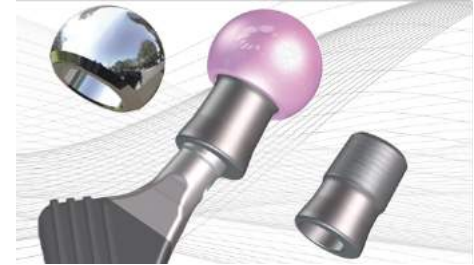
R



S.P., U, 77 aa

3 episodi di lussazione
(revisione cotile ma non stelo)

- Rotazione del modulo
- Bioball



Esiti megaprotesi per condrosarcoma a 10 aa

- Rimozione di 1 modulo
- Augment prossimale,
- Cage,
- Cotile cementato,
- ricostruzione medio gluteo con Mesh



Frattura sottocapitata (M. Alzheimer)



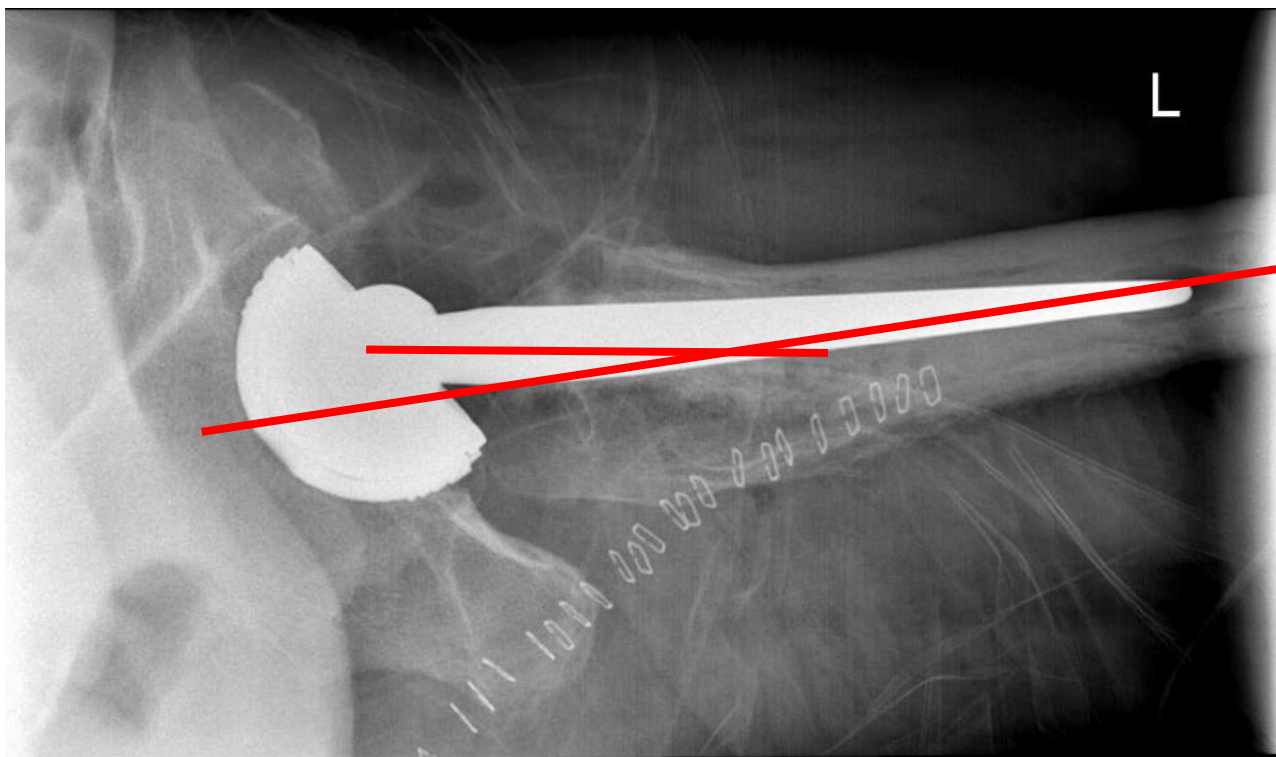
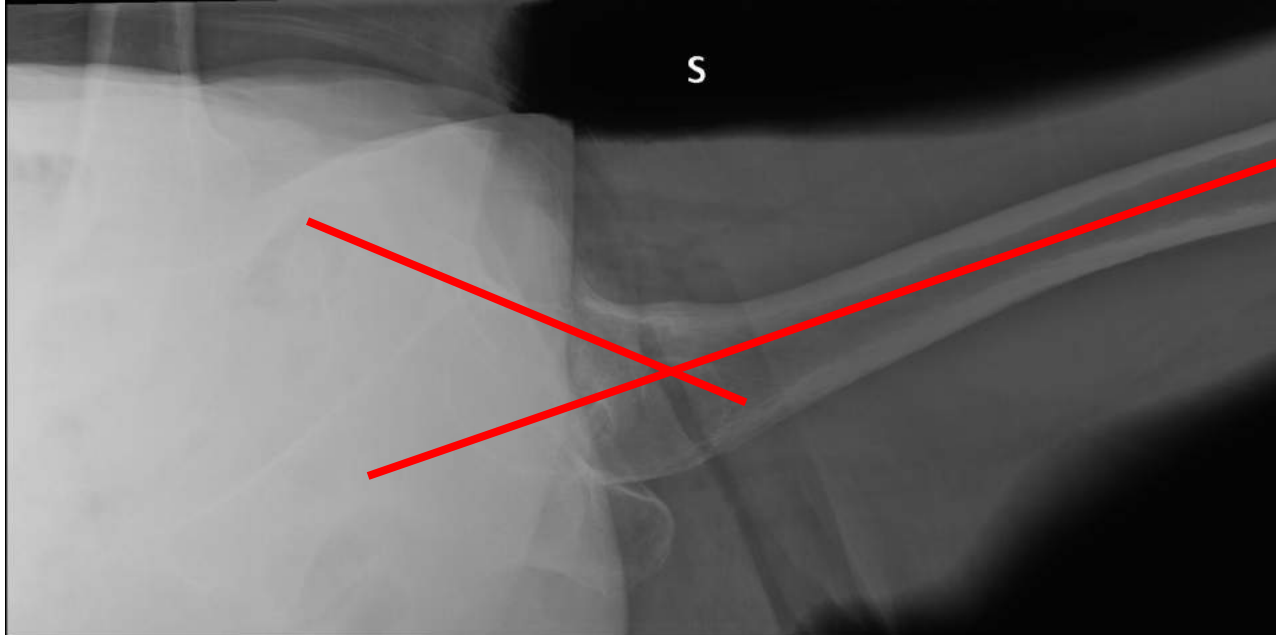
Exeter + Trident – Doppia Mobilità

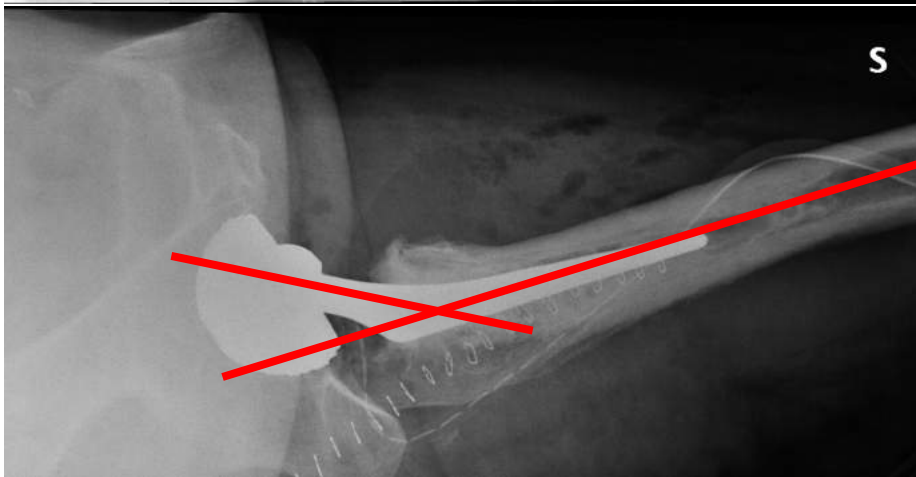
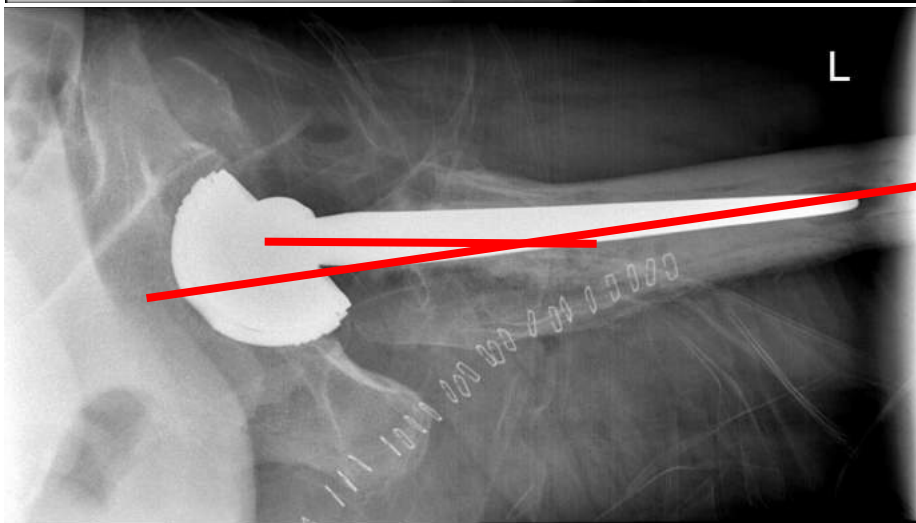
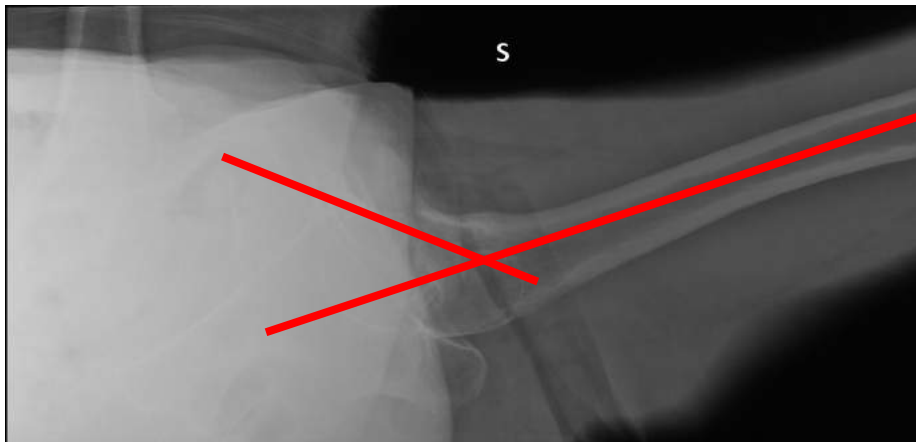


Dopo 1 mese:
lussazione

Cambiare il cotile?
Constrained liner?

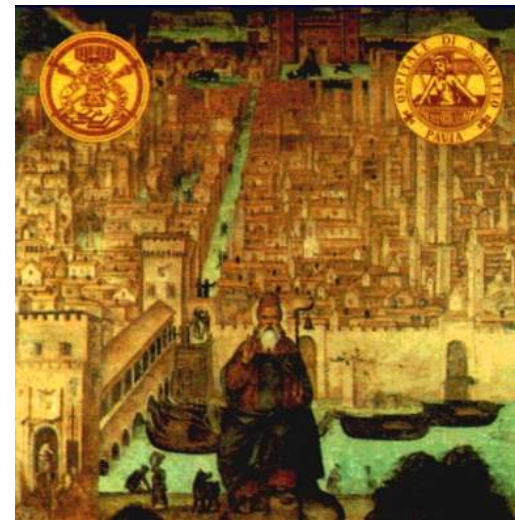
La posizione dello stelo è corretta?





Revisione stelo:
- Exeter short
aumentando
antiversione

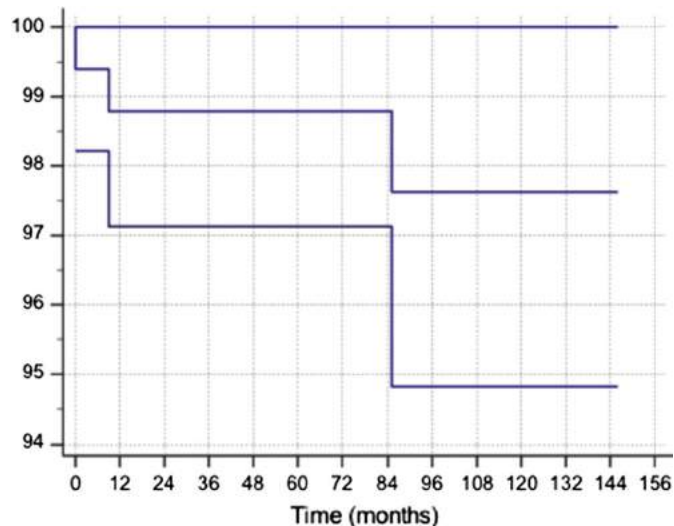
Nostra esperienza





MODULUS Stem for Developmental Hip Dysplasia: Long-term Follow-up

Francesco M. Benazzo, MD, Lucio Piovani, MD, Alberto Combi, MD, Loris Perticarini, MD

Clinica Ortopedica e Traumatologica, Università degli Studi di Pavia, Fondazione IRCCS Policlinico San Matteo, Italy

173 Modular Conical stems

There were 4 (2.3%) cases of posterior dislocation of the implant: one was treated immediately after surgery by replacing the neck and correcting the anteversion. The other three cases occurred during rehabilitative therapy in the first 4 weeks after surgery and were treated conservatively with good results.

KM 97.6% (95% CI, 94.8–100.0%) at a mean follow-up of 86 months, with stem failure for any reason as the endpoint.

Harris Hip Score (HHS) Distribution According to Crowe Grade of Developmental Dysplasia of the Hip (DDH).

DDH	HHS (Preoperative)	HHS (Last Follow-Up)	HHS Δ
CROWE I	51 (41–65)	97 (91–100)	+ 46
CROWE II	44 (36–53)	90 (85–95)	+ 46
CROWE III	33 (29–37)	88 (81–89)	+ 55
CROWE IV	28 (23–34)	85 (76–100)	+ 57

Stelo Doppia Conicità

Dicembre 2013 – Settembre 2016

- 61 pazienti

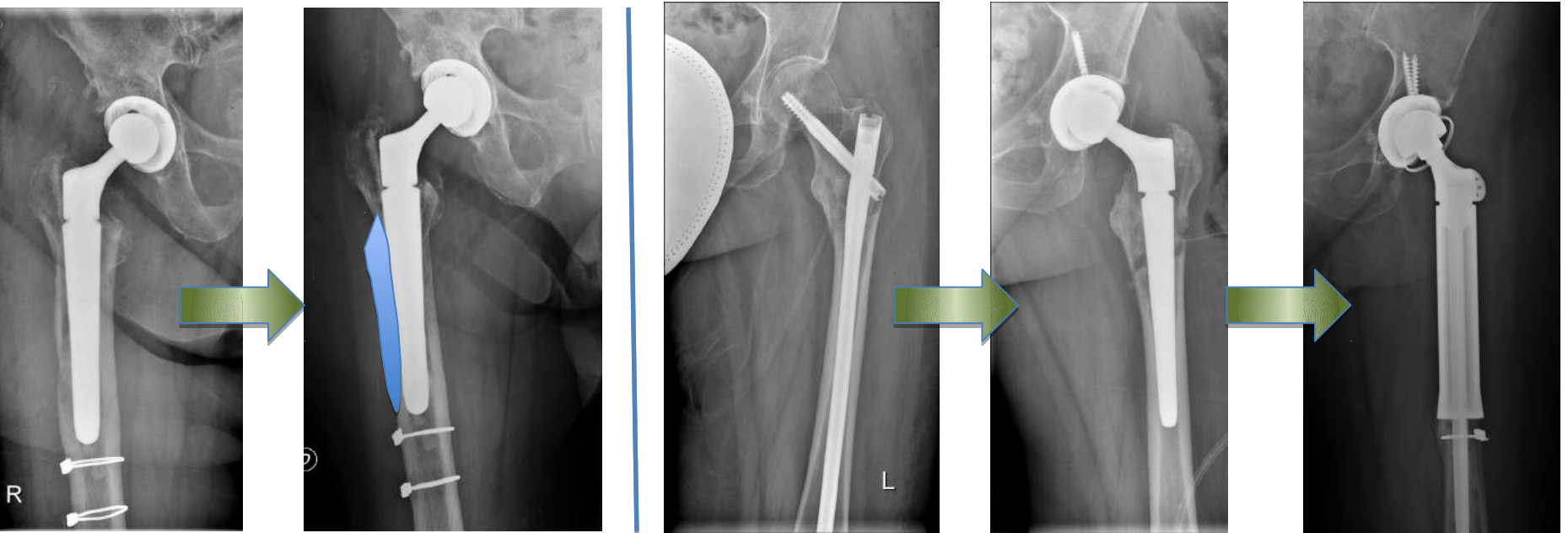
- Mobilizzazione asettica: 14
- Frattura femorale: 11
- DSA: 8
- Coxartrosi primaria: 12
- Fallimento di osteosintesi con chiodo endomidollare: 8
- Outcome infezioni: 3
- AVN: 3
- Instabilità PTA: 1
- Mobilizzazione di cemento spaziatore: 1

Follow-up medio: 28 m (range 12 – 45m)



Complicanze

- **1 lussazione per disaccoppiamento liner**
- 1 frattura trocanterica trattata con cerchiaggi
- 1 frattura distale di femore intraop: nessun intervento (durante l'espanto)
- 1 infezione (dopo asportazione calcificazioni): rimozione dell'impianto (pz immunodepresso)
- 1 infezione tardiva: nessun intervento (87 aa, non dolore)
- 1 espanto legato a neoplasia (Megaprotesi)





Cotili: Sistema Revisione (Coppa multifori/Cup cage)

Settembre 2011 - Agosto 2015

Casi: **96**

- 50 multifori: difetto osseo AIR II-III
- 46 cup cage: difetto osseo AIR III-IV

Età media: 71.3 aa (30-92 aa)

Follow-up medio 50 m (1a-5aa)



Implanti/Modularità

- BIG: 60/96 casi
- Augments: 20/96 casi
- Moduli interni: 60/96 casi
- Doppia Mobilità: 9/96 casi
- Revisione stelo: 28/96 casi



Complicanze

- 2 infezioni superficiali (DAIR)
- **5 lussazioni: 4 ridotte incruentamente, 1 revisione cotile (revisioni multiple, revisione solo cotile)**
- 1 mobilizzazione settica (cup cage)
- 1 mobilizzazione asettica (multifori)



Stelo Revision

Maggio 2001 – Novembre 2016

162 pazienti (80 D, 82 U)

- mobilizzazione aseptica: 117 casi (72.3%)
- fratture periprotetiches/
sequele di fratture: 37 casi (22.8%)
- infezioni: 8 (4.9%)

Revisioni acetabolari associate in 80 (49.4%) casi

Follow-up medio: 85 m (range 3m – 15aa)



Impianti/Modularità

- 200 mm in 110 casi
- 140 mm in 38 casi
- Tutti i diametri dello stelo e tutti i colli, versione standard e lat sono stati utilizzati
- Bone graft femorale in 12 casi (8.5%)

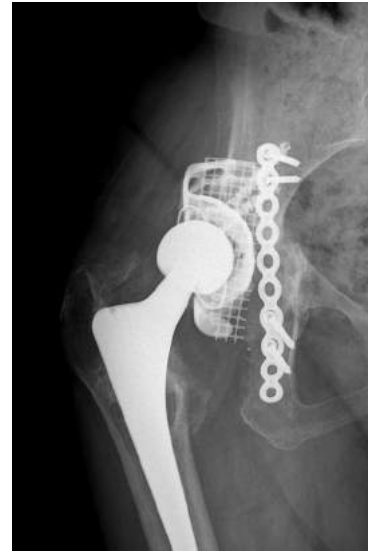
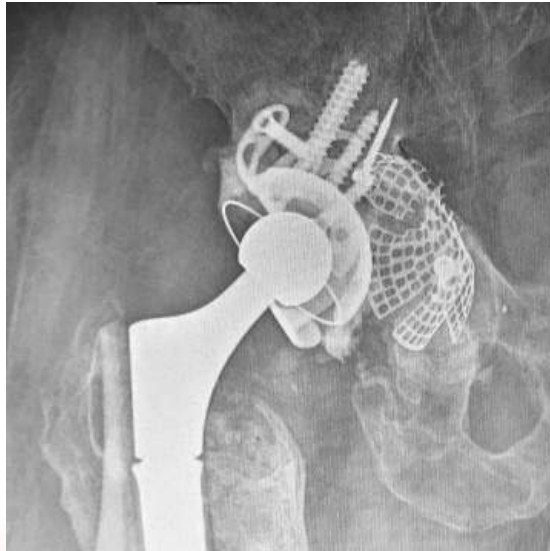


Risultati

- ✓ 6 pz deceduti
- ✓ No dismetrie maggiori di 1 cm (in un caso 2,5 da 5,5 di partenza)
- ✓ **1 revisione– rottura taper a 7 aa dall'intervento**
- ✓ **3 lussazioni trattate incruentamente**
- ✓ HHS da 42 (range 30-65) a 86 (range 67-99) ultimo follow-up
- 80% di risultati soddisfacenti (> età, comorbidità, ecc.)



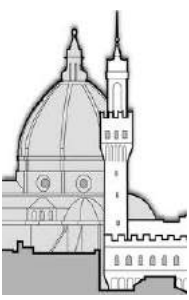
Modularità – Custom Made



Conclusioni

- Letteratura conferma l'utilità, soprattutto in casi difficili
- Applicabile in Primary e revisioni
- Considerare tutti i fattori di instabilità
- Basso tasso di complicanze legate all'impianto nella nostra esperienza
- Aiuto per il chirurgo, e una possibilità per il paziente





Le teste a doppia motilità nelle revisioni



R. Civinini



Orthopedic Department - University of Florence

A.O.U. Careggi, C.T.O. Firenze, Italy



Doppia mobilità



Il concetto del cotile a doppia mobilità venne introdotto da Bousquet nei primi anni 70.

Doppia mobilità

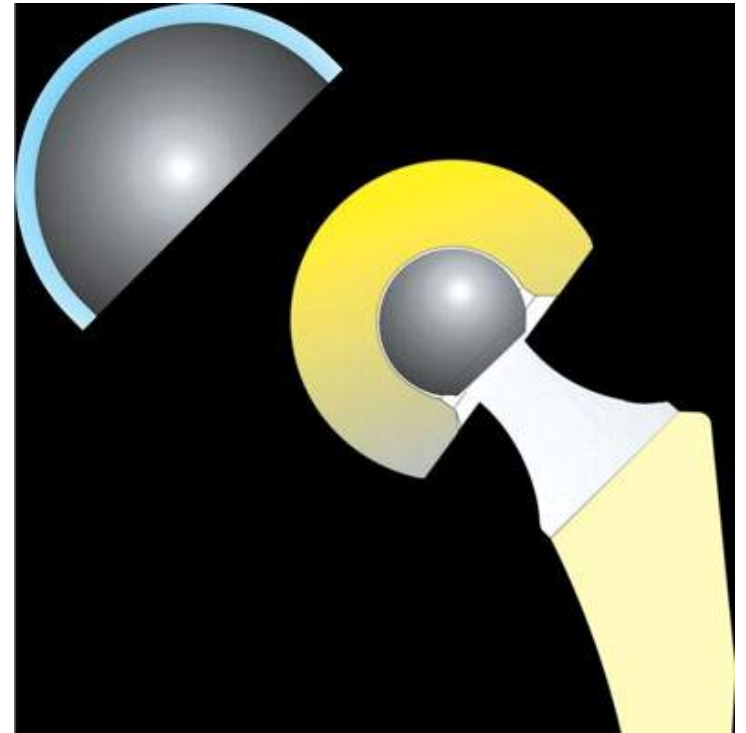


E costituita da una testina femorale bloccata dentro un inserto a ritenzione di polietilene...

....capace di muoversi liberamente all'interno di un cotile metallico lucidato a specchio al suo interno

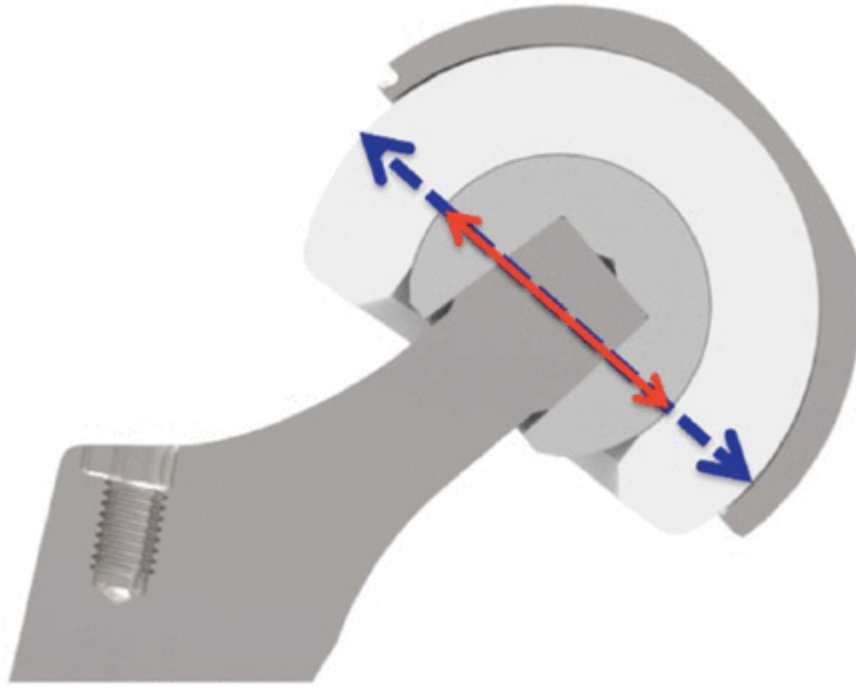
Doppia mobilità

Protesi a doppia motilità



- 1 Mobilità: fra testina e polietilene
- 2 Mobilità: fra polietilene e metal-back

Doppia mobilità

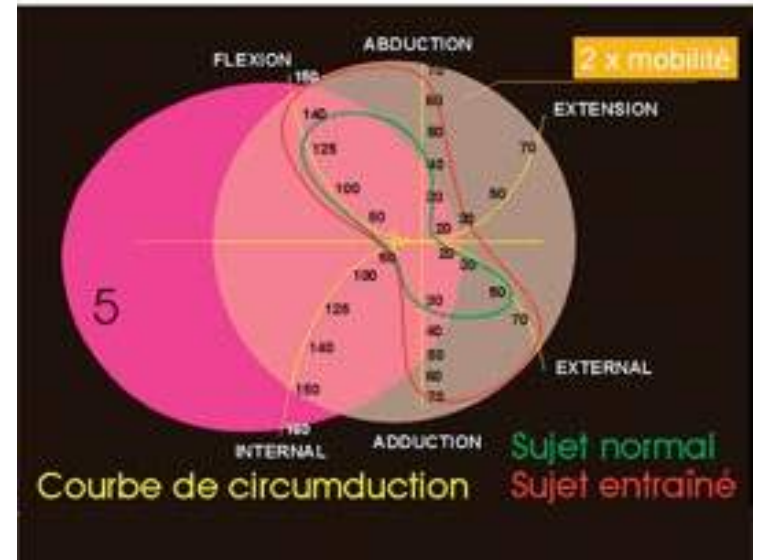
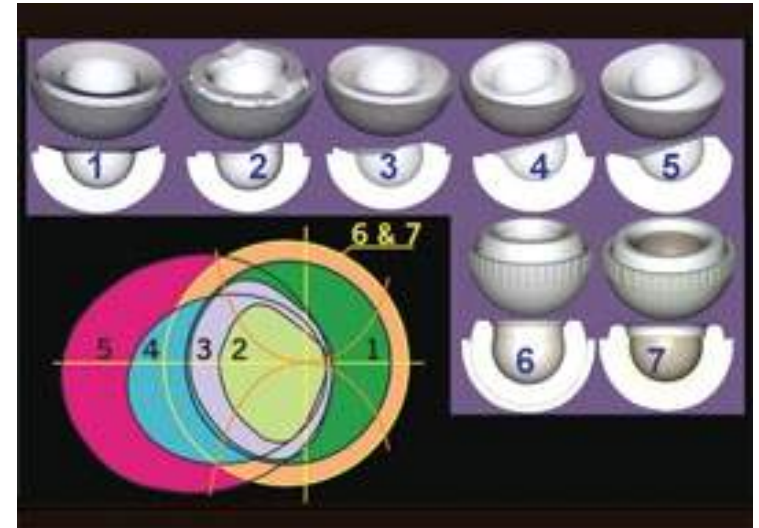
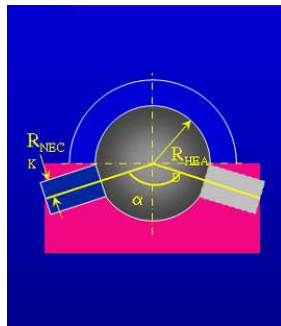


Dal punto di vista biomeccanico il diametro reale della testa diventa quello dell'inserto in polietilene...

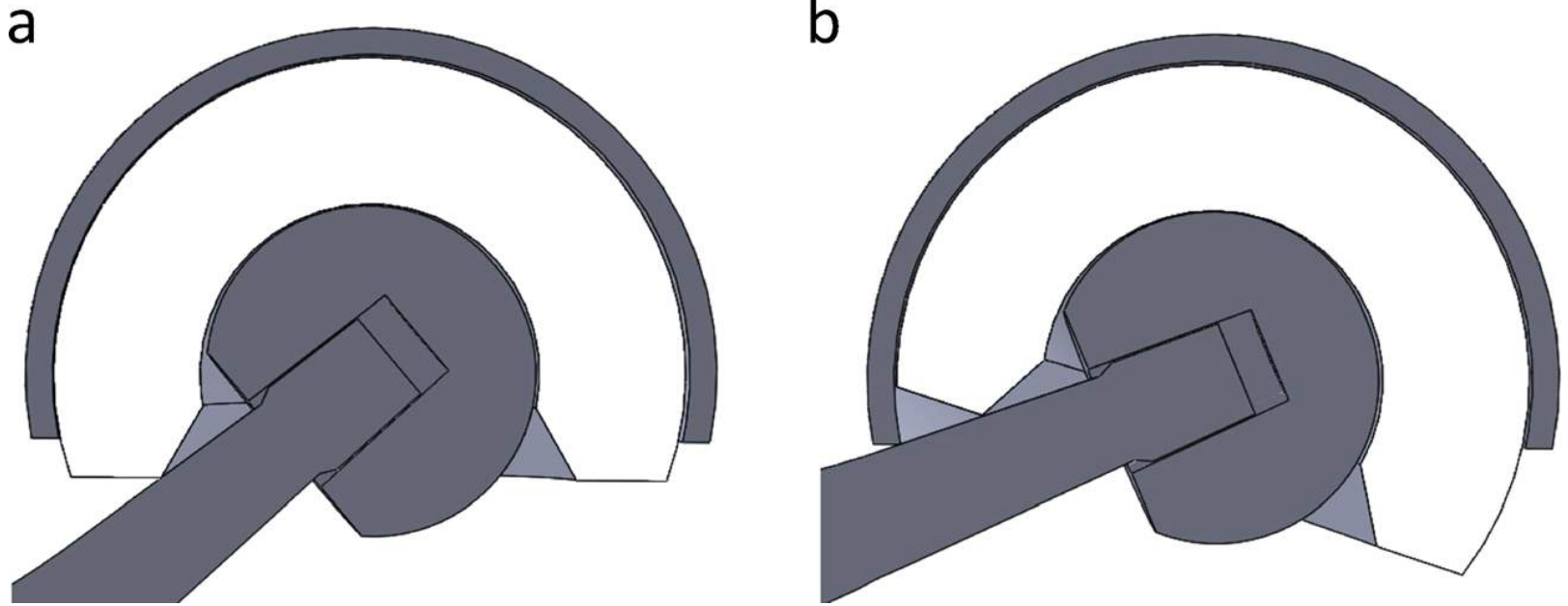
...e pertanto il cotile a doppia mobilità acquisisce i vantaggi delle teste di grande diametro

Dual Mobility Cup

Incrementa l'arco di movimento

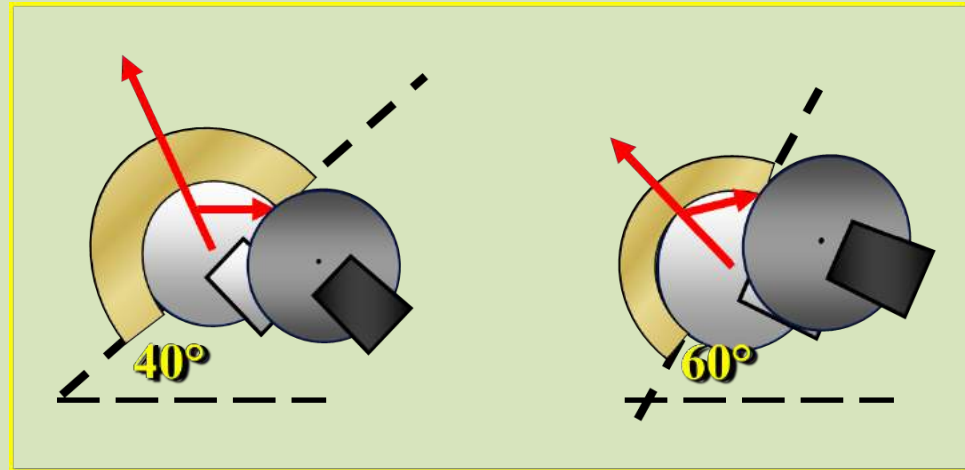
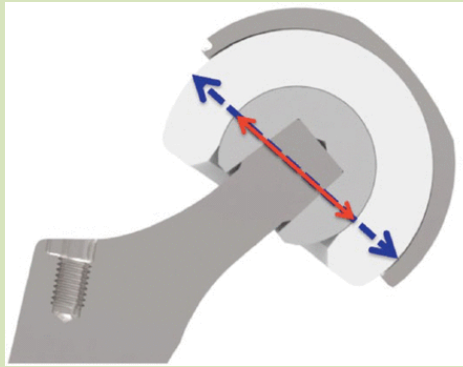


Dual Mobility Cup



The configuration allows a greater range of motion (ROM) before impingement due to the relative motion of the polyethylene liner into the acetabular metal cup

Doppia mobilità



Ampia diffusione in Europa e Nord-america
nella prevenzione e nel trattamento
dell'instabilità

Doppia motilità nelle protesi primarie

	Results of Dual Mobility Articulations in Primary Total Hip Arthroplasty			
References	Number	Follow-up	Survival (%)	Dislocations(%)
Adam (2012)	214	0.8	99.5	1.4 %
Boyer (2012)	240	22	82.6	0
Hamadouche (2012)	168	6	94.2	2.3 %
Massin (2012)	1905	7.7	98.5	0.7 %
Combes (2013)	2480	7	95.8	0.9 %
Philippot (2013)	100	12	95	2 %
Prudhon (2013)	105	7.6	97.1	0.9 %
Sanders (2013)	10	3.3	100	0
Benson (2014)	175	1.8	90.9	4.6 %
Caton (2014)	105	10	97.1	0.9 %
Epinette (2014)	143	4	100	0
Mohammed (2015)	20	2	100	0

Lombardi et al *Al* The dual mobility poly liner: A worthwhile articulation choice?. 2015

Doppia motilità nelle revisioni



Superfici con limitata
capacità osteointegrativa



Ridotte possibilità di sintesi
supplementare in regione
iliaca ed ischiatica

Doppia motilità nelle revisioni



La protesi a doppia motilità nelle revisioni

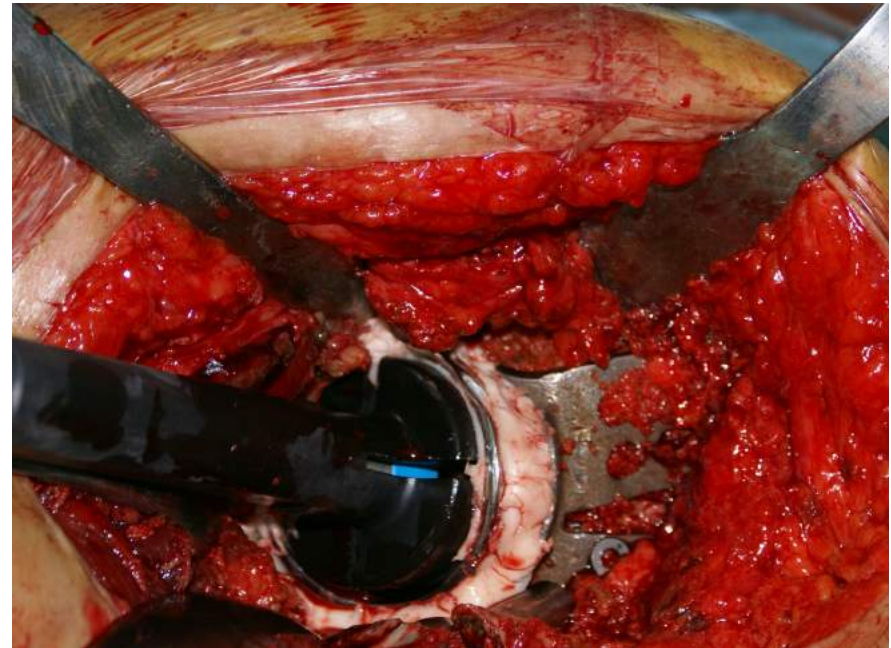
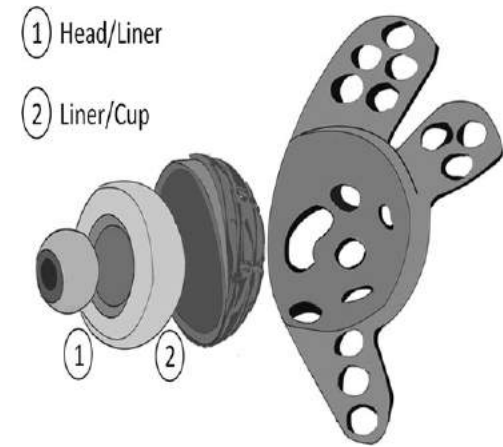


La protesi a doppia motilità nelle revisioni

Il cotile a doppia mobilità esiste anche nelle versione da cementare



Protesi a doppia motilità nelle revisioni



La protesi a doppia motilità nelle revisioni



La protesi a doppia motilità nelle revisioni

Clin Orthop Relat Res (2012) 470:3542–3548
DOI 10.1007/s11999-012-2428-y

Clinical Orthopaedics
and Related Research®
A Publication of The Association of Bone and Joint Surgeons®

CLINICAL RESEARCH

A Dual-mobility Cup Reduces Risk of Dislocation in Isolated Acetabular Revisions

**Roberto Civinini MD, Christian Carulli MD,
Fabrizio Matassi MD, Lorenzo Nistri MD,
Massimo Innocenti MD**

Received: 17 January 2012 / Accepted: 31 May 2012 / Published online: 15 June 2012
© The Association of Bone and Joint Surgeons® 2012

No dislocations.

Survivorship rates of the femoral and acetabular components were 97% at 5 years;

Rerevision rate for any reason was 3%.

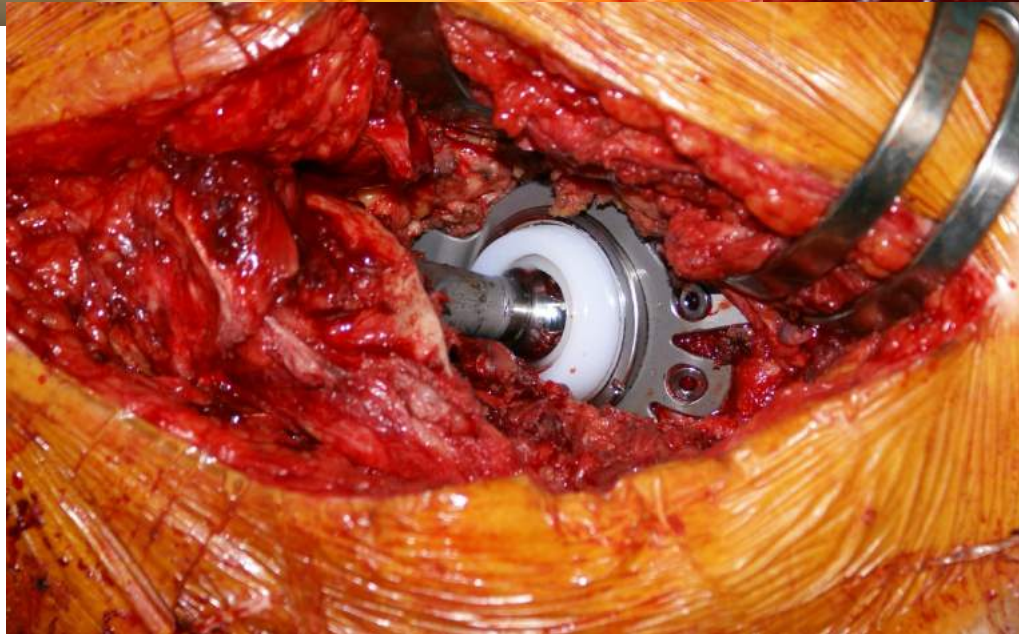
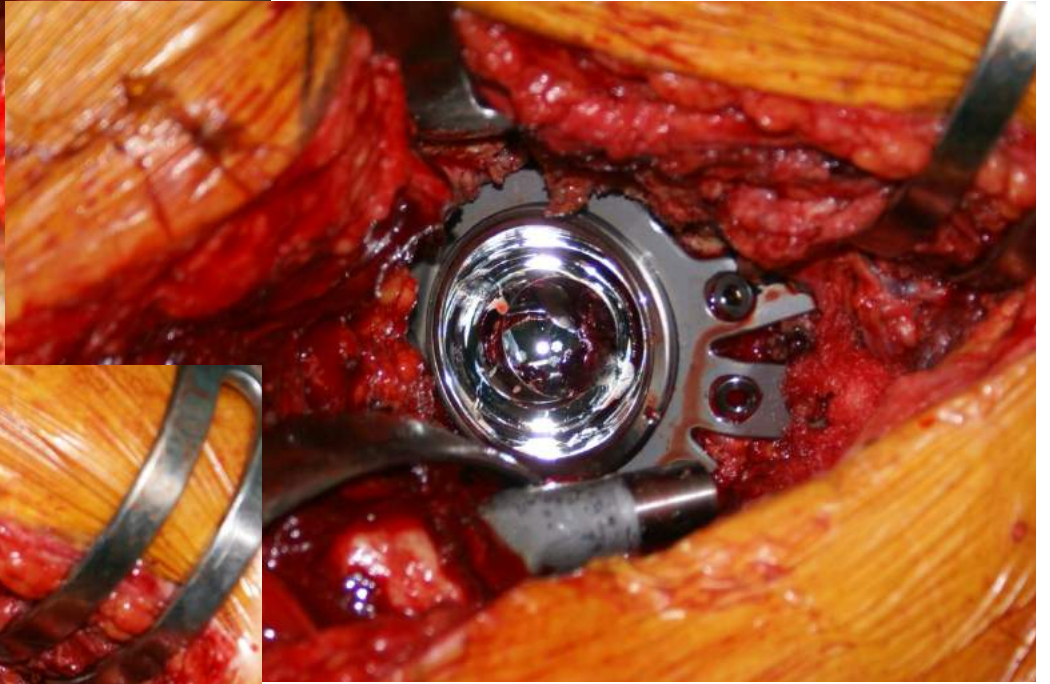
La protesi a doppia motilità nelle revisioni

- **Gabbie e Cotili con doppia motilità integrata**
- Rivestimenti porosi di ultima generazione
- Flange iliache ed ischiatiche
- Spesssori e distanziali





58 yrs Third revision: Paprosky 3b defect





✂ Pre-op



✂ Post-op 3 months



✂ Post-op 1 year



TIANA

H

✂ Antero-lateral



HLP
H

Type

✂ Postero-lateral

Doppia motilità nelle chirurgia di revisione

	Results of Dual Mobility Articulations in revision Total Hip Arthroplasty			
References	Number	Follow-up	Survival (%)	Dislocations(%)
Adam (2012)	214	0.8	99.5	1.4 %
Boyer (2012)	240	22	82.6	0
Hamadouche (2012)	168	6	94.2	2.3 %
Massin (2012)	1905	7.7	98.5	0.7 %
Combes (2013)	2480	7	95.8	0.9 %
Philippot (2013)	100	12	95	2,0 %
Prudhon (2013)	105	7.6	97.1	0.9 %
Sanders (2013)	10	3.3	100	0
Benson (2014)	175	1.8	90.9	4.6 %
Caton (2014)	105	10	97.1	0.9 %
Epinette (2014)	143	4	100	0
Mohammed (2015)	20	2	100	0

Lombardi et al *AI* The dual mobility poly liner: A worthwhile articulation choice? 2015

La protesi a doppia motilità nelle revisioni

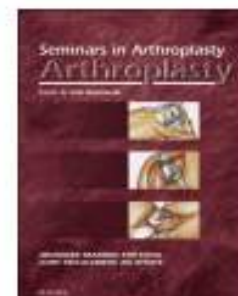
Indica



The dual
articulation

Adolph V.
Joanne B.

\$!



^aJoint Implant Surgeons, Inc., 1277 Smith's Mill Rd, Suite 200, New Albany, OH 43054

^bDepartment of Orthopaedics, The Ohio State University Wexner Medical Center, Columbus, OH

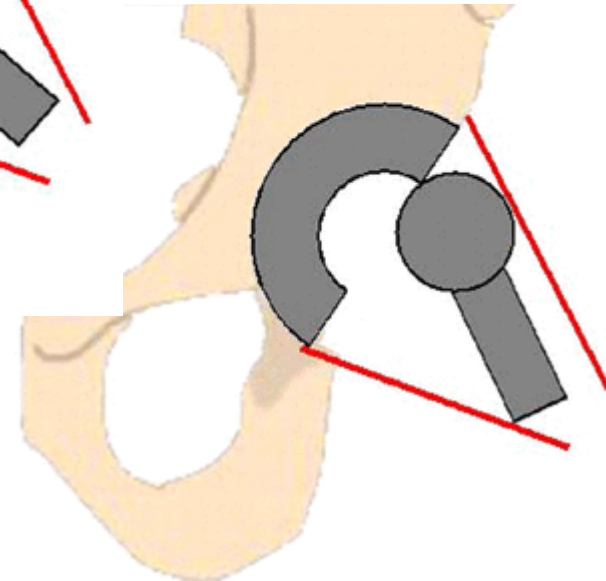
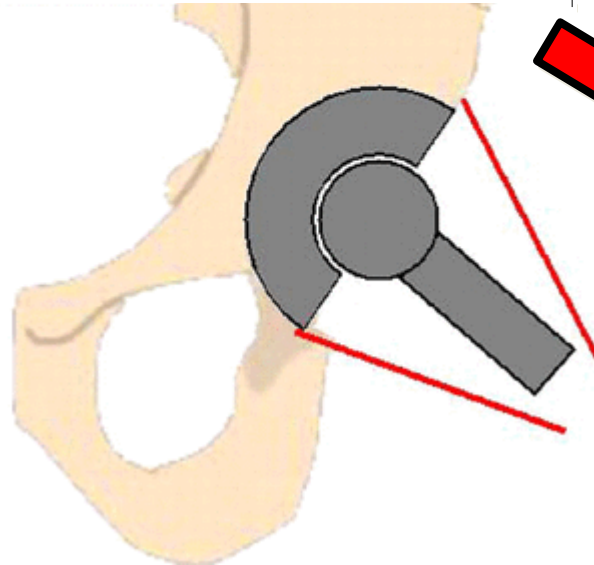
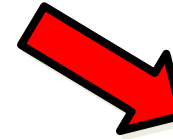
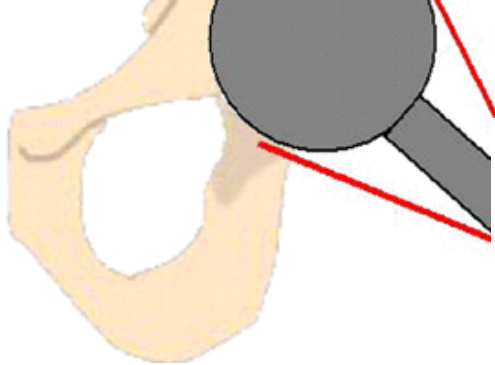
^cMount Carmel Health System, Columbus, OH

La protesi a doppia motilità nelle revisioni

Indicazioni assolute:

1. Revisioni delle protesi MoM
2. Revisione per instabilità/lussazione
3. Revisioni delle protesi cefaliche instabili

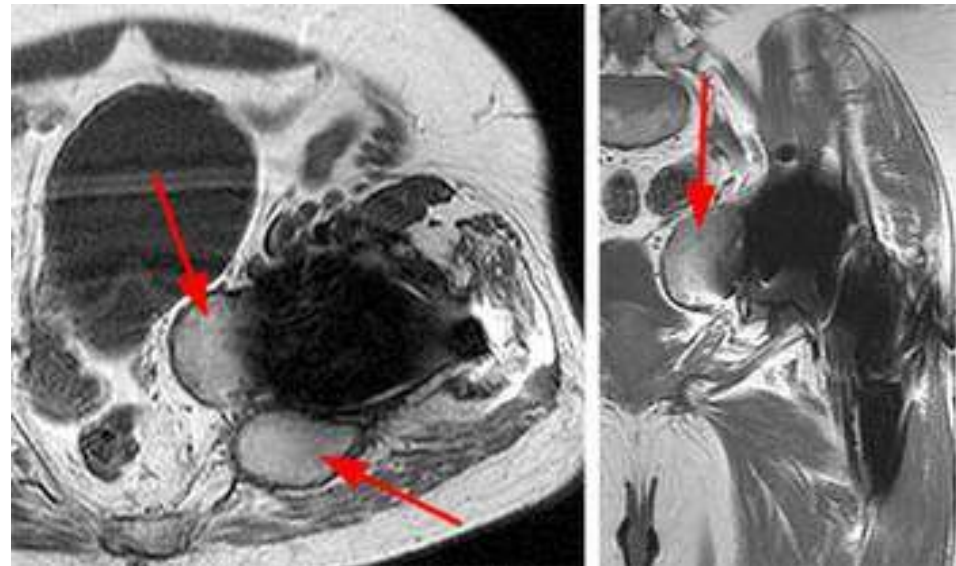
- Revisioni delle protesi MoM



La protesi a doppia motilità nelle revisioni



- Revisioni di MoM



La protesi a doppia motilità nelle revisioni



La protesi a doppia motilità nelle revisioni

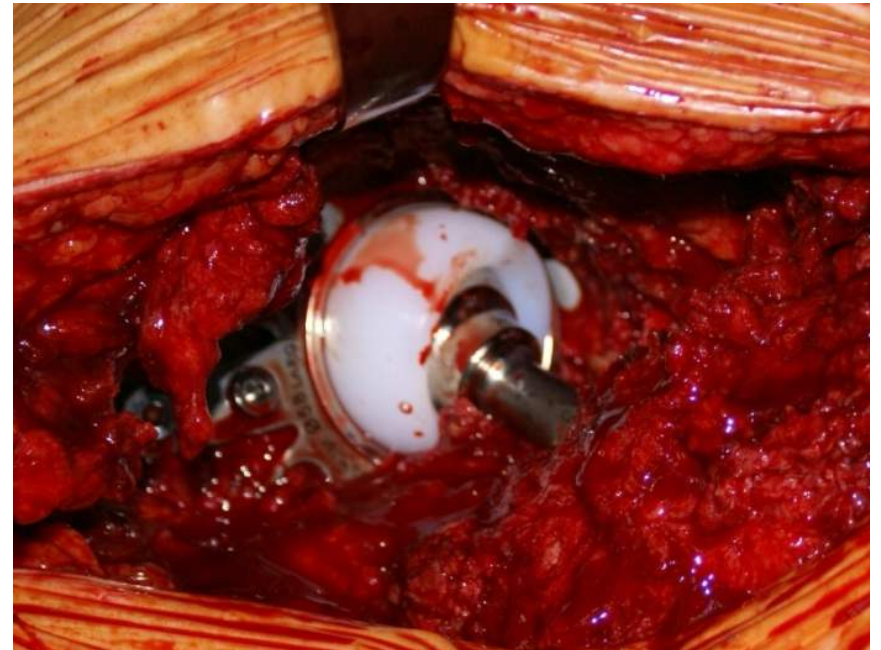


- Revisioni di MoM

La protesi a doppia motilità nelle revisioni



- Revisioni di MoM





✂ Pre-op



✂ Post-op



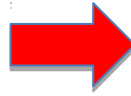
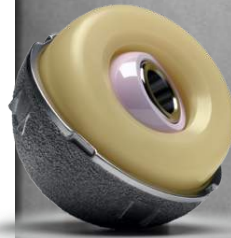
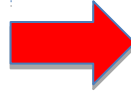
✂ Post-op

La protesi a doppia motilità nelle revisioni

Revisione isolata della testa femorale



La protesi a doppia motilità nelle revisioni



La protesi a doppia motilità nelle revisioni

- Revisioni isolata della testa femorale



Female - 65yrs - 7 yrs from primary THA with Biomet M2a Magnum

La protesi a doppia motilità nelle revisioni

Indicazioni assolute:

1. Revisioni delle protesi MoM
2. Revisione per instabilità/lussazione
3. Revisioni delle protesi cefaliche instabili



Trattamento delle lussazioni recidivanti

Doppia motilità



J Orthopaed Traumatol (2015) 16:15–20
DOI 10.1007/s10195-014-0318-7

ORIGINAL ARTICLE

Dual mobility acetabular component in revision total hip arthroplasty for persistent dislocation: no dislocations in 50 hips after 1–5 years

M. van Heumen · P. J.
B. A. Swierstra · G. G.
J. H. M. Goosen

HSSJ (2012) 8:251–256
DOI 10.1007/s11420-012-9301-0

 HOSPITAL FOR
SPECIAL SURGERY

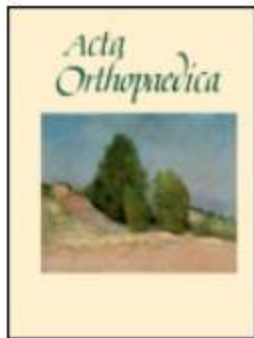
CURRENT TOPICS CONCERNING JOINT PRESERVATION AND MINIMALLY INVASIVE SURGERY OF THE HIP

Recurrence of Dislocation Following Total Hip Arthroplasty Revision Using Dual Mobility Cups Was Rare in 180 Hips Followed Over 7 Years

Patrice Mertl, MD · Antoine Combes, MD · Frédérique Leiber-Wackenheim, MD · Michel Henri Fessy, MD · Julien Girard, MD, PhD · Henri Migaud, MD

Trattamento delle lussazioni ricidivanti

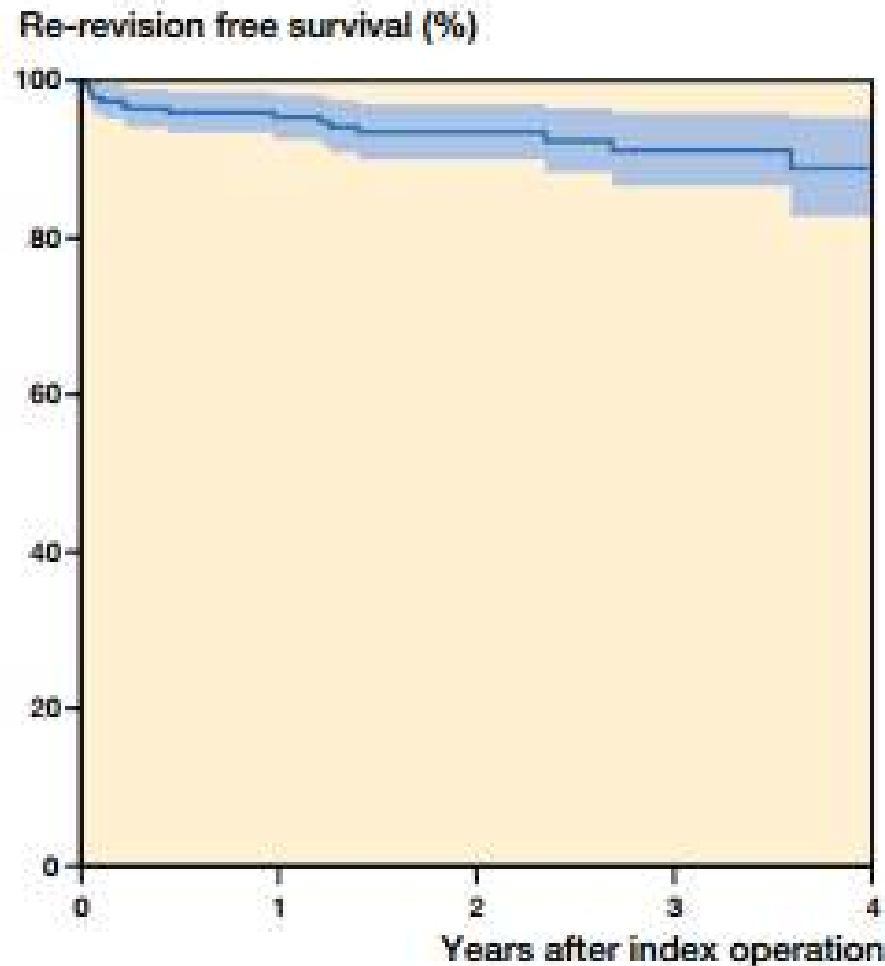
Doppia motilità



Acta Ortho

ISSN: 1745-3674 (P)

Dual-mobility
are associated
to dislocation



Nils P Hailer, Rüdiger J Weiss, André Stark & Johan Kärrholm

La protesi a doppia motilità nelle revisioni

Indicazioni assolute:

1. Revisioni delle protesi MoM
2. Revisione per instabilità/lussazione
3. Revisioni delle protesi cefaliche instabili



Il cotile a doppia motilità nelle conversione delle lussazioni recidivanti di protesi cefaliche



Il cotile a doppia motilità nelle conversione delle lussazioni recidivanti di protesi cefaliche



Il cotile a doppia motilità nelle conversione delle lussazioni recidivanti di protesi cefaliche

J Orthopaed Traumatol
DOI 10.1007/s10195-015-0365-8



ORIGINAL ARTICLE

The use of a dual mobility cup in the management of recurrent dislocations of hip hemiarthroplasty

Christian Carulli¹ · Armando Macera¹ · Fabrizio Matassi¹ · Roberto Civinini¹ · Massimo Innocenti¹



La protesi a doppia motilità nelle revisioni

Indicazioni relative:

- Revisioni isolate di cotile
- Revisioni multiple
- Deficit muscolari

La protesi a doppia motilità nelle revisioni isolate di cotile



Gabbia in TT

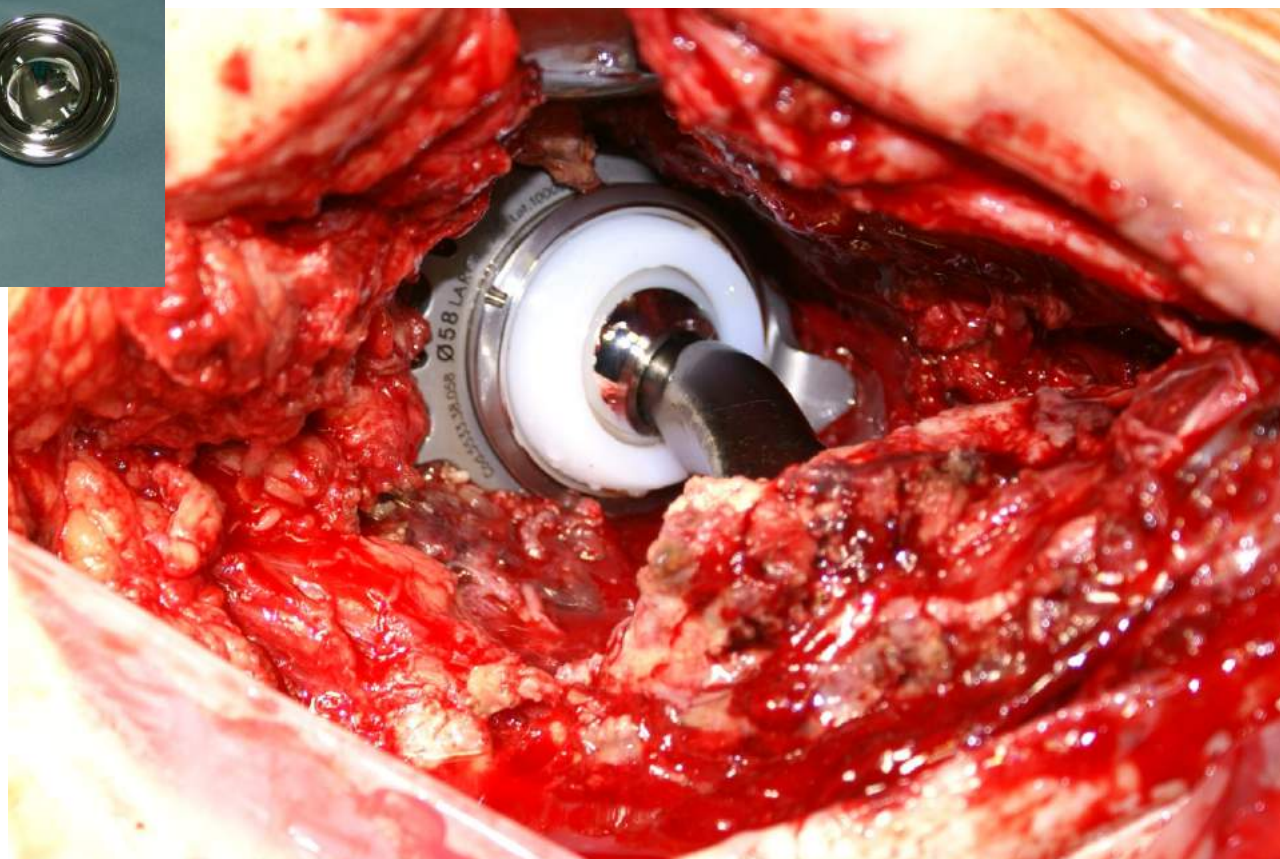


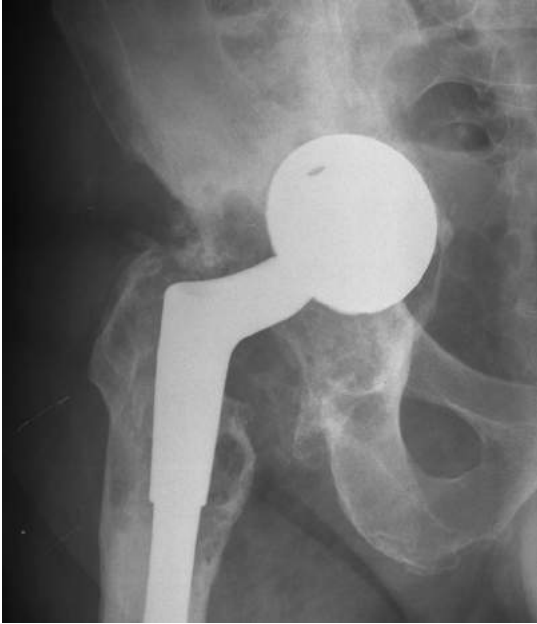
Posizionamento della gabbia



Fissaggio con viti

Applicazione dell'inserto a doppia motilità





Pre-op



6 mesi

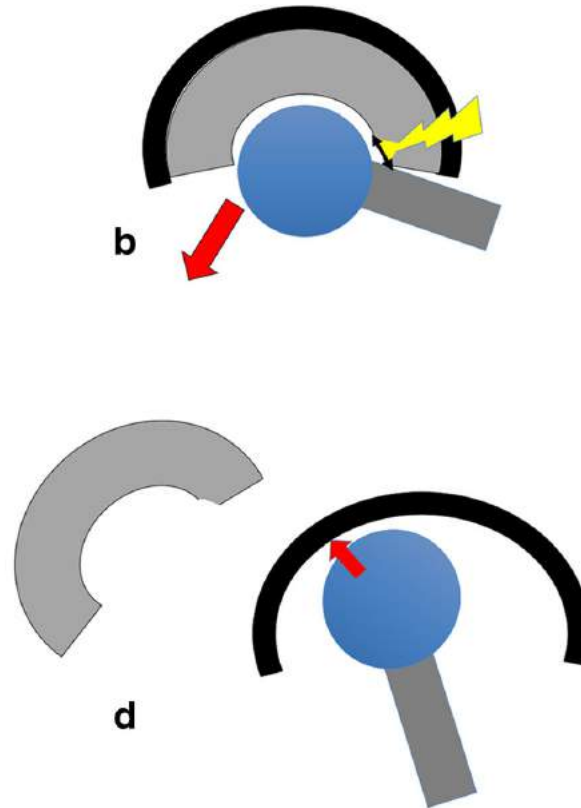
La protesi a doppia motilità nelle revisioni

Complicanze ??



La protesi a doppia motilità nelle revisioni

Intra-prosthetic dislocation



[Hernigou et al](#) [AI](#) Dual-mobility arthroplasty failure: a rationale review of causes and technical considerations for revision?. [2017](#)

La protesi a doppia motilità nelle revisioni

Intra-prosthetic dislocation

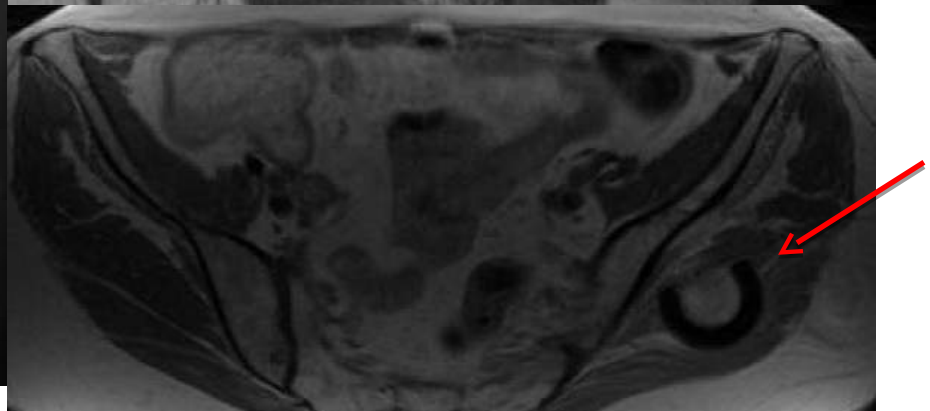
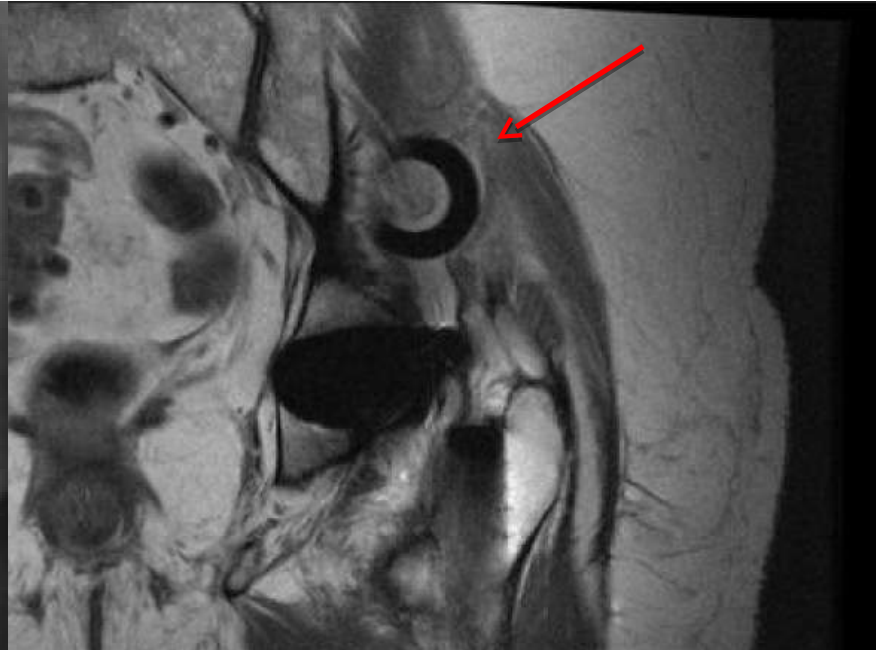
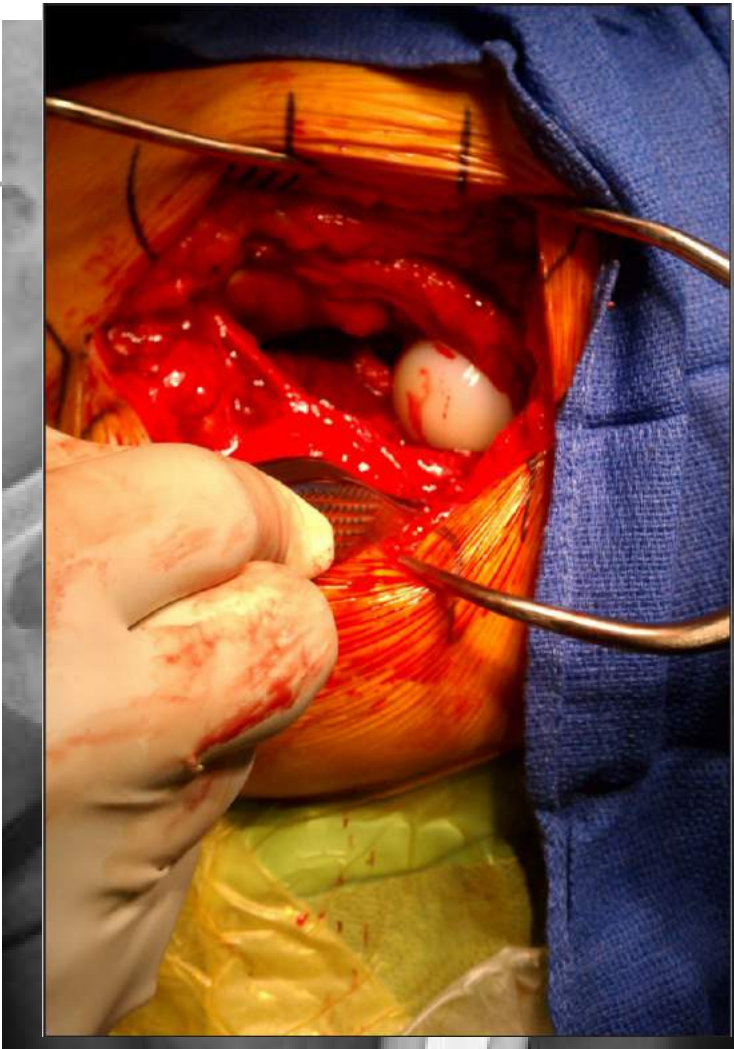
«Bubble sign»



[Hernigou et al](#) AI Dual-mobility arthroplasty failure: a rationale review of causes and technical considerations for revision?. [2017](#)

La protesi a doppia motilità nelle revisioni

Intra-prosthetic dislocation



La protesi a doppia motilità nelle revisioni

Intra-prosthetic dislocation

Authors	N.	(%)
Prudhon al. 2013	105	0,9%
Leclercq et al. 2013	200	0,5%
Caton et al. 2014	105	0,9%
Guyen et al. 2009	54	3,7%
Philippot et al. 2009	384	3,6%
Vielpeau et al. 2011	668	1,1%
Hamadouche et al. 2012	168	2,3%
Philippot et al. 2013	1960	4%

Incidenza variabile dallo 0% al 3,7%

CONCLUSIONS

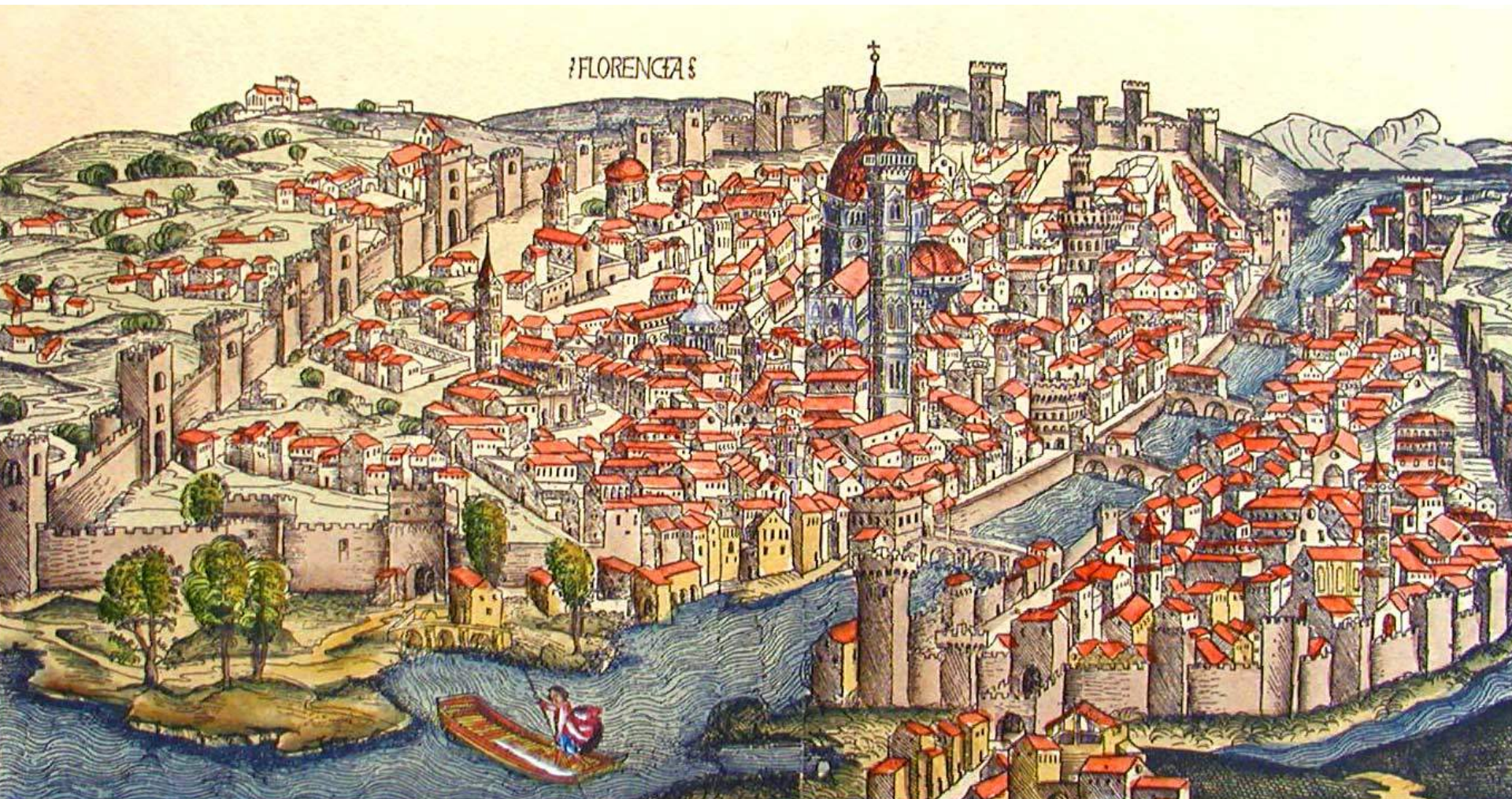


Conclusioni

Le protesi a doppia motilità sono indicate nella prevenzione e nel trattamento dell'instabilità.

Rappresentano in particolare una modalità specifica di revisione delle teste di grande diametro.

I risultati a lungo termine indicano una diminuzione significativa delle lussazioni con una percentuale minima di complicanze



Grazie per l'attenzione