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Journal Club Guided Primary THA Cases: Latest Evidence

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I have nothing to disclose.

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AAOS Disclosure Program on the AAOS website at

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Outline

- Cementless Femoral Stem Geometry
- Cemented Femoral Fixation
- Antibiotics in Arthroplasty
- Arthroplasty in Obese Patients
- Stiff Spine Patient and Dual Mobility Implants

Cementless Femoral Stem Geometry

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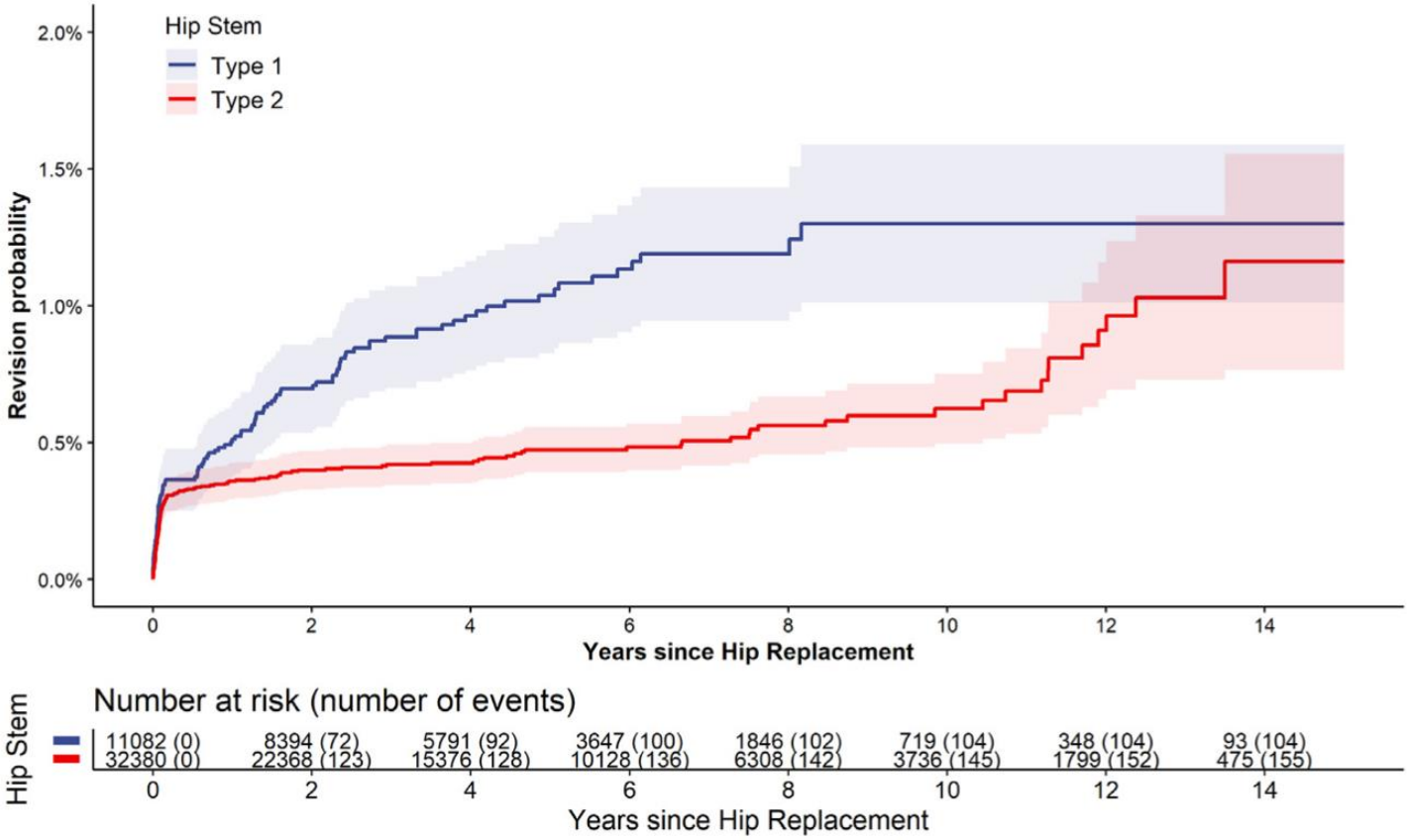
Single Wedge Femoral Stem Designs are Associated With a Higher Risk for Revision After Cementless Primary Total Hip Arthroplasty

Nithin C. Reddy, MD [a, *], Richard N. Chang, MPH [b], Heather A. Prentice, PhD [b], Elizabeth W. Paxton, PhD [b], Matthew P. Kelly, MD [c], Monti Khatod, MD [d]



- 43,462 cementless THA
- Higher risk of revision due to aseptic loosening with type 1 stems

J Arthroplasty. 2023 May;38(5):855-861.

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Periprosthetic Femur Fracture Risk: Influenced by Stem Choice, Not Surgical Approach

Robert A. Sershon, MD [a, b], James F. McDonald III, BS [b, *], Henry Ho, MS [b], William G. Hamilton, MD [a, b]

[a] *Inova Mount Vernon Hospital Joint Replacement Center, Alexandria, VA*
[b] *Anderson Orthopaedic Research Institute, Alexandria, VA*

- PFF risk was significant for:
  - female patients
  - patients older than age 65
  - single-wedge taper stems
  - cases with collarless stems

- Collarless stems were 2.6 times more likely to result in PFF than collared stems (P=.04)
- Single-wedge taper stems were 2.3 times more likely to result in PFF than fit-and-fill stems (P = .05)
- Approach was not found to be an independent risk factor for PFF (P= .85).

J Arthroplasty. 2021 Jul;36(7S):S363-S366.

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49F Left Hip Pain

61M Left Hip Pain

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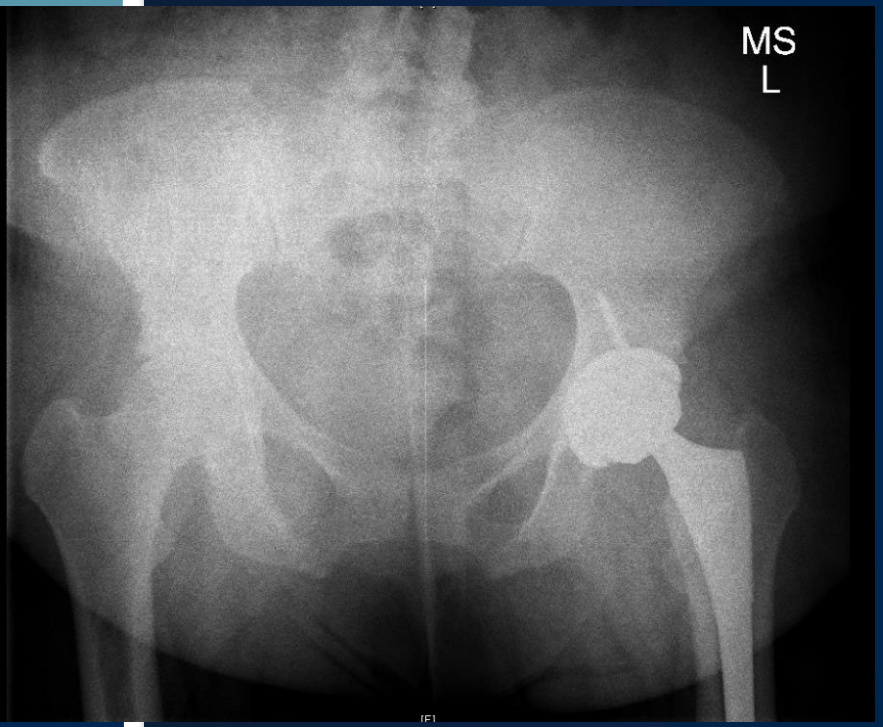
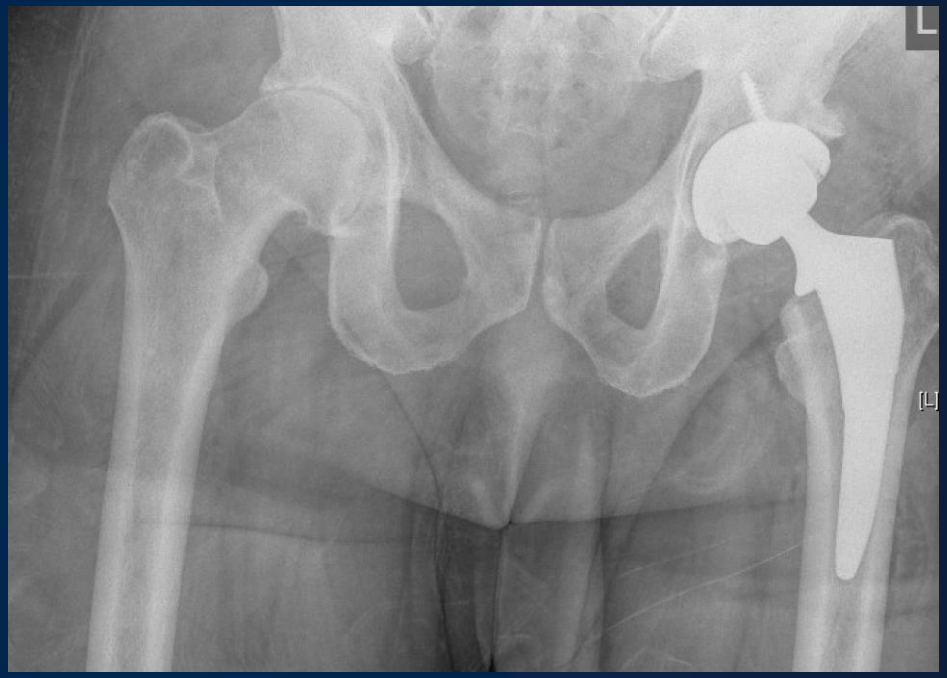
49F Left Hip Pain



61M Left Hip Pain



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Cemented Femoral Fixation

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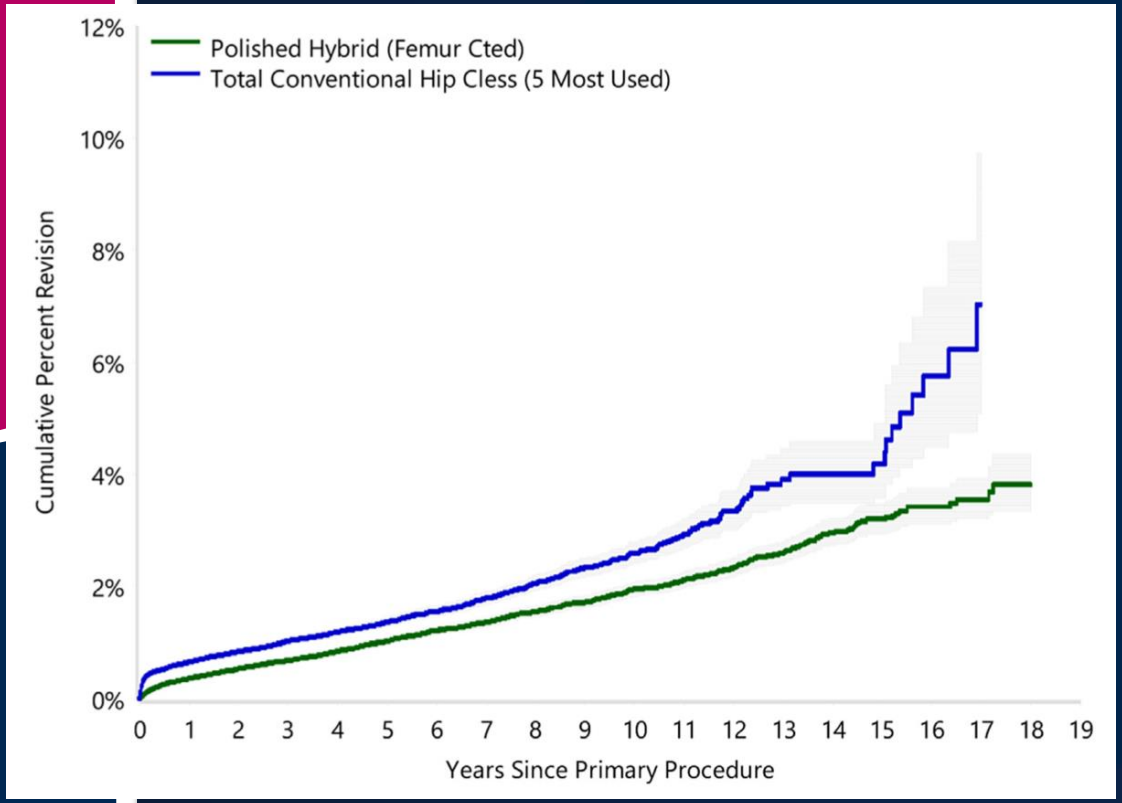
Primary Hip

Cemented Polished Tapered Stems Have Lower Revision Rates Than Commonly Used Cementless Implant up to 17 Years of Follow-Up: An Analysis of 201,889 Total Hip Replacements From the Australian Orthopedic Association National Joint Replacement Registry

Sina Babazadeh, PhD [a, b, c, *], Richard N. de Steiger, PhD [d, e], Carl Holder, MBiostat [f], Dirk van Bavel, MBBS [a, e]



- 201,889 total hip replacements
  - 50.0% cemented
  - 50.0% cementless
- **Cemented polished tapered stems have a lower revision rate compared to cementless prostheses**

J Arthroplasty. 2022 Jan;37(1):110-118.

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THE BONE & JOINT JOURNAL

■ HIP

Should patient age thresholds dictate fixation strategy in total hip arthroplasty?

B. V. Bloch,
J. J. E. White,
H. E. Matar,
R. Berber,
A. R. J. Manktelow

From Nottingham Elective Orthopaedic Services, Nottingham University Hospitals NHS Trust, Nottingham, UK

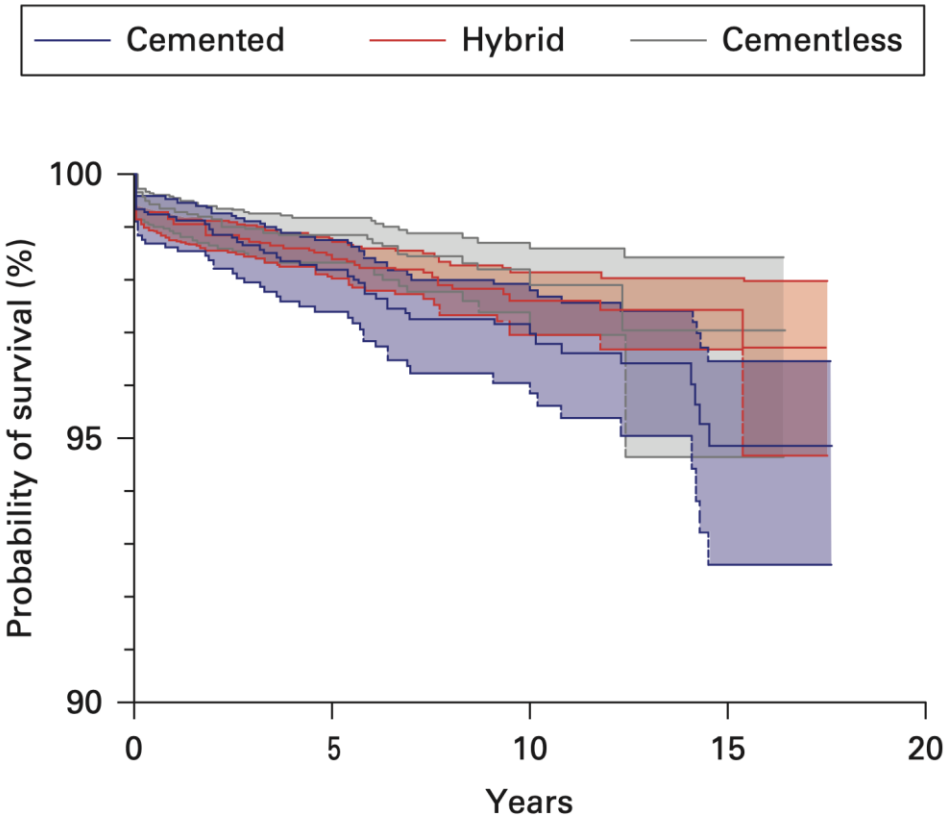

Fig. 1

Implant survival in all age groups, with 95% confidence intervals in shaded areas. For numbers at risk, see Table IV.

- 10,112 THAs from a prospectively collected database
  - 1,699 cemented
  - 5,782 hybrid
  - 2,631 cementless
- **Cemented fixation associated with the lowest implant survival in all age groups, including in more elderly patients**

Bone Joint J. 2022 Feb;104-B(2):206-211.

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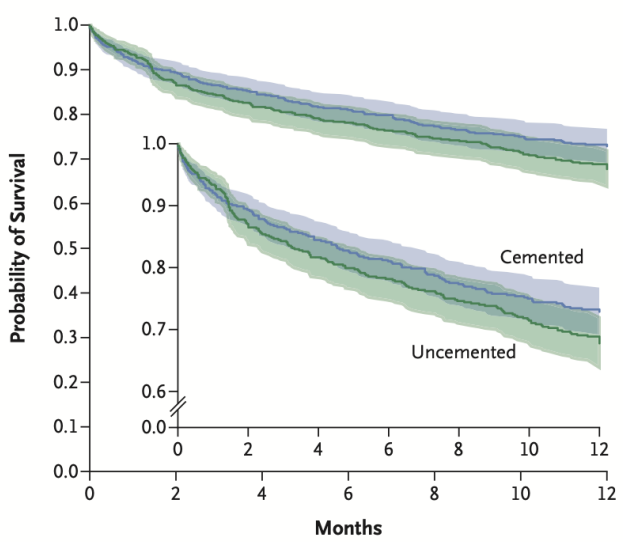
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Cemented or Uncemented Hemiarthroplasty for Intracapsular Hip Fracture

Miguel A. Fernandez, Ph.D., Juul Achten, Ph.D., Nicholas Parsons, Ph.D., Xavier L. Griffin, Ph.D., May-Ee Png, Ph.D., Jenny Gould, Alwin McGibbon, B.A., and Matthew L. Costa, Ph.D., for the WHiTE 5 Investigators*



No. at Risk

Cemented	610	506	481	461	445	429	418	411	399	391	387	380	197
Uncemented	615	519	476	453	426	410	399	386	378	373	362	353	188

Figure 2. Kaplan–Meier Survival Curves, According to Type of Hemiarthroplasty.

The inset shows the same data on an expanded y axis. Shaded areas indicate 95% confidence intervals.

- 610 patients cemented
- 615 patients uncemented
- Higher rate of periprosthetic fractures in uncemented group (2.1% v 0.5%) OR, 4.37; 95% CI, 1.19 to 24.00)
- Modestly but significantly better quality of life by EQ-5D score

N Engl J Med. 2022 Feb 10;386(6):521-530.

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The Impact of Femoral Component Cementation on Fracture and Mortality Risk in Elective Total Hip Arthroplasty

Analysis from a National Medicare Sample

Adam I. Edelstein, MD, Eric L. Hume, MD, Liliana E. Pezzin, PhD, JD, Emily L. McGinley, MS, MPH, and Timothy R. Dillingham, MD, MS

- Elective THA in Medicare patients with known cement status, ~118,000/180,000
- 90-day PPfx rate 2.0% (2.5%F, 1.1%M)
- 30-day mortality rate 0.18% (0.15%F, 0.23%M)
- 1:2 matching, ~7,000 fracture analysis, ~650 mortality analysis

TABLE II Conditional Logit Model Results for Association of Cement Usage with 90-Day Fracture and 30-Day Mortality*

	Female Patients			Male Patients		
Cement Effect	OR	95% CI	P Value	OR	95% CI	P Value
Effect on 90-day fracture rate	0.83	0.69–1.00	0.05	0.98	0.63–1.54	0.94
Effect on 30-day mortality rate	1.74	0.98–3.11	0.06	2.09	1.12–3.87	0.02

*Both models include an additional adjustment for low-income status.

J Bone Joint Surg Am. 2022 Mar 16;104(6):523-529.

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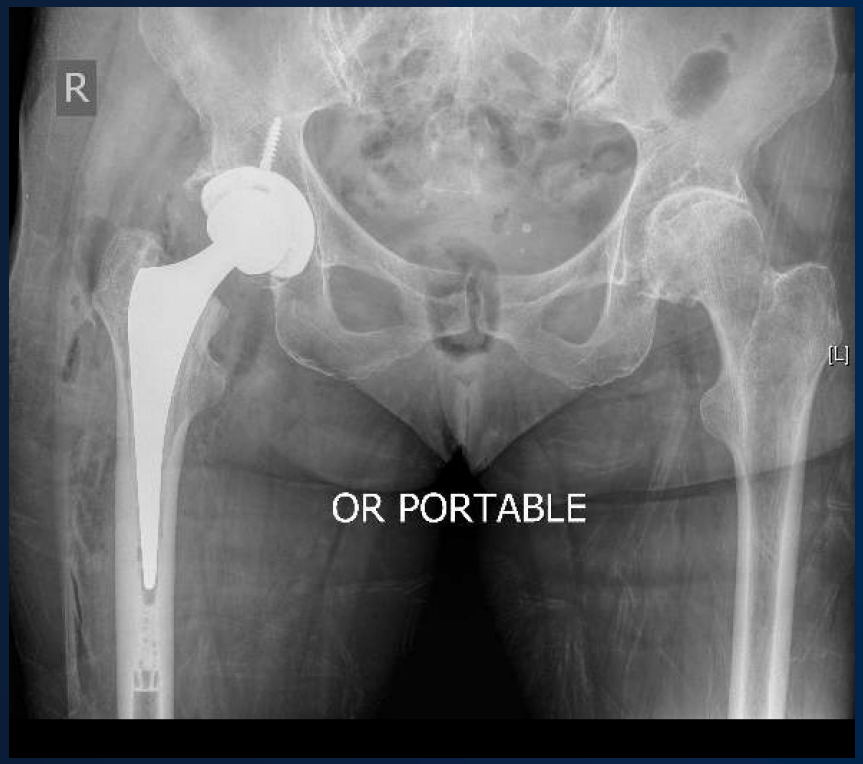
- 73F with right hip pain
- PMH of HTN, atrial fibrillation (not on AC)
- Medications: atenolol, atorvastatin

- 62F with left hip pain
- PMH of osteoporosis, sarcoidosis, GERD
- Medications: Fluticasone Inhaler, Omeprazole

- 73F with right hip pain
- PMH of HTN, atrial fibrillation (not on AC)
- Medications: atenolol, lipitor



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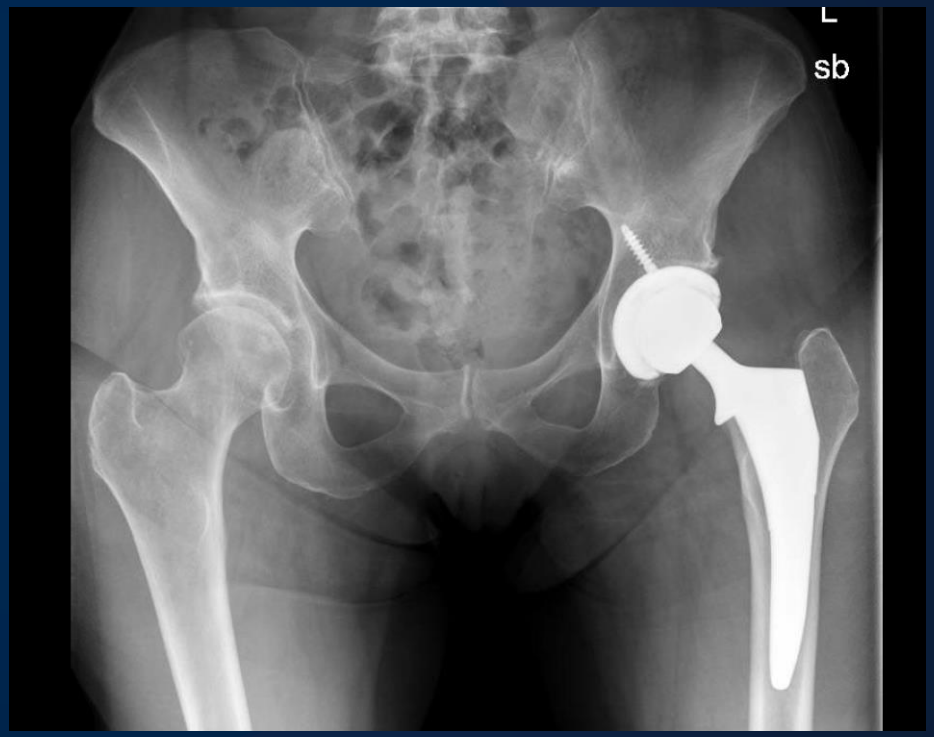

Antibiotics in Arthroplasty

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Incomplete Administration of Intravenous Vancomycin Prophylaxis is Common and Associated With Increased Infectious Complications After Primary Total Hip and Knee Arthroplasty

Oren I. Feder, MD, David Yeroushalmi, BS, Charles C. Lin, MD, Matthew S. Galetta, BA, Moretza Meftah, MD, Claudette M. Lajam, MD, James D. Slover, MD, Ran Schwarzkopf, MD, Joseph A. Bosco III, MD, William B. Macaulay, MD *

Department of Orthopedic Surgery, NYU Langone Health, NYU Langone Orthopedic Hospital, New York, NY

- 1047 primary THA and TKA patients (524 THAs and 523 TKAs) where vancomycin used
- Increase in confirmed prosthetic joint infections (2.2% vs 0.6%, P= .023)
- <30 minutes of vancomycin infusion as an independent risk factor for PJI when controlling for comorbidities (OR 5.22, P= .012)

J Arthroplasty. 2021 Aug;36(8):2951-2956.

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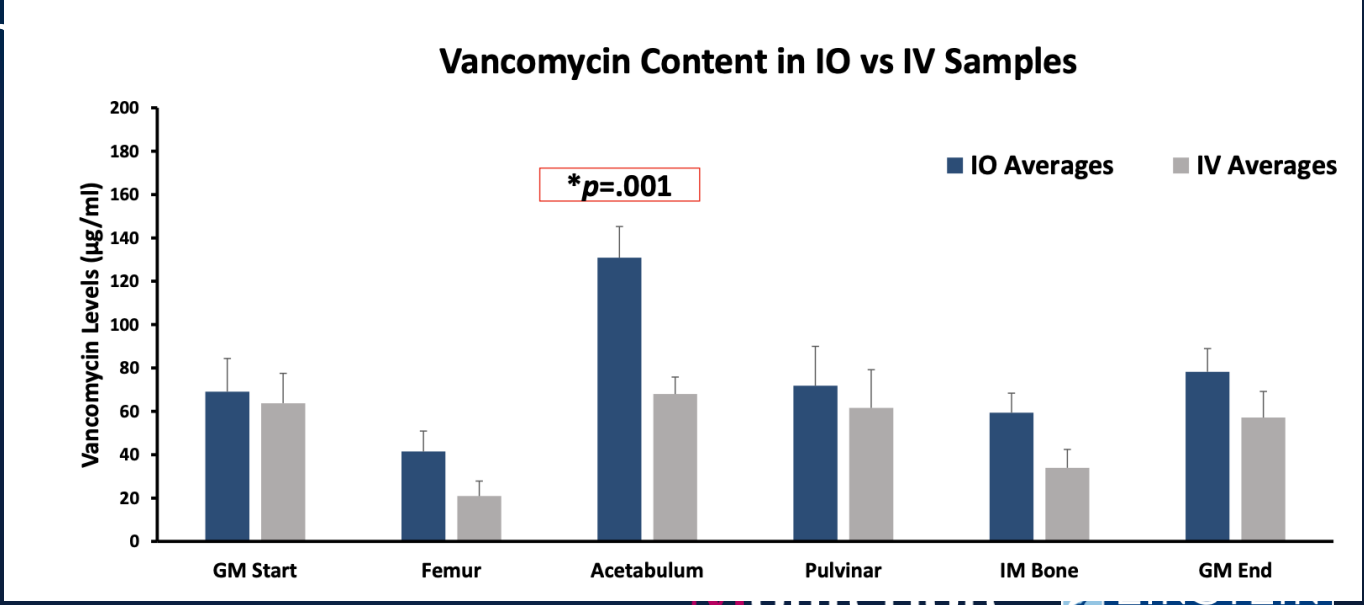
2023 Hip Society Award

Otto Aufranc Award: Intraosseous Vancomycin in Total Hip Arthroplasty — Superior Tissue Concentrations and Improved Efficiency

Katharine D. Harper, MD [a,*], Kwan J. Park, MD [b], Ava A. Brozovich, PhD, MPH [b,c], Thomas C. Sullivan [b], Stefano Serpelloni, MS [c], Francesca Taraballi, PhD [c], Stephen J. Incavo, MD [b], Terry A. Clyburn, MD [b]

- Twenty patients were randomized into 1 of 2 groups: IV vancomycin (15 mg/kg) given routinely, or IO vancomycin (500 mg/100cc of NS) injected into the greater trochanter during incision



J Arthroplasty . 2023 Jul;38(7S):S11-S15.

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AAHKS Award Paper

The AAHKS Clinical Research Award: Extended Oral Antibiotics Prevent Periprosthetic Joint Infection in High-Risk Cases: 3855 Patients With 1-Year Follow-Up

Michael M. Kheir, MD [a], Julian E. Dilley, MD [a], Mary Ziemba-Davis, BA [b], R. Michael Meneghini, MD [a, b, *]

- Risk factors: BMI>35, DM, Smoker, CKD, Autoimmune disease, nasal colonization, history of sepsis, hepatitis C, recurrent UTI, stasis dermatitis
- Cefadroxil 500 BID, Bactrim DS BID, Clindamycin 300 TID x 7 days
- Lower PJI rate with extended antibiotic prophylaxis (0.89% vs 2.64%, respectively; P < .001).

J Arthroplasty. 2021 Jul;36(7S):S18-S25.

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Antibiotics in Arthroplasty

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Arthroplasty in the Obese Patient

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Greater risks of complications, infections, and revisions in the obese versus non-obese total hip arthroplasty population of 2,190,824 patients: a meta-analysis and systematic review

J.R. Onggo † *, J.D. Onggo †, R. de Steiger ‡, R. Hau † §

† *Department of Orthopaedic Surgery, Box Hill Hospital, 8 Arnold Street, Box Hill, VIC 3128, Melbourne, Australia*
‡ *Department of Surgery Epworth Healthcare, University of Melbourne, Parkville, VIC 3010, Melbourne, Australia*
§ *Department of Orthopaedic Surgery, Epworth Eastern Hospital, 1 Arnold Street, Box Hill, VIC 3128, Melbourne, Australia*

Obese patients had a higher risk of:

- **All complications**
  - (OR= 1.53, 95%CI: 1.30-1.80, P < 0.001)
- **Deep infections**
  - (OR =2.71, 95%CI: 2.08-3.53, P < 0.001)
- **Superficial infections**
  - (OR = 1.99, 95%CI: 1.55-2.55, P < 0.001)
- **Dislocations**
  - (OR = 1.72, 95%CI: 1.66-1.79, P < 0.001)
- **Reoperations**
  - (OR = 1.61, 95%CI: 1.40-1.85, P < 0.001)
- **Revisions**
  - (OR = 1.44, 95%CI: 1.32-1.57, P < 0.001)
- **Readmissions**
  - (OR = 1.37, 95%CI: 1.15-1.63, P < 0.001)

- When sub-group analysis of morbidly obese (BMI>40 kg/m2) patients was performed, the risks of all these parameters were even greater

Osteoarthritis Cartilage. 2020 Jan;28(1):31-44.

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Primary Arthroplasty

Patient Characteristics Influence Revision Rate of Total Hip Arthroplasty: American Society of Anesthesiologists Score and Body Mass Index Were the Strongest Predictors for Short-Term Revision After Primary Total Hip Arthroplasty

Rinne M. Peters, MD [a, b, *], Liza N. van Steenbergen, PhD [c], Roy E. Stewart, PhD [b], Martin Stevens, PhD [b], Paul C. Rijk, MD, PhD [a], Sjoerd K. Bulstra, MD, PhD [b], Wierd P. Zijlstra, MD, PhD [a]

- Primary THAs (n = 218,214) in patients with osteoarthritis in the Netherlands between 2007 and 2018 Dutch Arthroplasty Register
- Higher BMI (30-40 and >40) (OR 1.4, 95% CI 1.2-1.5 and OR 2.0, 95% CI 1.4-1.7) associated with increased risk for revision 1 year after THA

J Arthroplasty. 2020 Jan;35(1):188-192.

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Primary Hip

What Is the Impact of Body Mass Index Cutoffs on Total Hip Arthroplasty Complications?

David E. DeMik, MD, PharmD [a, *], James G. Kohler, MD [a], Christopher N. Carender, MD [a], Natalie A. Glass, PhD [a], Timothy S. Brown, MD [b], Nicholas A. Bedard, MD [c]

le 3
urrence of Complications Based on BMI Cutoffs.

MI Cutoff (kg/m^2)	Surgery Allowed		Surgery Denied		Complications Avoided (%)	Complication-Free Surgeries Allowed (%)	Patients Denied Complication-Free Surgery per Each Complication Avoided (n)
	Complication- (n, %)	Complication+ (n, %)	Complication- (n, %)	Complication+ (n, %)			
0 (n = 102,438)	98,323 (96.0)	4115 (4.0)	84,859 (94.3)	5097 (5.7)	55.3%	51.1%	17
5 (n = 152,546)	145,967 (95.7)	6579 (4.3)	37,215 (93.4)	2633 (6.6)	28.6%	75.9%	15
0 (n = 178,424)	170,296 (95.4)	8128 (4.6)	12,886 (92.2)	1084 (7.8)	11.8%	88.5%	12
5 (188,338)	179,508 (95.3)	8830 (4.7)	3674 (90.6)	382 (9.4)	4.1%	93.3%	10
0 (191,217)	182,123 ((95.2)	9094 (4.8)	1059 (90.0)	118 (10.0)	1.3%	94.7%	9

- Lower BMI cutoffs for THA can result in fewer complications although they will consequentially limit access to complication-free THA.

J Arthroplasty. 2022 Jul;37(7):1320-1325.

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Arthroplasty in the Obese Patient

- 47M with bilateral hip and knee pain
- PMH of gastric bypass
- Weight 313lbs Height 5’7”
- BMI 49
- Non smoker

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Arthroplasty in the Stiff Spine

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THE BONE & JOINT JOURNAL EST. 1948

■ THE HIP SOCIETY

2021 Otto Aufranc Award: A simple Hip-Spine Classification for total hip arthroplasty

VALIDATION AND A LARGE MULTICENTRE SERIES

THE HIP SOCIETY FOUNDED IN 1968

J. M. Vigdorchik,
A. K. Sharma,
A. J. Buckland,
A. M. Elbuluk,
N. Eftekhary,
D. J. Mayman,
K. M. Carroll,
S. A. Jerabek

From Hospital for Special Surgery, New York, New York, USA

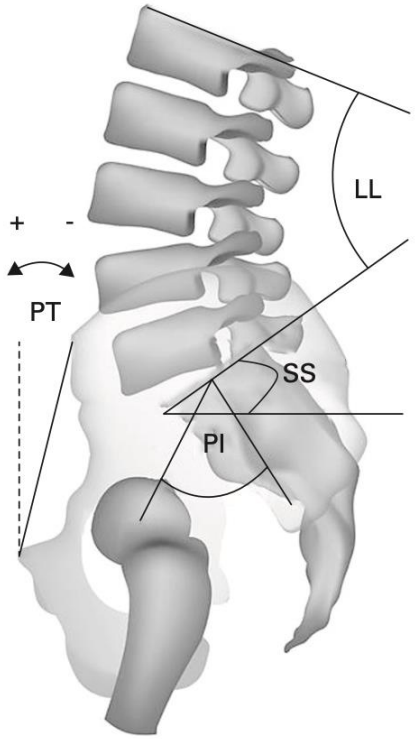

Fig. 2

Spinopelvic parameters measured in the preoperative evaluation.

The Hip-Spine Classification system guides the use of DM components in patients with spinopelvic pathology in order to reduce the risk of dislocation in these high-risk patients.

Bone Joint J 2021;103-B(7 Supple B):17–24.

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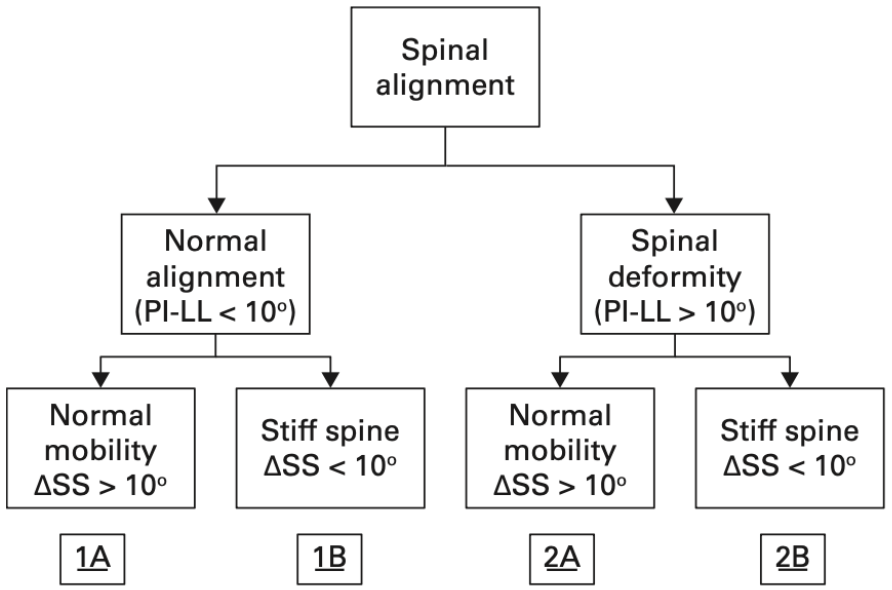

Fig. 1

The Hip-Spine Classification system guides the use of DM components in patients with spinopelvic pathology in order to reduce the risk of dislocation in these high-risk patients.

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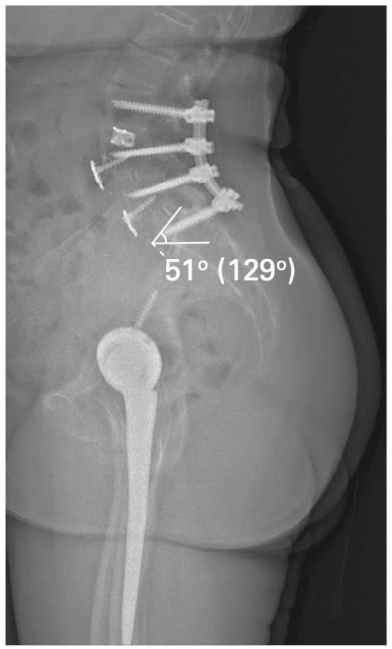

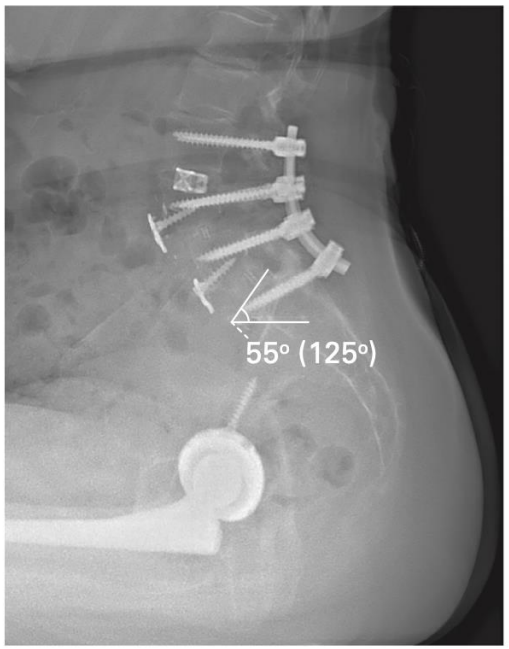

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Bone Joint J 2021;103-B(7 Supple B):17–24.

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VALIDATION AND A LARGE MULTICENTRE SERIES

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J. M. Vigdorchik, A. K. Sharma, A. J. Buckland, A. M. Elbuluk, N. Eftekhary, D. J. Mayman, K. M. Carroll, S. A. Jerabek

From Hospital for Special Surgery, New York, New York, USA

Table I. Four categories of the Hip-Spine Classification in total hip arthroplasty.

Group	Classification	Pathology	Patients, n (%)
1A	Normal spinal alignment (PI-LL < 10°) and normal spinal mobility (> 10˚ change in sacral slope from stand to sit)	Normal anatomy and mobility	987 (47)
1B	Normal spinal alignment and stiff spine (< 10° change in sacral slope from stand to sit)	"Stuck standing" - stiff spine, needs more inclination and anteversion	232 (11)
2A	Flatback deformity (PI-LL ≥ 10°) and normal mobility	Anterior pelvic tilt: from hip flexion contracture, will resolve postoperatively Posterior pelvic tilt: spinal deformity will cause more functional component anteversion	715 (34)
2B	Flatback deformity and stiff spine	"Stuck sitting" - spinal deformity and stiff spine will cause more functional component anteversion	147 (7)

PI-LL, pelvic incidence (PI) minus lumbar lordosis (LL).

987 group 1A
232 group 1B
715 group 2A
147 group 2B

Bone Joint J 2021;103-B(7 Supple B):17–24.

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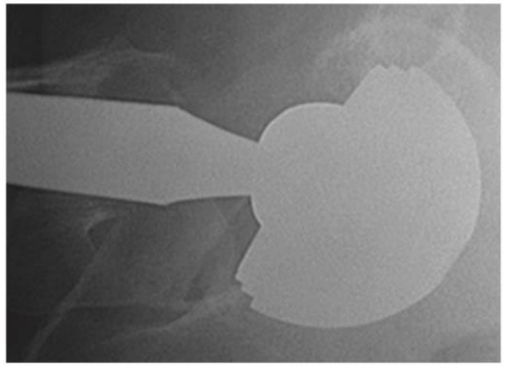
THE HIP SOCIETY

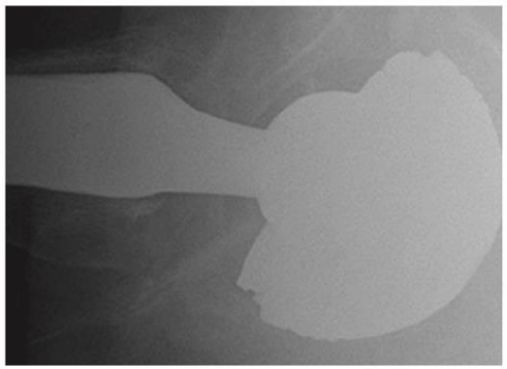
2020 Otto Aufranc Award: Malseating of modular dual mobility liners

INCIDENCE AND IMPLICATIONS

J. Romero,
A. Wach,
S. Silberberg,
Y-F. Chiu,
G. Westrich,
T. M. Wright,
D. E. Padgett

From Hospital for Special Surgery, New York, New York, USA





- 32 of 551 MDM liners (5.8%) were malseated
- The incidence was significantly higher in low-volume MDM surgeons than high-volume MDM surgeons ($p < 0.001$).
- The onset of fretting and increased fretting current throughout loading cycles suggests susceptibility to corrosion when this occurs.

Bone Joint J 2020;102-B(7 Supple B):20–26.

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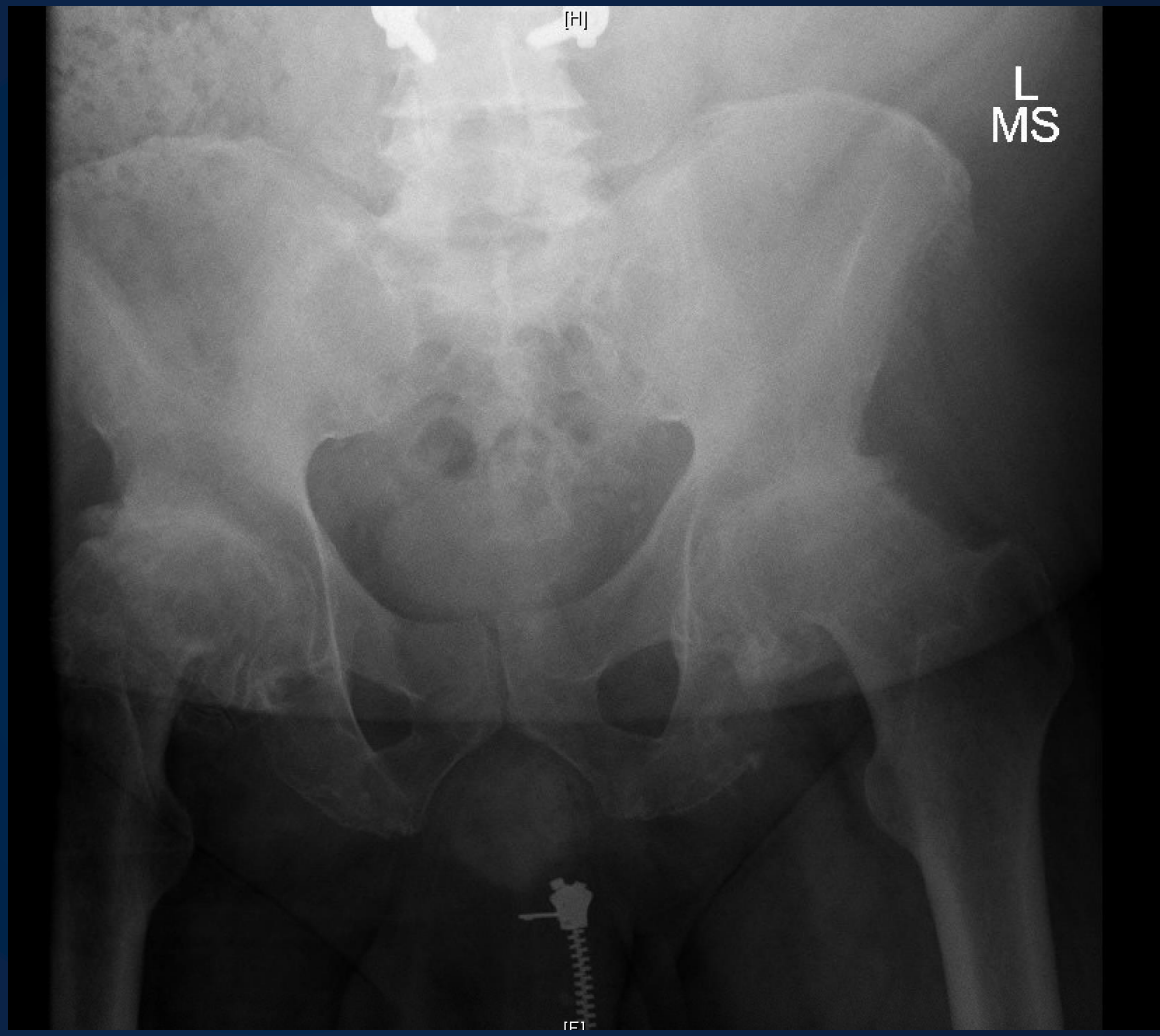
Arthroplasty in the Stiff Spine

- 66M with bilateral hip pain
- PMH of L3-4 PSF
- Weight 288lbs Height 5’10”
- BMI 41
- Non smoker



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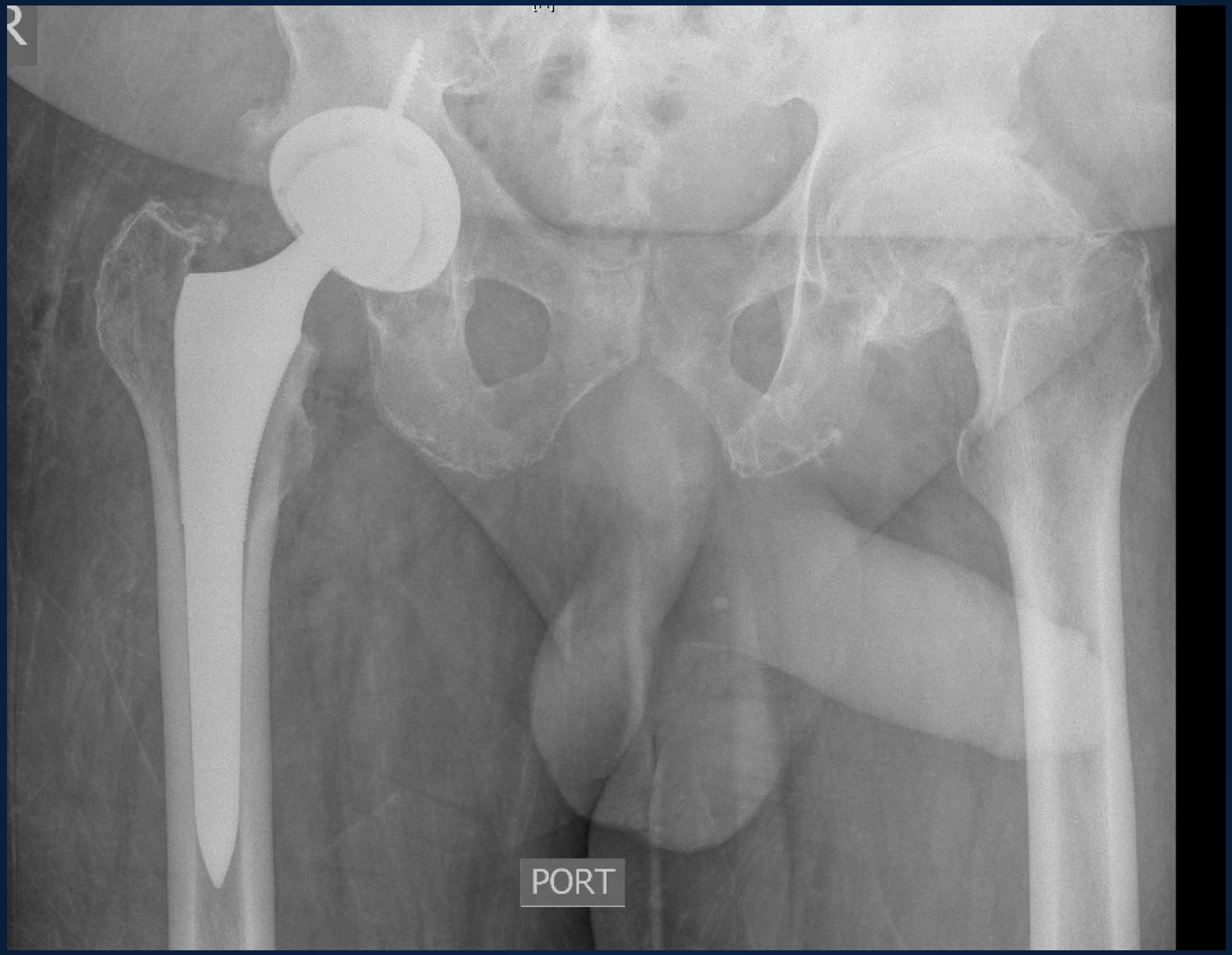

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Journal Club Guided Primary THA Cases: Latest Evidence

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