



Difficult Primary TKA

“After Septic Arthritis”

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Disclosures

- **Consulting with ConMed**
- **Consulting with Smith & Nephew**
- **Vice-general Secretary of ESSKA**
- **Editorial Committee of *Arthroscopy***

No conflict of interest

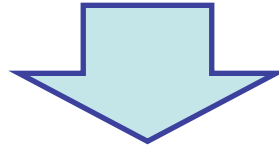
TKA AFTER SEPTIC ARTHRITIS

- **Incidence**
- **Diagnostics**
- **Preoperative antibiotic prophylaxis**
- **ALBC**
- **Technical tips**
- **Two-stage procedure after SA**



INCIDENCE

PJI in previous septic arthritis → 8-10%



SA is a major risk factor for PJI

- **Chronic osteomyelitis?**
- **Dormant bacteria synovial / cartilage?**



DIAGNOSIS

**Challenging: *keep always in mind
low grade & chronic infection***

A photograph of two ostriches standing in a field under a blue sky. A diagonal yellow banner with a red border is overlaid on the image, containing the text 'The ostrich phenomenon'.

The ostrich phenomenon



DIAGNOSIS

LABORATORY

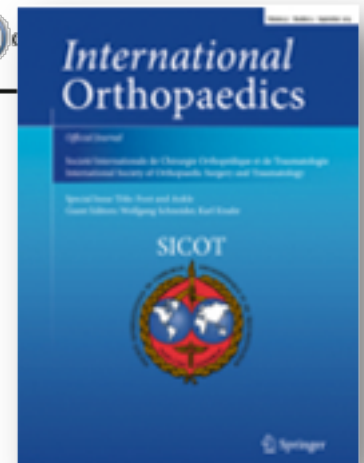
CRP / VSG → follow-up rather than diagnostic
(misdiagnoses 33% PJI)

International Orthopaedics (SICOT)
DOI 10.1007/s00264-017-3430-5

ORIGINAL PAPER

C-reactive protein may misdiagnose prosthetic joint infections, particularly chronic and low-grade infections

Daniel Pérez-Prieto^{1,2} · María E. Portillo³ · Lluís Puig-Verdié¹ · Albert Alier¹ · Santos Martínez¹ · Lluís Sorli⁴ · Juan P. Horcajada⁴ · Joan C. Monllau^{1,2}



DIAGNOSIS

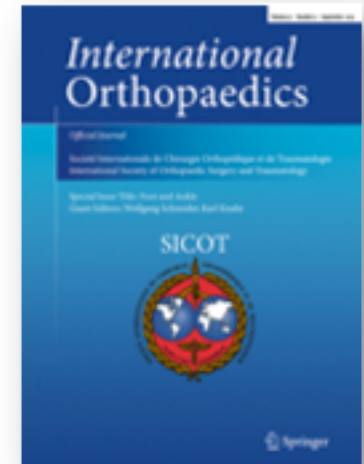
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According to AAOS & MSIS → **23%** of the patients with PJI would never have been identified.

Blood inflammatory markers (CRP level and ESR) may not be accurate as diagnostic tools in PJI, particularly to identify low-grade and chronic PJI.



LABORATORY

Knee aspiration

- Leukocyte count
(and differential)
- Culture
(in blood culture bottles)



DIAGNOSIS

Imaging

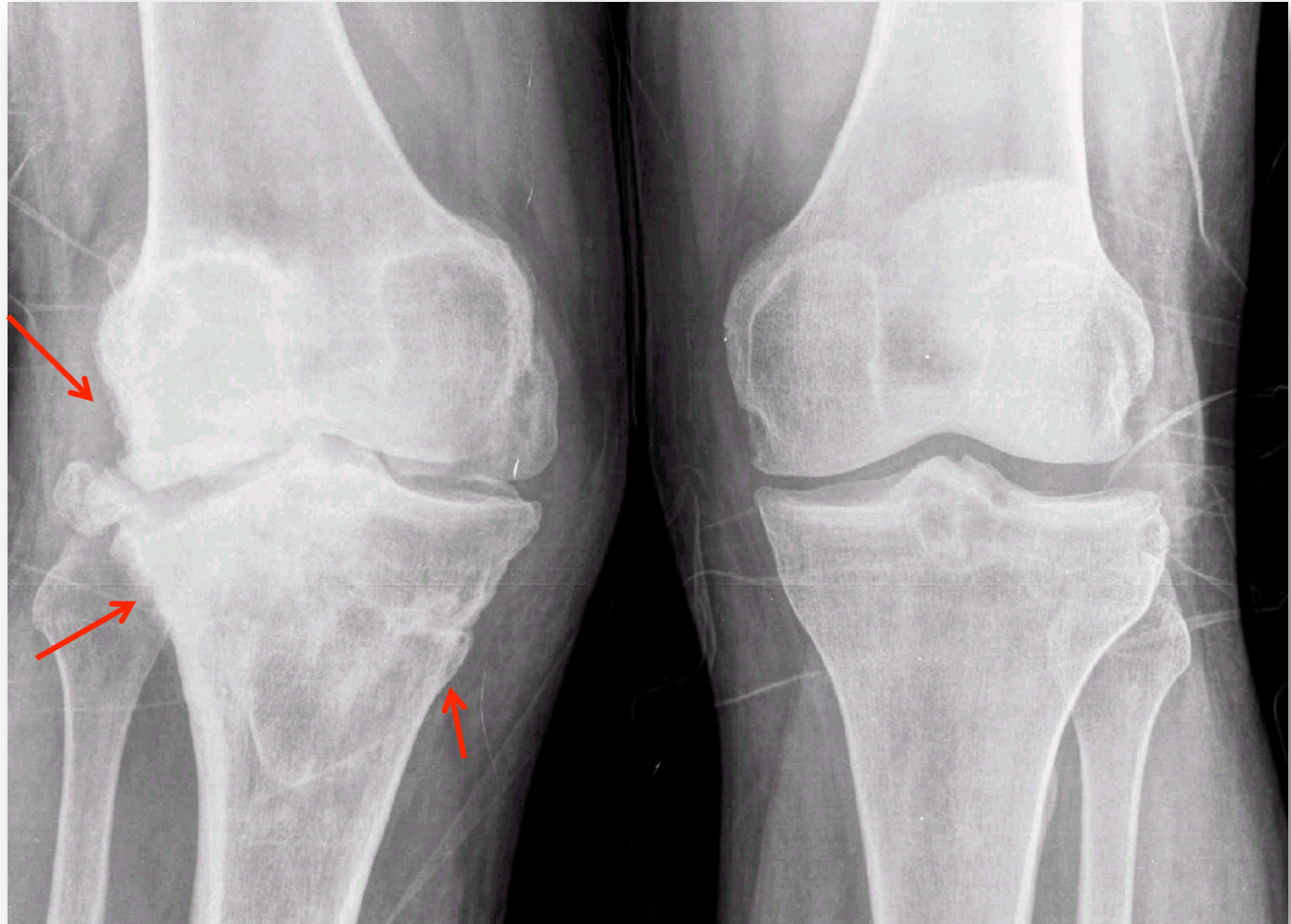
X-ray



DIAGNOSIS

Imaging

X-ray



DIAGNOSIS

Imaging

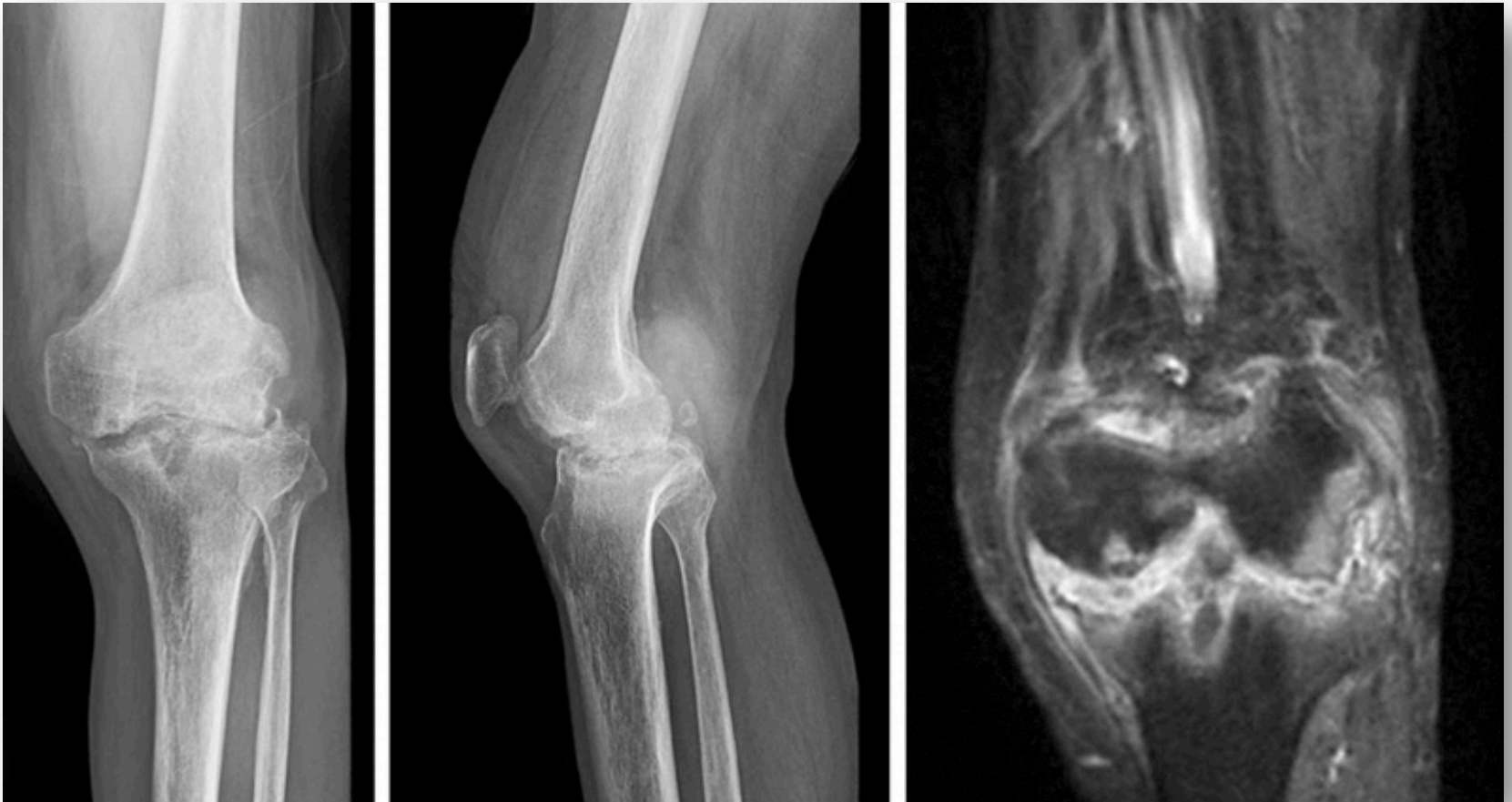
MRI



DIAGNOSIS

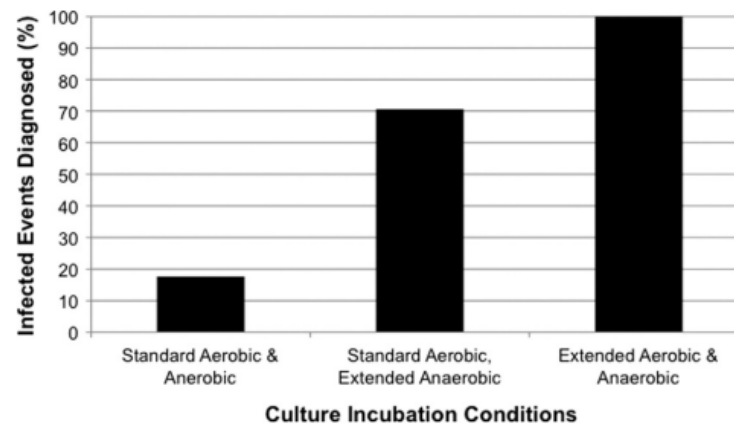
Imaging

X-ray / MRI correlation



Intraoperative cultures

- 5 samples → better **soft tissue** than bone
- Prolonged incubation → **14** days



.- *Butler-Wu SM et al.* Optimization of periprosthetic culture for diagnosis of *Propionibacterium acnes* prosthetic joint infection. *J Clin Microbiol.* 2011

.- *Portillo ME, Salvadó M, Alier A et al.* Advantages of sonication fluid culture for the diagnosis of prosthetic joint infection. *J Infect.* 2014



DIAGNOSTICS

*Do not look to the other side....
(20% culture negative)*



ATB PROPHYLAXIS



ELSEVIER

Contents lists available at ScienceDirect

Diagnostic Microbiology and Infectious Disease

journal homepage: www.elsevier.com/locate/diagmicrobio



Preoperative antibiotic prophylaxis in prosthetic joint infections: Not a concern for intraoperative cultures

Daniel Pérez-Prieto ^{a,*}, María E Portillo ^b, Lluís Puig-Verdié ^a, Albert Alier ^a, Carlo Gamba ^a, Pau Guirro ^a, Santos Martínez-Díaz ^a, Juan P Horcajada ^c, Andrej Trampuz ^d, Joan C Monllau ^a

^a Orthopedic Department, Hospital del Mar – Universitat Autònoma de Barcelona, Barcelona, Spain

^b Clinical Microbiology, Complejo Hospitalario de Navarra, Pamplona, Spain

^c Infectious Diseases Department, Hospital del Mar-IMIM, Universitat Pompeu Fabra, Barcelona, Spain

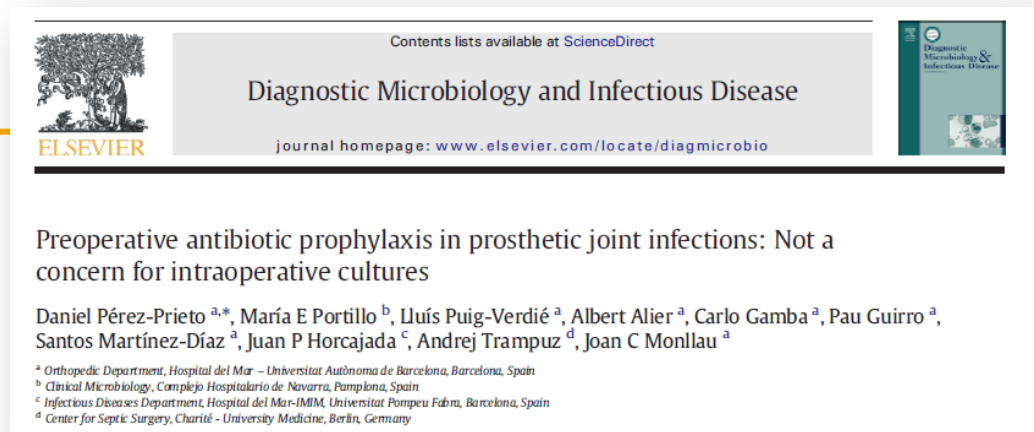
^d Center for Septic Surgery, Charité – University Medicine, Berlin, Germany

Patients were prospectively randomized to receive or not AB prophylaxis prior to Revision surgery.

PREOPERATIVE AB PROPHYLAXIS DOES NOT AFFECT INTRAOPERATIVE CULTURES



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Table 2

Number of positive cultures of the periprosthetic tissue culture, sonication fluid culture,

SC

AB prophylaxis should not
be withdrawn
even when PJI is suspected

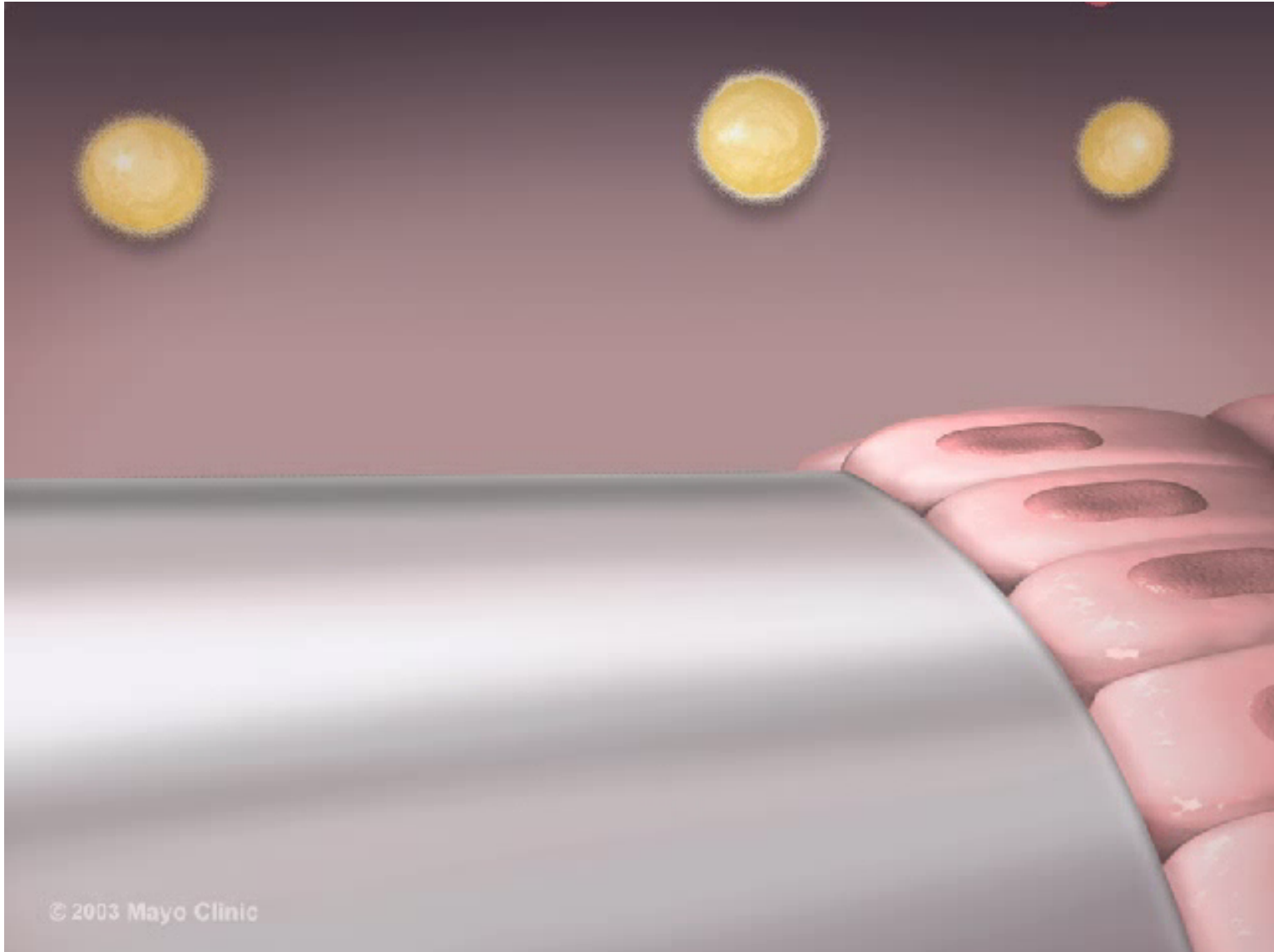
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.- **Tetreault MW et al.** Should prophylactic antibiotics be withheld before revision surgery to obtain appropriate cultures? *CORR*. 2014

.- **Wouthuyzen-Bakker M et al.** Withholding Preoperative Antibiotic Prophylaxis in Knee Prosthesis Revision: A Retrospective Analysis on Culture Results and Risk of Infection. *J Arthroplasty*. 2017



ATB PROPHYLAXIS



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ATB PROPHYLAXIS

DUAL ANTIBIOTIC PROPHYLAXIS

has been proven to reduce PJI

**in high risk patients*

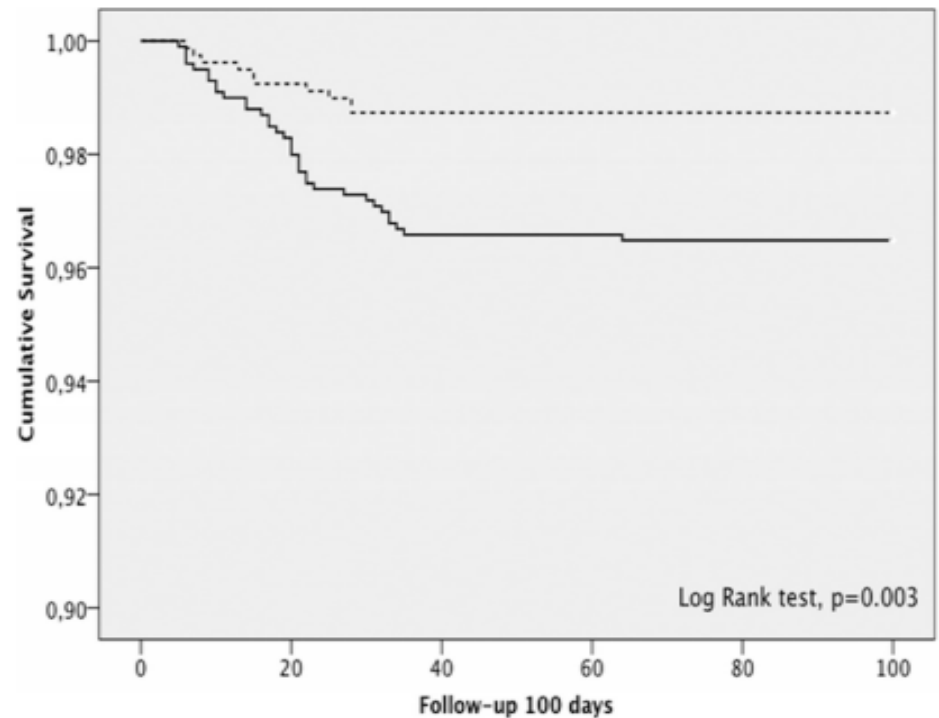


FIG 1 Cumulative probability of being free of PJI within the first 100 days of follow-up for each antibiotic prophylaxis group. —, cefuroxime prophylaxis; ---, cefuroxime and teicoplanin prophylaxis.





A. P. Sprowson[†],
C. Jensen,
S. Chambers,
N. R. Parsons,
N. M. Aradhyula,
I. Carluke,
D. Inman,
M. R. Reed

■ TRAUMA

The use of high-dose dual-impregnated antibiotic-laden cement with hemiarthroplasty for the treatment of a fracture of the hip

THE FRACTURED HIP INFECTION TRIAL

Results

The rate of deep SSI was 3.5% in the control group and 1.1% in the intervention group ($p = 0.041$; logistic regression adjusting for age and gender). The overall rate of non-infective surgical complications did not differ between the two groups (unadjusted chi-squared test; $p > 0.999$).

Conclusion

The use of high dose dual-antibiotic impregnated cement in these patients significantly reduces the rate of SSI compared with standard low dose single antibiotic loaded bone cement.

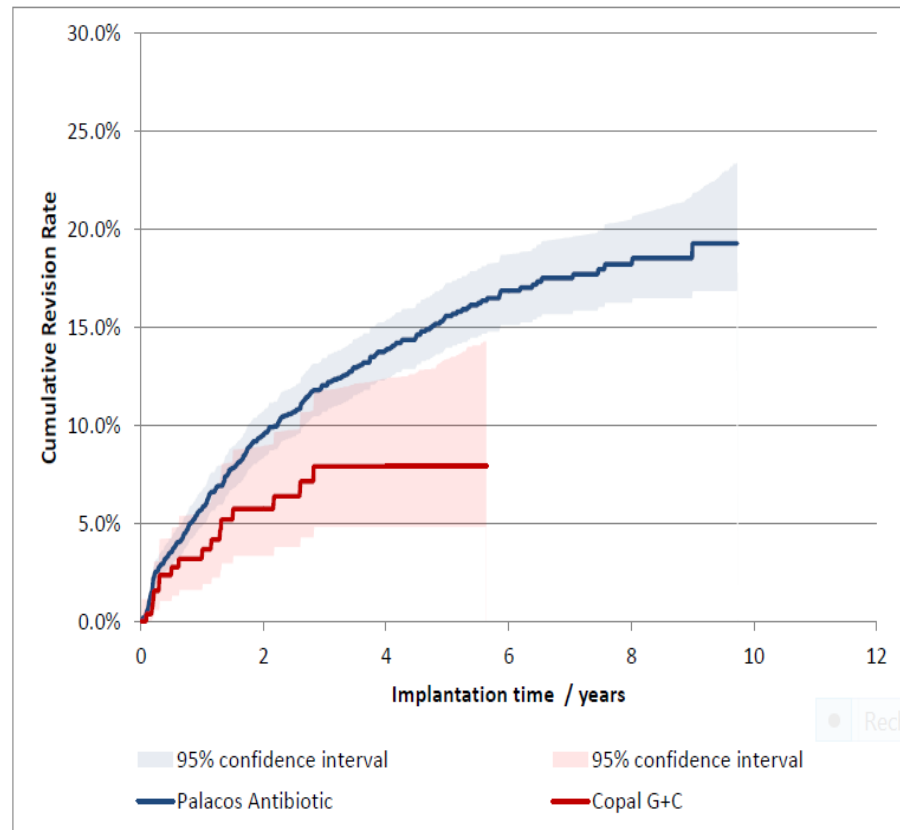


Comparison re-revision risk in total knee revision surgery for Copal (GENTA + CLINDA) vs Palacos (GENTA)

Bespoke Report on: **Copal G+C vs. Palacos Antibiotic**



Endpoint: Revision for any reason



Bespoke Implant Report for:

Heraeus Medical

Copal G+C vs. Palacos Antibiotic

Comprising REVISION knees implanted up to:
NJR Database extract:

05 September 2016
04 November 2016

COPAL G+C vs PALACOS G for implant **re-fixation** after **septic** knee procedures (1-stage or 2-stage)

266 (COPAL G+C) vs **2493** (PALACOS G) patients analysed

Hazard ratio for revision is (after age- and risk adjustment)

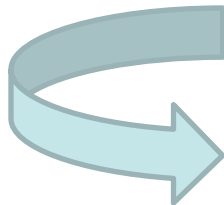
0.53 for COPAL G+C $p = 0.013$



ANTIBIOTIC LOADED BONE CEMENT (ALBC)

→ *effective for reducing PJI in:*

- Institutionalised patients
- Previous MARSA colonisation
- Revision cases
- Comorbidities



is it so in previous SA???



TECHNICAL TIPS

IS MANDATORY

- Debride necrotic / poorly vascularized tissue
- Complete sinovectomy
- Remove sequestrum / involucrum (seen in MRI/ Xray)

“Less than 1hr débridement is not a good débridement”

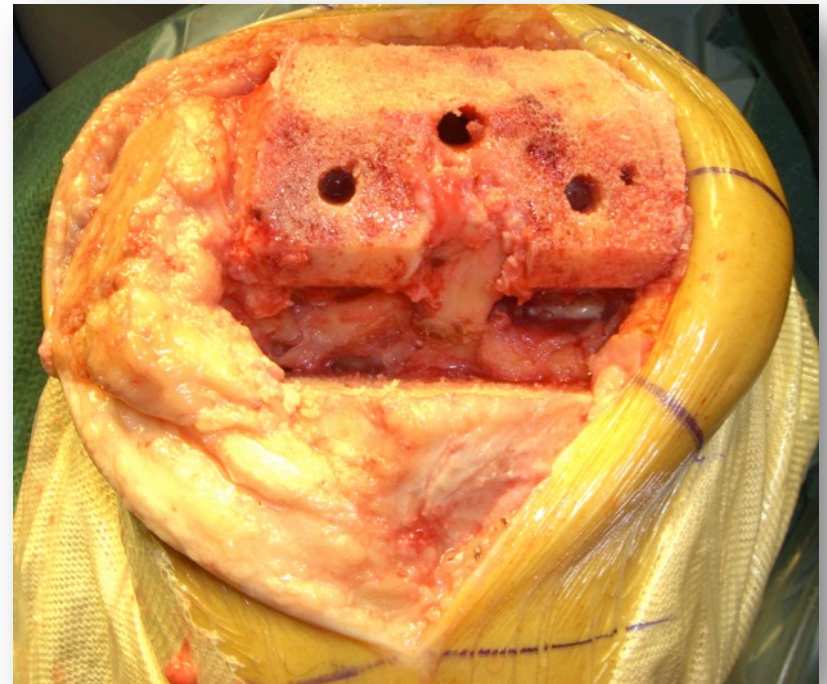
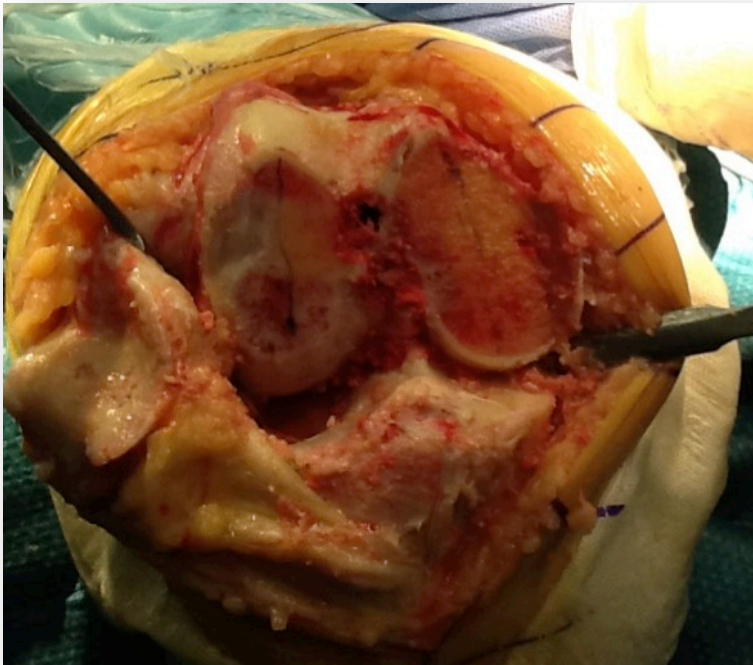
Olivier Borens



TECHNICAL TIPS

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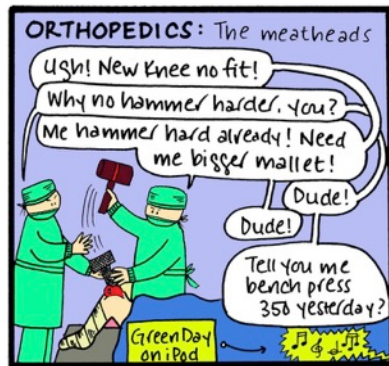


TECHNICAL TIPS

STIFF KNEE AND REDUCED ROM

→ occur in **30%**

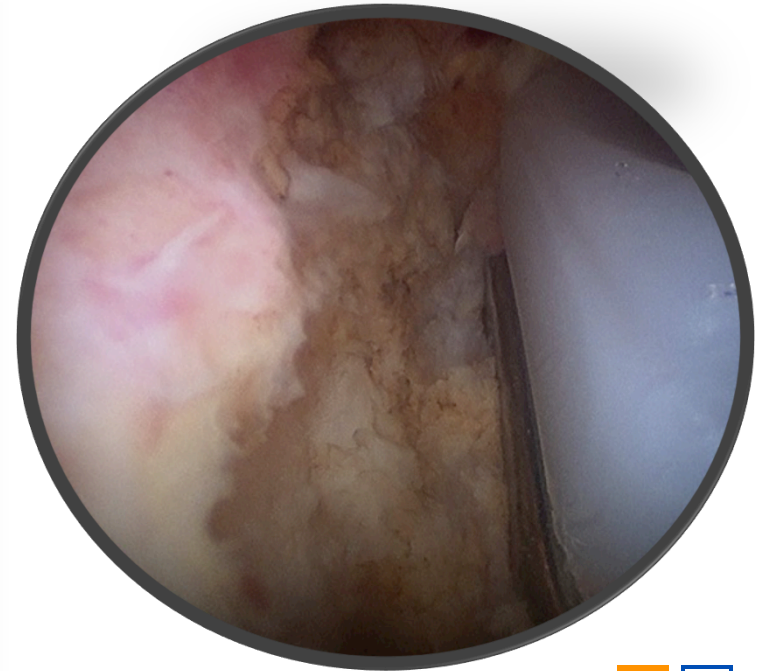
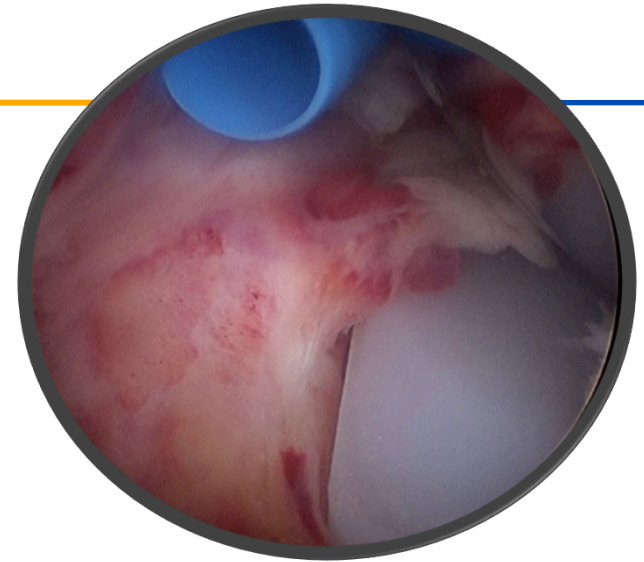
- “Oversize cuts”
- Avoid a constrained knee



TECHNICAL TIPS

Arthroscopic Arthrolysis *Surgical Technique*

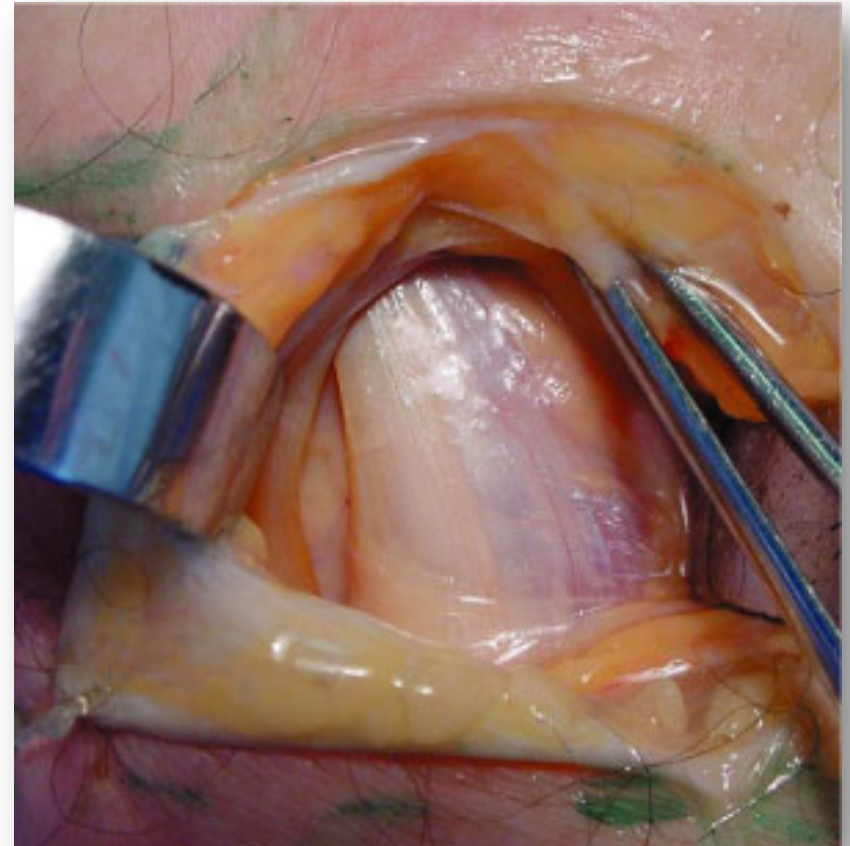
- Release of posterior capsule
 - Need for posterior portals



TECHNICAL TIPS

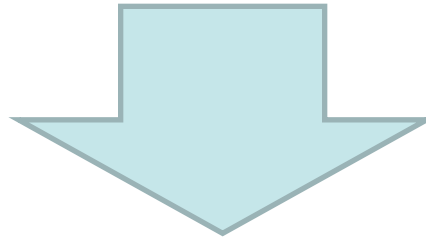
Open Arthrolysis *Surgical Technique*

- **Release of posterior capsule**
 - Need for posterior approach



TWO-STAGE PROCEDURE AFTER SA

**Gächter 4 SA stages or previous
Osteoarthritic knee**



**Direct TKA implantation after a short
interval with ALBC spacer**

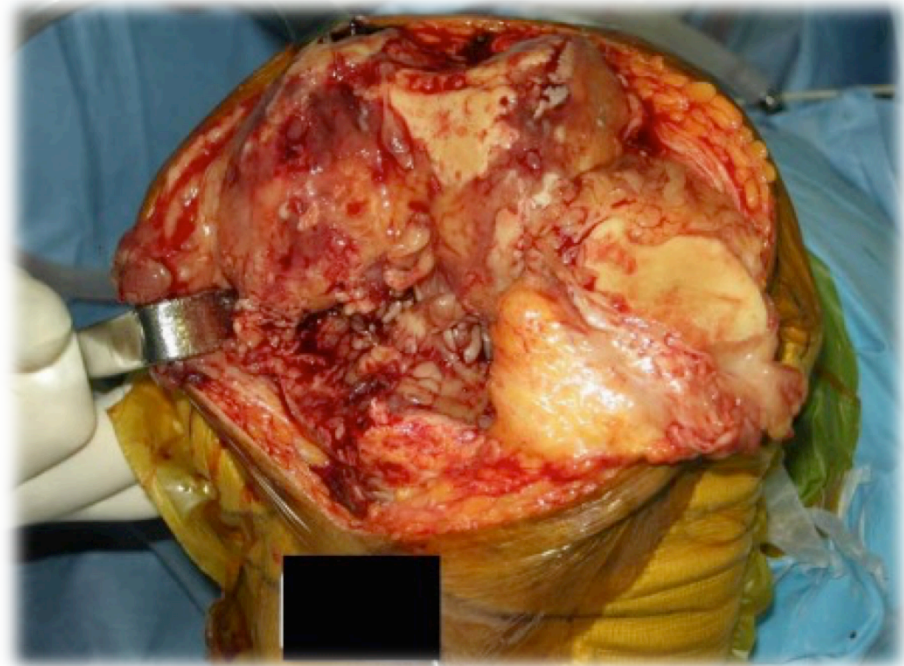
.- *Shaikh AA et al.* Two-stage approach to primary TKA in infected arthritic knees using intraoperatively molded articulating cement spacers. *CORR* 2014

.- *Hochreiter B et al.* Short-interval two-stage approach to primary total knee arthroplasty for acutely septicosteoarthritic knees. *KSSTA* 2016



TWO-STAGE PROCEDURE AFTER SA

**1st: thorough
debridement**



**2nd: provisional
bone cuts**



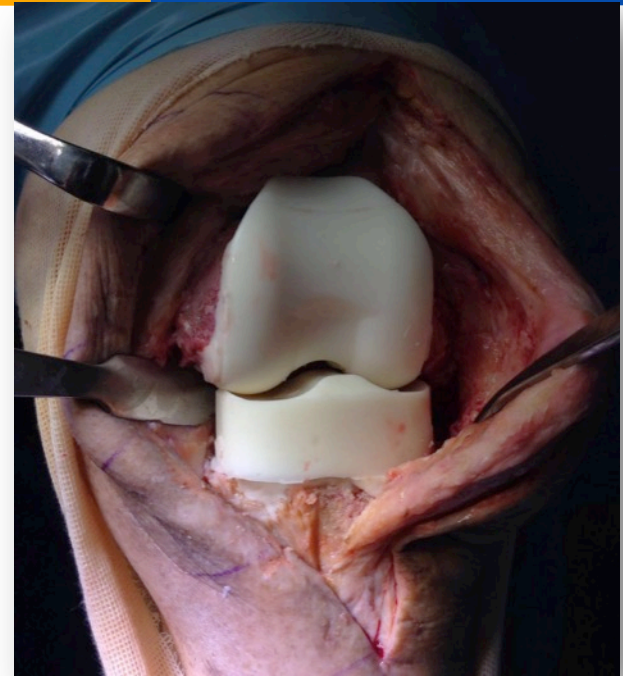
TWO-STAGE PROCEDURE AFTER SA

ALBC spacer

(4g vanco + 1g genta per
40g of cement)

Empiric / targeted
antibiotic treatment

After 14 days →
TKA implantation + ATB
for a total period of 6 wks



TWO-STAGE PROCEDURE AFTER SA

ALBC spacer

(4g vanco + 1g genta per
40g of cement)

Empiric/ targeted
antibiotic treatment

After 14 days → TKA
implantation + ATB for a
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>10% antibiotics
Not vacuum mix
(bad quality cement)

Vanco / Genta
Clinda / Genta

**Tailored if known
microorganism*



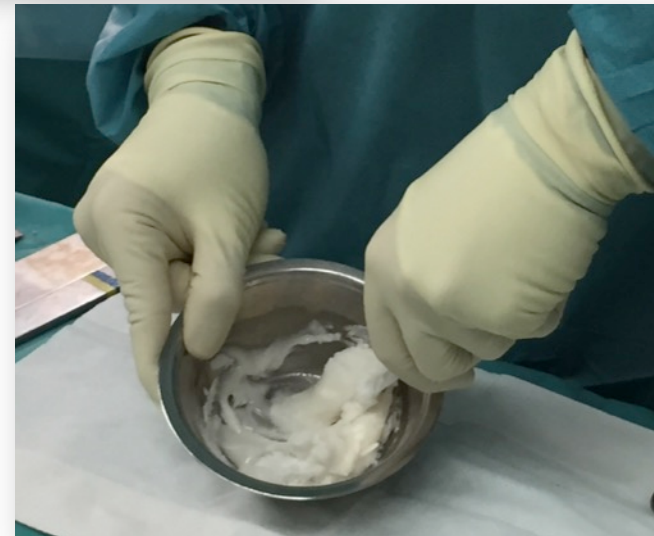
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TWO-STAGE PROCEDURE AFTER SA

ALBC spacer

(4g vanco + 1g genta per
40g of cement)

Empiric/ targeted
antibiotic treatment

After 14 days → TKA
implantation + ATB for a
total period of 6 weeks

the total mass of AB
eluted ↑ with
hand-mixed cement

**release of AB was mainly
a surface phenomenon*



TWO-STAGE PROCEDURE AFTER SA



■ ARTHROPLASTY

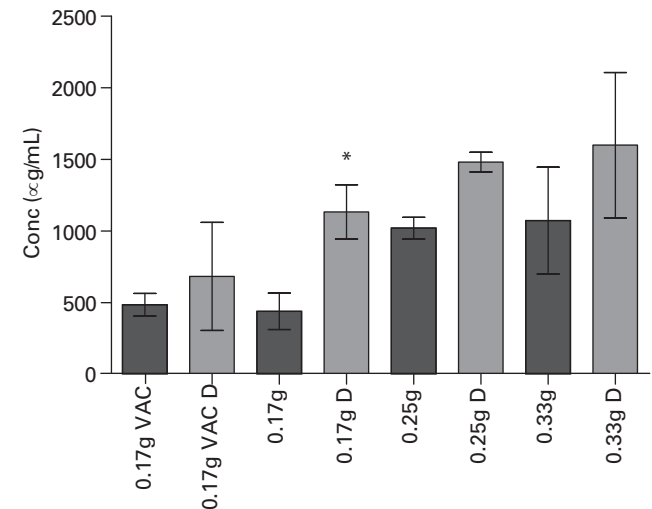
The cement spacer with multiple indentations

INCREASING ANTIBIOTIC ELUTION USING A CEMENT SPACER 'TEABAG'

S. Salih,
A. Paskins,
T. Nichol,
T. Smith,
A. Hamer

When preparing AB spacers

- Indenting the spacer (with a MacDonald dissector)
- To increase the elution of AB



TWO-STAGE PROCEDURE AFTER SA

ALBC spacer

(4g vanco + 1g genta per
40g of cement)

Empiric/ targeted antibiotic treatment

After 14 days → TKA
implantation + ATB for a
total period of 6 weeks

**Do not use
rifampin / ciprofloxacin
in the interim**



TWO-STAGE PROCEDURE AFTER SA

ALBC spacer

(4g vanco + 1g genta per
40g of cement)

Empiric/ targeted
antibiotic treatment

**After 14 days → TKA
implantation + ATB for a
total period of 6 weeks**

TKA using ALBC

Introduce antibiofilm
agents (i. e. rifa / cipro)
once wounds are dry



TWO-STAGE PROCEDURE AFTER SA

16 patients (3 years f-up)

- No PJI was seen
- Satisfied
- ROM → mean flexion 100°
- KSS → mean 85



HIGHLIGHTS

- SA → risk factor for PJI (10%)
- Consider dual antibiotic prophylaxis
- Dual ALBC can be helpful to reduce PJI risk
- Thorough debridement
- Avoid constrained implants TKA



TAKE HOME MESSAGE

If suspecting a previous SA

DO NOT FORGET TO BE PRO-ACTIVE !!



See You in Glasgow

18th ESSKA Congress 9 – 12 May 2018

Glasgow, Scotland, UK



**PEOPLE
MAKE
GLASGOW**

www.esska-congress.org
www.esska.org
www.people make glasgow.com

1st Announcement



Thank you

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