



Treatment of prosthetic knee infections: a retrospective evaluation of a five and a half year experience

Katrin Kösters

Laboratory Medicine, Klinikum Krefeld, Germany

Nijmegen University Centre for Infectious Diseases, Nijmegen, The Netherlands

Aims of the study



- **evaluate treatment outcome**
- **identify factors associated with treatment failure**

What did we do?



- **Retrospective analysis of all patients treated for a prosthetic knee infection in a Dutch University Hospital**
- **Diagnosed between January 2000 – July 2005**

Diagnostic criteria for prosthetic knee infection



- **presence of a sinus tract**
- **signs of acute inflammation on histopathology**
- **purulence of synovial fluid or implant site**
- **same microorganism in ≥ 2 cultures**



Zimmerli et al. NEJM 2004;351:1645-54

Marculescu et al. CID 2006;42:471-8

Definition: successful treatment, follow-up



- **Successful treatment**
 - ✓ no clinical, laboratory or radiological findings suggestive of PKI necessitating further therapy
- **Follow-up**
 - ✓ from surgery until April 2006 or treatment failure

Study population II



✓ Clinical characteristics

- **fever > 38°C: 5 patients (33%)**
- **CRP > 5 mg/l: 7 (12) patients (58%)**
- **pain: 12 patients (80%)**
- **decreased function: 13 patients (87%)**

✓ Classification

- **Early (≤ 3 mth postop): 5 cases**
- **Delayed (3-24 mth): 3 cases**
- **Late (> 2 years): 7 cases**

Zimmerli et al. NEJM 2004;351(16):1645-54

Microbiology



- **monomicrobial:** **11 cases**
 - ✓ **coag-neg staph** **5 isolates**
 - ✓ **S. aureus** **2 isolates**
 - ✓ **haemolytic strept** **2 isolates**
 - ✓ **E. cloacae** **1 isolate**
 - ✓ **corynebacteria** **1 isolate**

- **polymicrobial:** **2 cases**
 - ✓ **CNS + propionibacteria**
 - ✓ **CNS + Enterobacteriaceae**

- **no growth:** **2 cases**

Surgical treatment



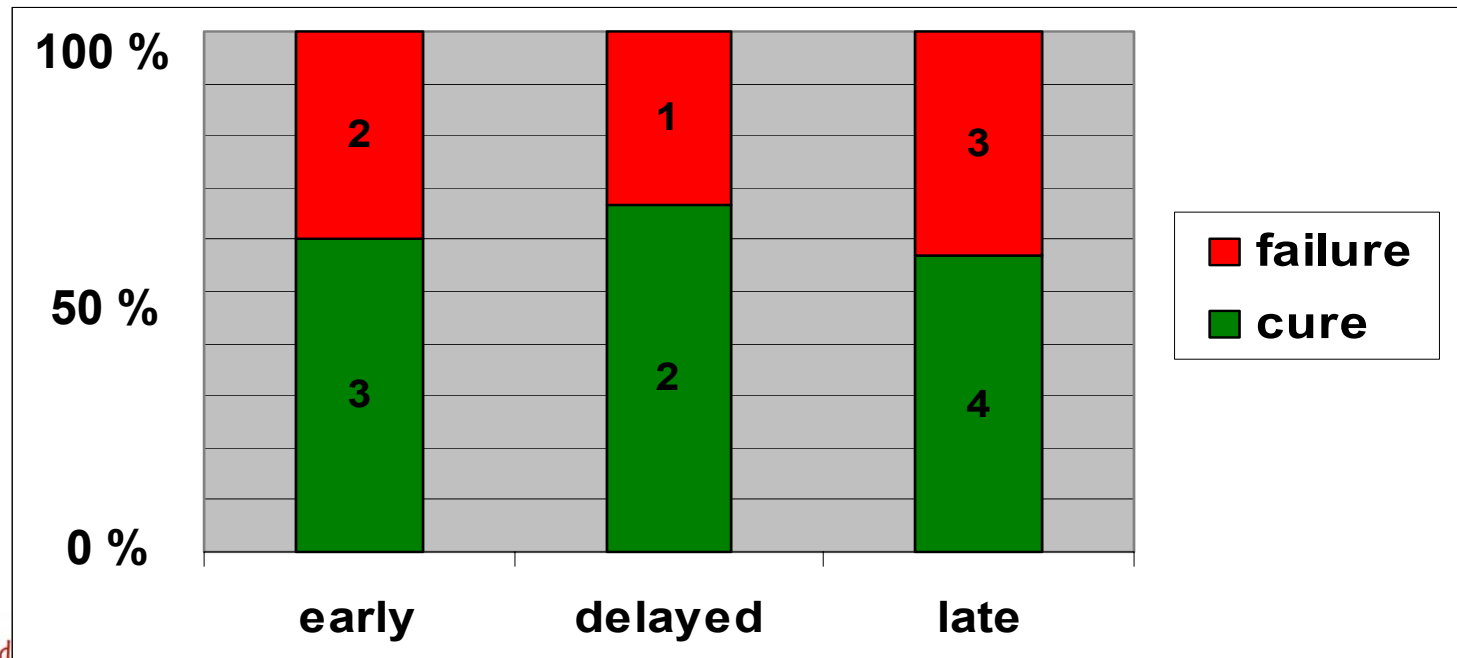
- **Two-stage exchange with gentamicin spacer:** **6 patients**
- **Debridement with retention of prosthesis:** **8 patients**
- **Resection arthroplasty with arthrodesis:** **1 patient**

Success rate I



**overall:
9/15 (60 %)**

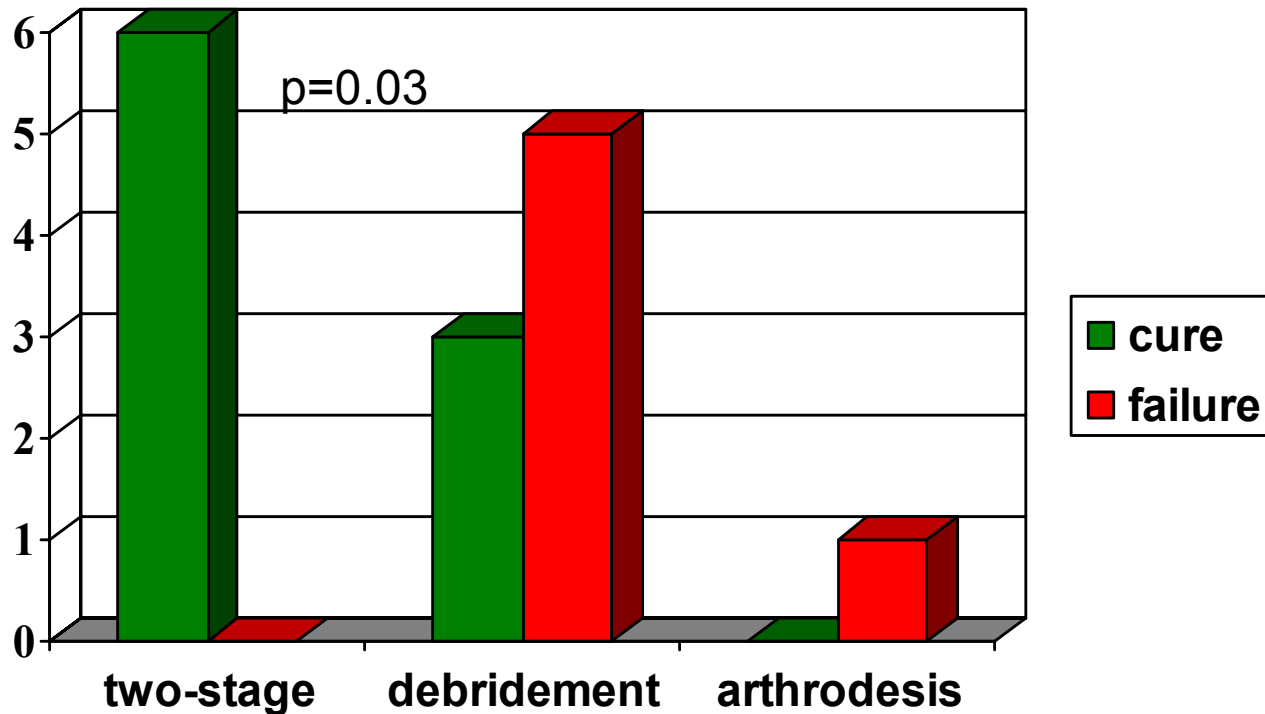
- **according to classification**



Success rate II



- according to procedure:



Treatment algorithm



- early or late acute infection
- clinical symptoms < 3 wks
- stable implant
- intact soft tissue
- AB with biofilm activity



**debridement +
retention of prosthesis**

all others

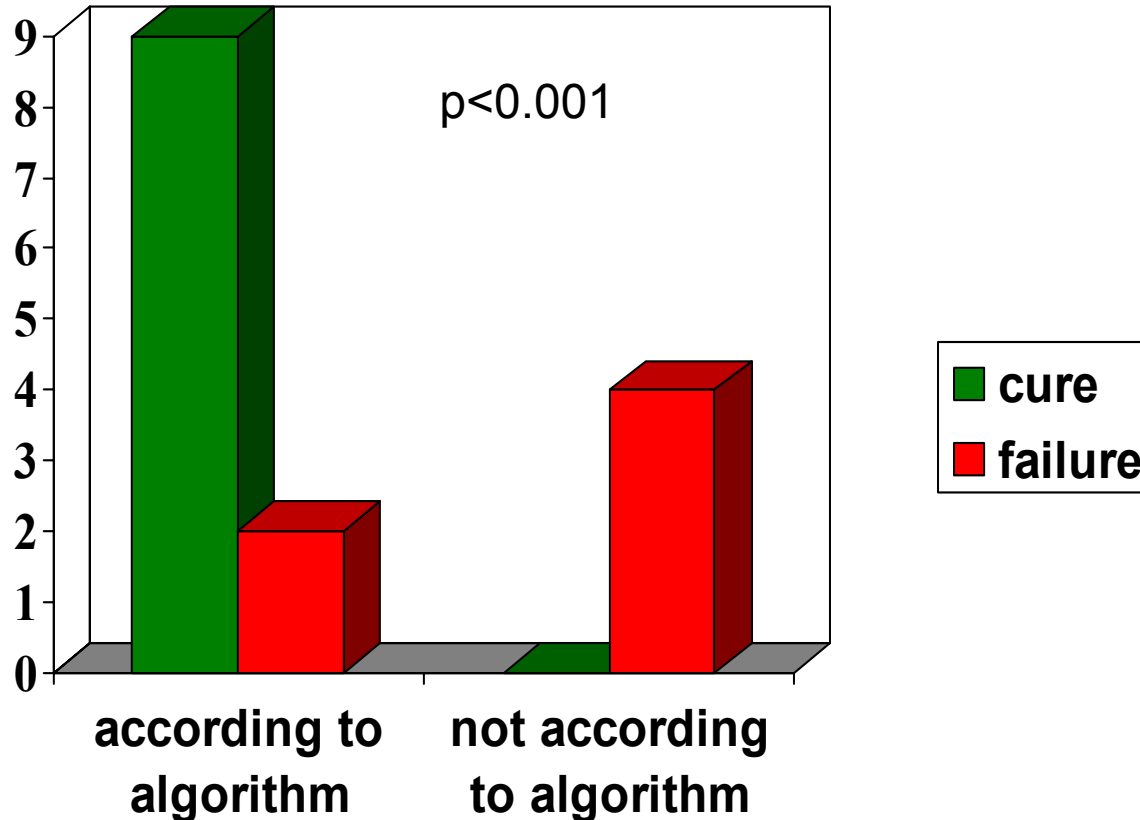


- one/two-stage exchange
- suppressive antibiotic treatment
- implant removal

Success rate III



- **surgery chosen according to treatment algorithm**



Factors associated with failure in our population



- **Debridement**

BUT:

- ✓ **only 1 out of 5 fulfilled all criteria for prosthesis retention**
 - **3 not early postoperative or late acute**
 - **3 severely damaged soft tissue**
 - **1 no rifampicin added**
 - **4 had symptoms >3 weeks**

Conclusion



- **overall success rate comparable to other institutions**
- **significantly higher failure rate with debridement and retention than with 2-stage**
 - ✓ **surgery was not chosen according to current treatment algorithm**
- **careful selection of patients for implant salvage**
- **duration of antibiotic therapy after debridement might need further evaluation**

Thank you



- **Reinout van Crevel**
- **Patrick Sturm**
- **Willem Schreurs**
- **Albert van Kampen**
- **Bart-Jan Kullberg**

What else did we notice?

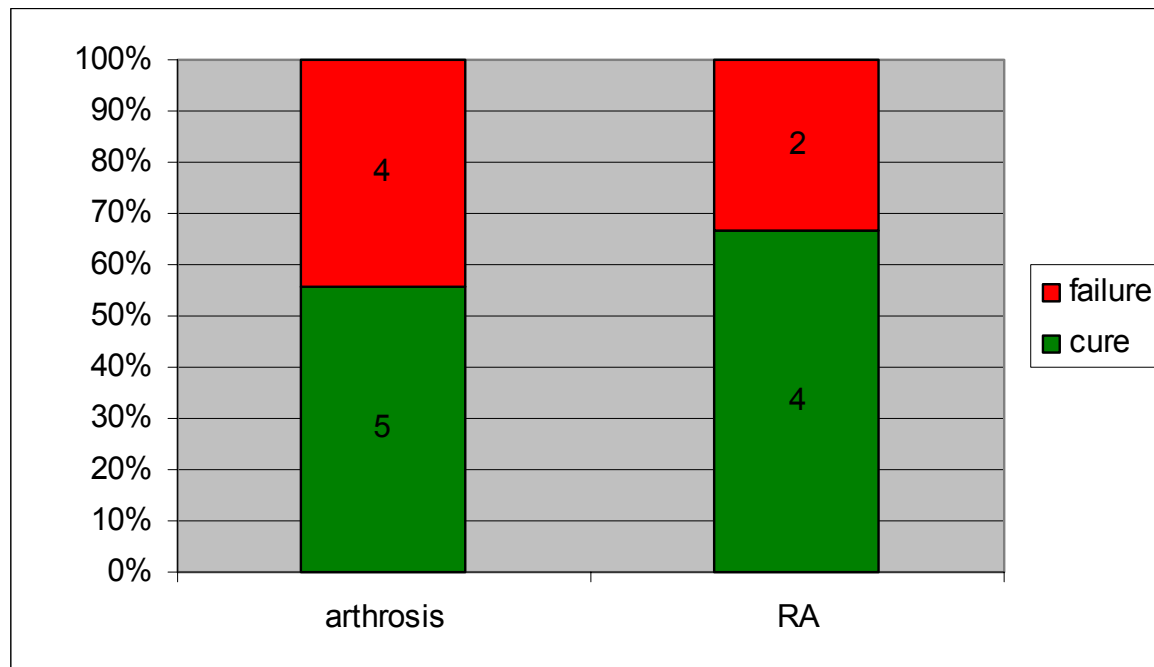


- ✓ **3 patients cured with debridement received antibiotics for**
 - **4 months**
 - **3 months**
 - **6 weeks**
- ✓ **duration of antibiotic therapy after debridement might need further evaluation**

Success



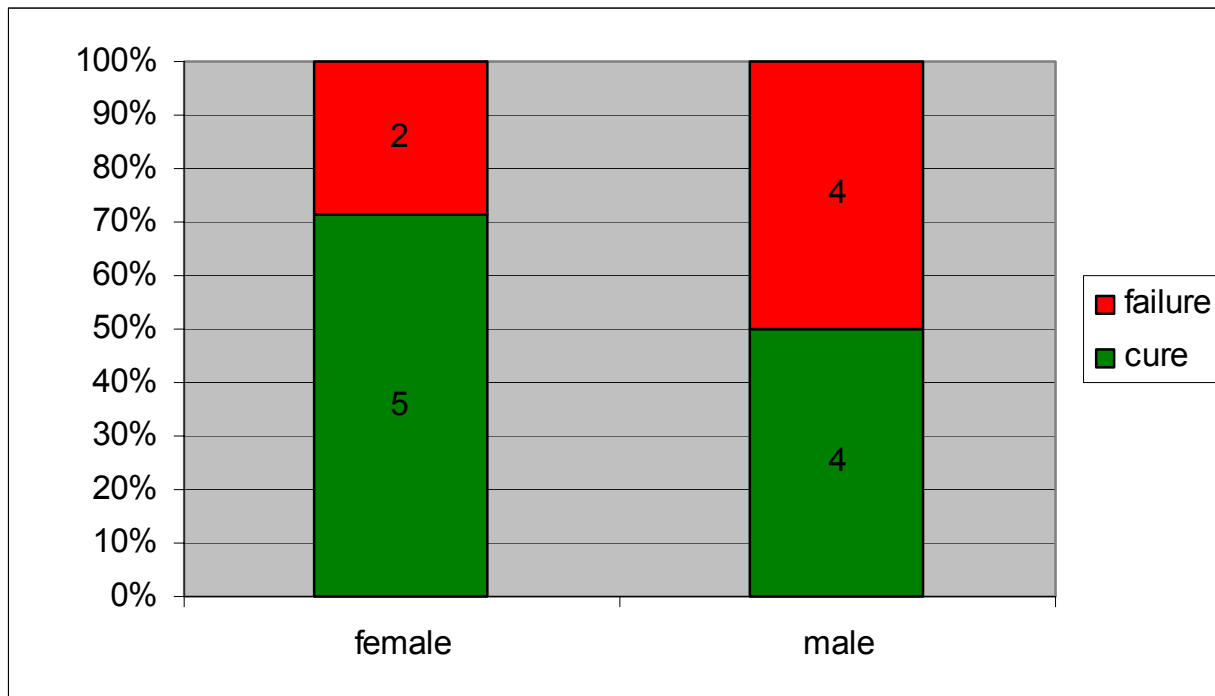
- **according to underlying disease**
 - ✓ **5/9 arthrosis successful**
 - ✓ **4/6 rheumatoid arthritis successful**



Success



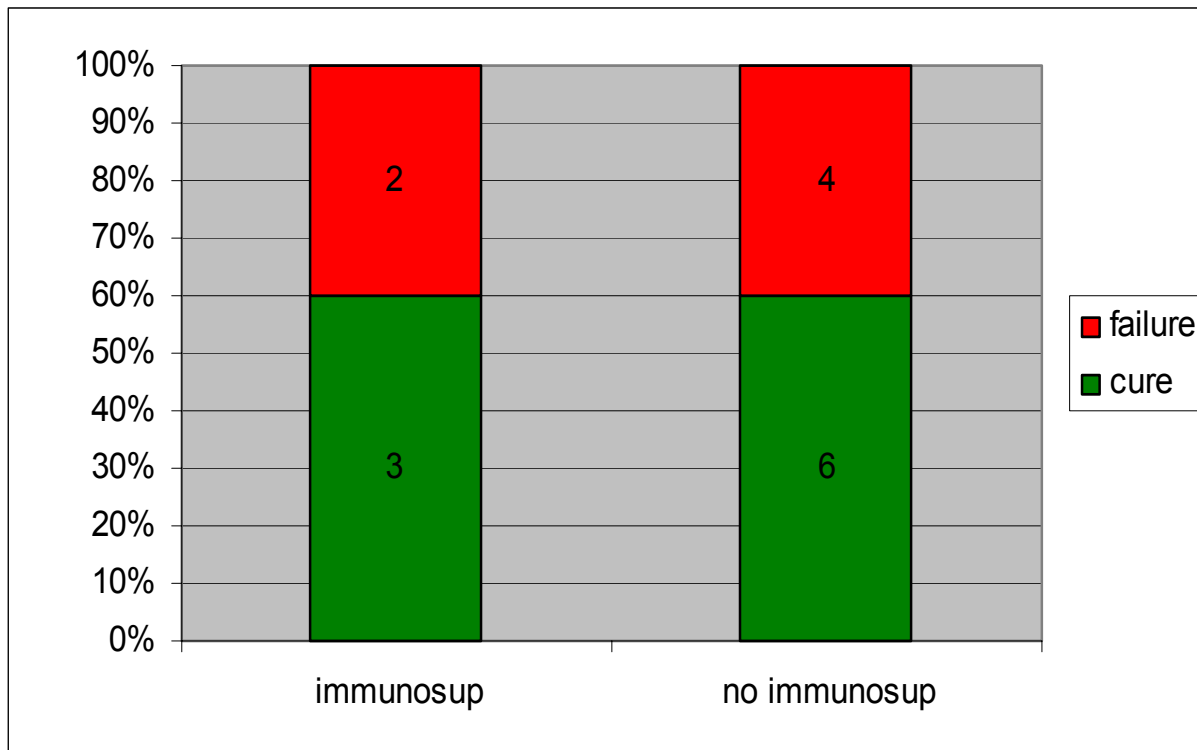
- **according to gender**
 - ✓ **female: 5/7 successful**
 - ✓ **male: 4/8 successful**



Success



- according to immunosuppression



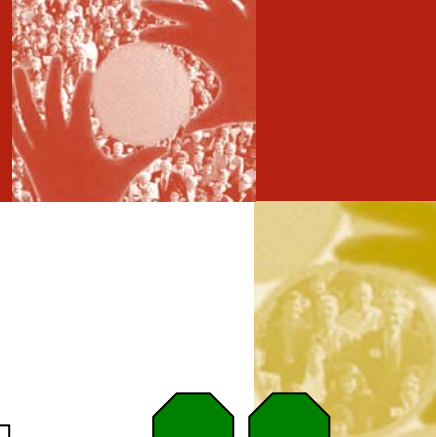
Success



- according to microorganism

	total	cured
CNS	5	3
S. aureus	2	0
h. strep	2	1
E. cloacae	1	1
corynebacteria	1	1
polymicrobial	2	1
negative	2	2

Antibiotic therapy



success 

failure 

