October 4-8 • San Diego, CA • www.idweek.org

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Hospices Civils de Lyon — UCBL Lyon 1 — ciri Centre International de Recherche en Infectiologie

Pressure ulcer-related pelvic osteomyelitis

Evaluation of a two-stage surgical strategy (debridement, negative pressure therapy and flap coverage) with prolonged antimicrobial therapy

Tristan FERRY, Fabien BOUCHER, Joseph CHATEAU, Hirsto SHIPKOV, Fatiha DAOUD, Evelyne BRAUN, Claire TRIFFAULT-FILLIT, Thomas PERPOINT, Frédéric LAURENT, Alain-Ali MOJALLAL, Christian CHIDIAC and Florent VALOUR on behalf of the **Lyon BJI study group*** – Hospices Civils de Lyon, Lyon, FRANCE

Prospective cohort study in a tertiary hospital reference center
Inclusion period: 01/01/12 and 04/30/16

Objectives

- Description of the experience of our regional reference center for the management of complex BJI with a two-stage surgical strategy with prolonged antimicrobial therapy in patients with pressure ulcer-related osteomyelitis
- Secondary ojectives:
  - Evaluation of microbiological epidemiology,
  - Risk factors for treatment failure[1]
  - Risk factors for superinfection[2]

Inclusion criteria

Adults (≥ 18 yo) with sacral or ischial pressure ulcer with contiguous pelvic osteomyelitis defined on the basis of clinical, morphological, microbiological[3] and therapeutic criteria

[1] **Treatement failure:** septic-related indication of additional surgical procedure after flap reconstruction OR relapse at the same site after antibiotic stop OR infection-related death

[2] **Superinfection:** additional microbiological findings at flap reconstruction

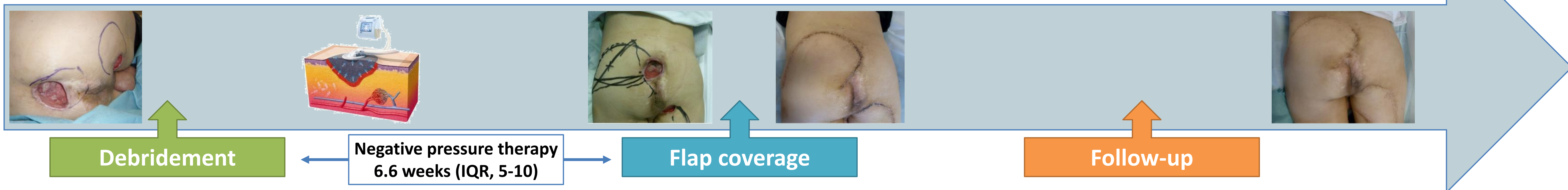
[3] **Microbiological diagnosis:** virulent microorganisms (e.g., *S. aureus*, *Enterobacteriaceae*, *P. aeruginosa* …) on ≥1 bone sample; potentially contaminants (CoNS, *Corynebacteria*, *P. acnes*…) on ≥2 bone samples and taken into account by the treating physician

Included population

- **64 pressure ulcer-related osteomyelitis in 61 patients**
  Males, 72% – Median age 47 (IQR, 36-63)
- **Pressure ulcer evolution delay:**
  36 (IQR, 14-110) weeks
- **Underlying condition/context:**
  - Para (64%), tetra (19%) or hemi (3%) plegia
  - Geriatrics (5%)
  - ICU (2%)

Sacrum 33%

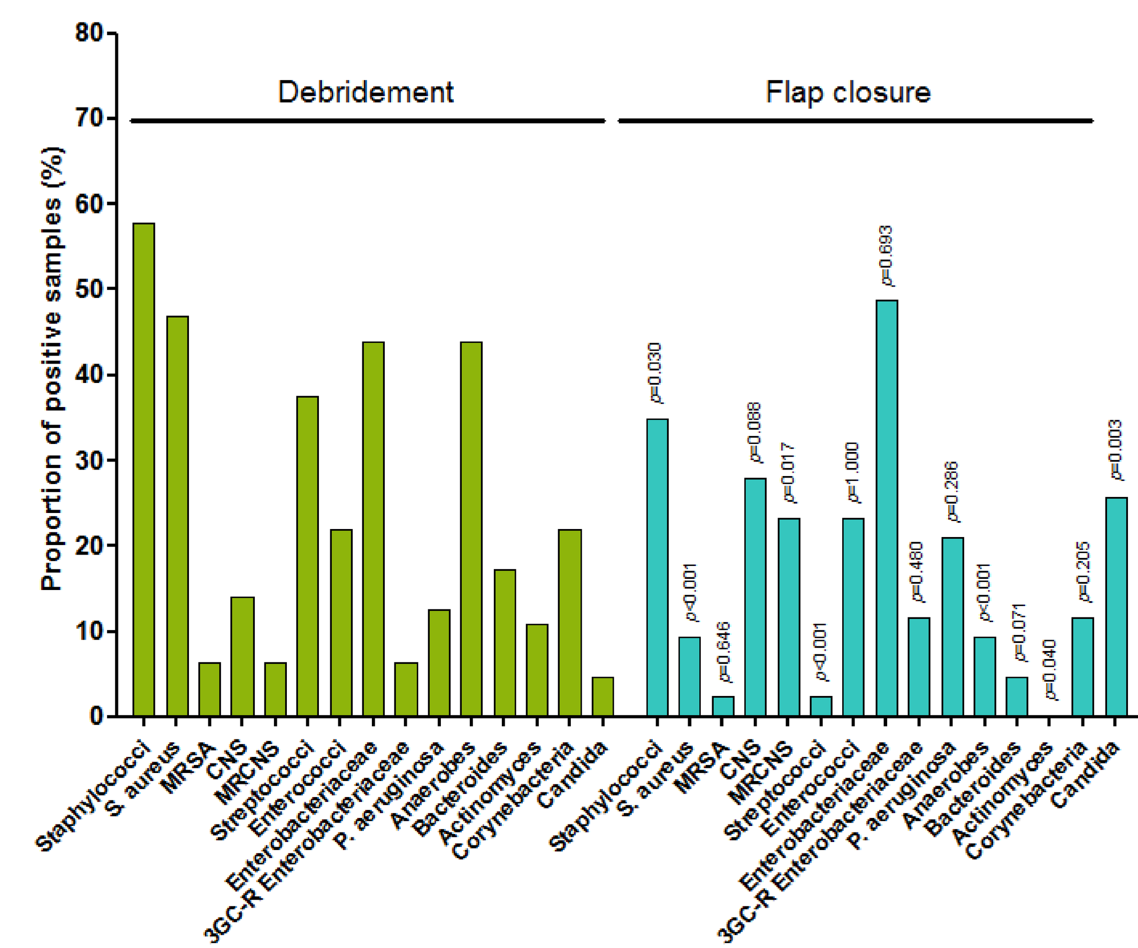
Ischion 67%



Broad spectrum empiric therapy:
VAN (70%) + PT (57%) or carbapenem (22%)

Adaptation: 78%
- VAN (41%)
- PT (39%), carbapenem (13%) or 3GC (16%)
- Fluoroquinolone (11%)

MICROBIOLOGY at DEBRIDEMENT
Plurimicrobial : 73%
- *S. aureus*: 47% (MR: 13%)
- ENB: 44% (3GC-R: 15%)
- Anaerobes: 44% (*Actinomyces*: 11%)
- Streptococci: 36%



Re-broadering: 23%

Final adaptation: 100%
- Oral switch: 39%, only

TOTAL ATB DURATION = 20 (IQR, 14-27) WEEKS

including **11 (IQR, 8-15)** weeks **post-coverage**

MICROBIOLOGY at FLAP COVERAGE

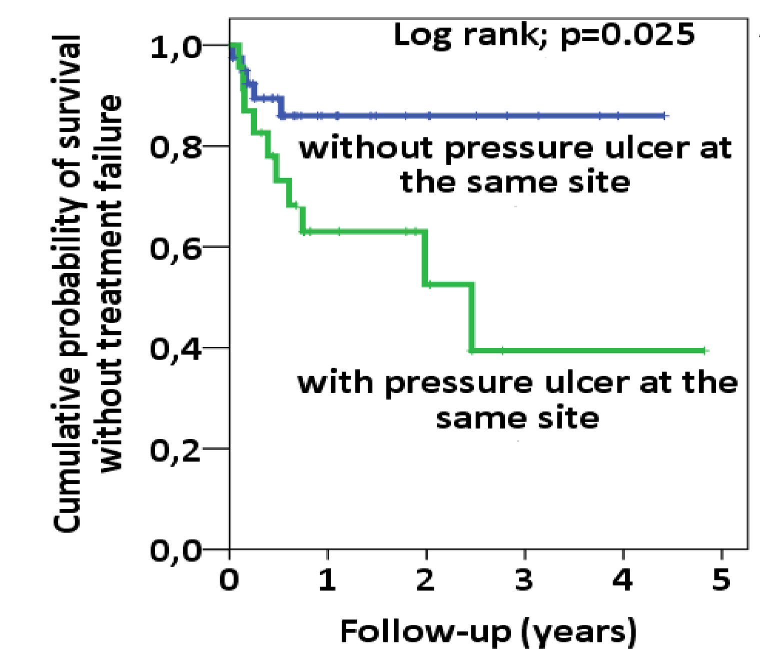
Positive bone sample(s): 68%
- **Persisting infection: 22%**
- **Superinfection: 91%**

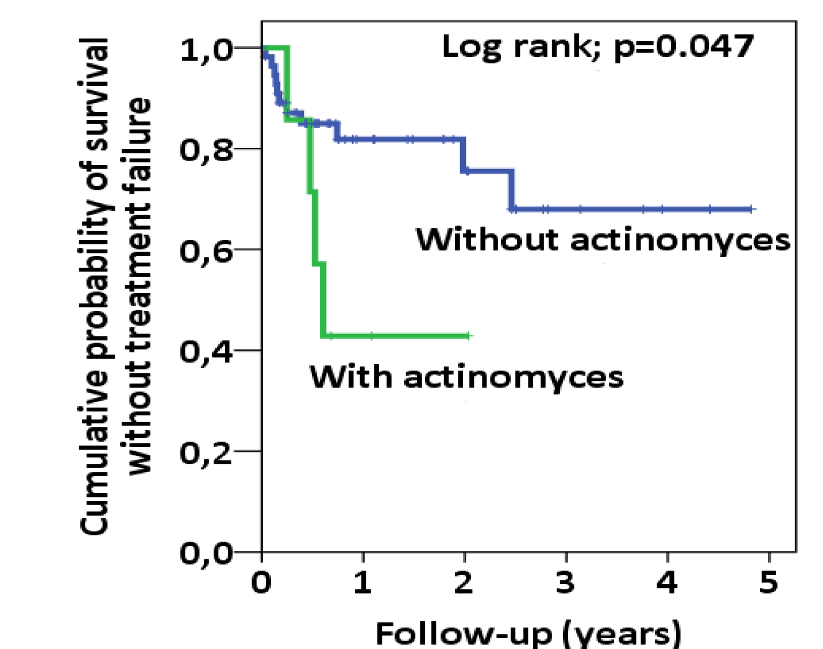
Risk factors for superinfection:
- High ASA score
  OR 5,7 (p=0,022)
- Efficient empiric treatment
  OR 0,07 (*p*=0,031)

Mostly difficult-to-treat pathogens:
- CoNS: 28% (MR: 83%)
- ENB 3GC-R: 12%
  Risk factor: FQ < 6 months: OR 32 (p=0,005)
- *P. aeruginosa* : 18%
  Risk factors:
  - High Charlson score: OR 1,3 (p=0,053)
  - Multiple debridement: OR 7 (p=0,057)
- *Candida*: 26%

Follow-up duration: 59 (IQR, 37-121) weeks

FAILURE RATE: 23%
Delay of failure: 12 (IQR, 7-28) weeks after coverage
Risk factors for treatment failure:
- Previous pressure ulcer (OR 5.7 – p=0.025)
- *Actinomyces* (OR 9.5 – *p*=0.027)

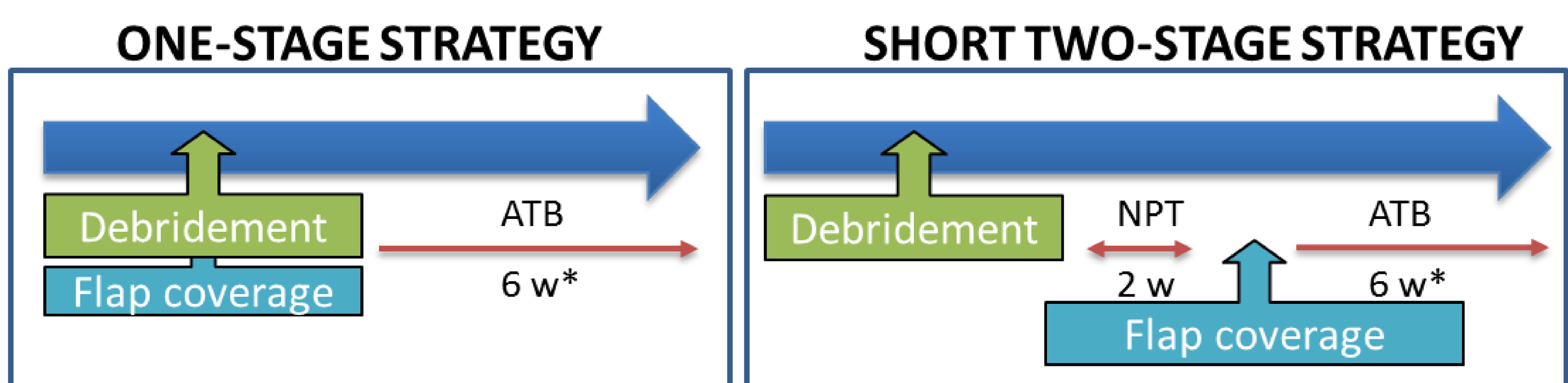




Conclusions

1. High **superinfection rate (60%)**
2. High **failure rate (23%)**, at least in part linked to superinfection
3. Important consumption of broad-spectrum antimicrobials

Two different strategies to limit the occurrence of superfinection



* Lyon BJI study group

Coordinator: Tristan Ferry; **Infectious disease specialists:** Tristan Ferry, Florent Valour, Thomas Perpoint, André Boibieux, François Biron, Patrick Miailhes, Florence Ader, Agathe Becker, Sandrine Roux, Claire Triffault-Fillit, Fatiha Daoud, Johanna Lippman, Evelyne Braun, Christian Chidiac, Yves Gillet, Laure Hees; **Surgeons:** Sébastien Lustig, Elvire Servien, Yannick Herry, Romain Gaillard, Antoine Schneider, Michel-Henry Fessy, Anthony Viste, Philippe Chaudier, Romain Desmarchelier, Tanguy Mouton, Cyril Courtin, Lucie Louboutin, Sébastien Marthres, Franck Trouillet, Cédric Barrey, Francesco Signorelli, Emmanuel Jouanneau, Thimothée Jacquesson, Alain-Ali Mojallal, Fabien Boucher, Hirsto Shipkov, Joseph Château; **Anesthesiologists:** Frédéric Aubrun, Isabelle Bobineau, Caroline Macabéo; **Microbiologists:** Frédéric Laurent, François Vandenesch, Jean-Philippe Rasigade, Céline Dupieux; **Imaging:** Fabien Craighero, Loic Boussel, Jean-Baptiste Pialat; **Nuclear medicine:** Isabelle Morelec, Marc Janier, Francesco Giammarile; **PK/PD specialists:** Michel Tod, Marie-Claude Gagnieu, Sylvain Goutelle; **Prevention of infection:** Solweig Gerbier-Colomban, Thomas Bénet; **Clinical research assistant:** Eugénie Mabrut.

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