

TWO NEW LOCAL POTENTIAL WEAPONS AS ADJUVANT DURING DAIR STRATEGY IN CHRONIC PERIPROSTHETIC JOINT INFECTIONS (PJI): A SINGLE CENTER RETROSPECTIVE STUDY

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Background

- Periprosthetic joint infections' prognosis remains poor and is associated with major morbi-mortality
- DAIR strategies combined with suppressive antibiotic therapy are possible but with limited success rates
- Additional strategies are needed to improve prognosis, particularly active against biofilm



STIMULAN®

- Calcium sulfate bone substitute which can be loaded with antibiotics
- Can be left as pellets inside the joint releasing large doses of antibiotics

BACTISURE®

- Antiseptic solution mainly composed by ethanol and acetic acid
- Used during surgical debridement and lavage with activity against biofilm



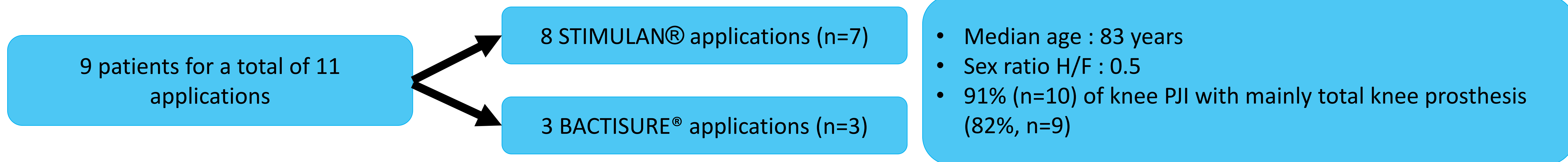
Objective

To describe the use and efficacy of these two local strategies combined with DAIR strategies during the management of chronic PJI

Methods

- Retrospective single center study (CRIOAC Lyon) including all patient treated with STIMULAN® (loaded with Vancomycin + Gentamicin) or BACTISURE® during in the management of chronic PJI associated with DAIR strategies between January 2022 and July 2023
- Outcome was evaluated by the investigators at the patient's last visit and classified as « Clinical success » / « Partial success » / « Clinical failure »

Main results



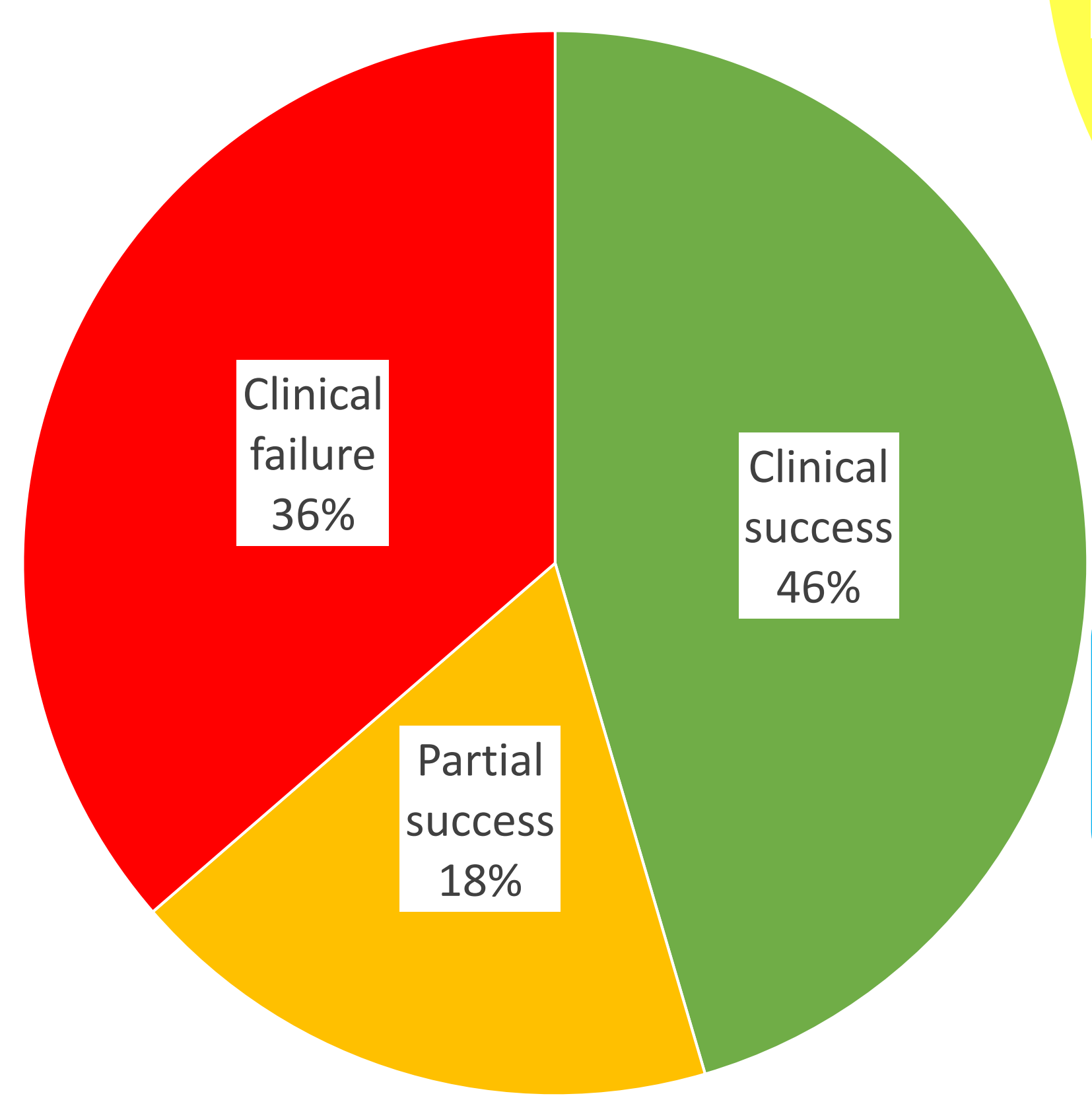
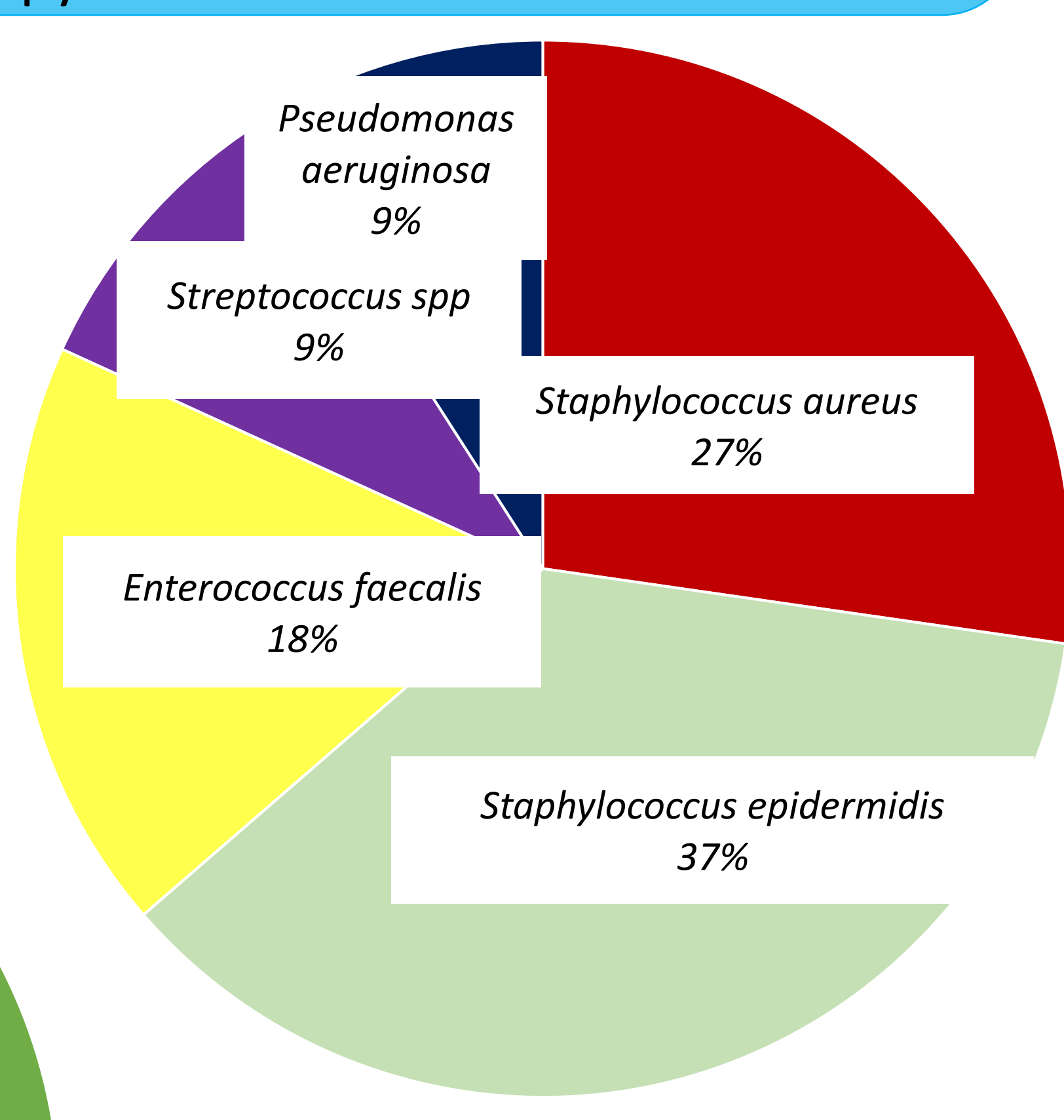
- Median age : 83 years
- Sex ratio H/F : 0.5
- 91% (n=10) of knee PJI with mainly total knee prosthesis (82%, n=9)

Table 1 . Previous features according to the number of STIMULAN® use or the number of BACTISURE® applications

Features	Total (n=11)	STIMULAN® (n=8)	BACTISURE® (n=3)
Number of patients (n)	9	7	3
Median body mass index [IQR]	25 [25-38]	35.1 [25-42]	24.8 [24-25]
Comorbidities, n (%)	10 (90.9)	7 (87.5)	3 (100)
Chronic renal failure	2 (18.2)	2 (25)	0
Chronic cardiac failure	2 (18.2)	1 (12.5)	1 (33.3)
Neurological diseases	4 (36.4)	3 (37.5)	1 (33.3)
Diabete mellitus	2 (18.2)	1 (12.5)	1 (33.3)
Ongoing cancer chemotherapy	2 (18.2)	1 (12.5)	1 (33.3)
Immunosuppressive treatment	3 (27.3)	1 (12.5)	2 (66.6)
Previous microbiological diagnosis, n (%)	9 (81.8)	8 (100)	1 (33.3)
Previous surgical features			
Previous surgical management, n (%)	10 (90.9)	8 (100)	2 (66.6)
Median number of previous DAIR procedures [IQR]	1.5 [1-3.5]	1.5 [1-2.5]	2.5 [1.8-3.3]
Median number of previous one or two-stage revision procedures [IQR]	1 [1-1]	1 [1-1]	1 [1-1]
Previous antibiotic features, n (%)			
Previous 3-month antibiotic course to treat PJI	9 (81.8)	8 (100)	1 (33.3)
Ongoing suppressive antibiotic therapy	6 (54.5)	5 (62.5)	1 (33.3)

- 11 applications (100%) with clinical signs of infections, mainly deep sinus tract (n=7, 63.6%)
- 9 episodes (81.8%) microbiologically documented / 1 polymicrobial infection (9.1%)
- 8 (72.7%) applications to increase success rates / 3 (27.3%) applications as salvage therapy

Microbiological diagnosis achieved over the 11 applications



Patient clinical assessment at last follow-up visit
Median follow-up 223 days

Discussion and conclusion

- Identification of 2 new effective strategies without major adverse events (no hypercalcemia observed, one pellet wound leakage with healing achieved at distance → 64% clinical improvement with possible walking and pain alleviation)
- STIMULAN® → No randomized clinical trial but several cohorts reporting applications during one or two-stage revision procedures (before skin closure and after prosthesis reimplantation during DAIR (Gramlich *et al*, Int Orthop 2019; Di Benedetto *et al*, Acta Biomed 2017; Indelli *et al*, Pathogens 2023)
- BACTISURE® → No randomized clinical trial among patients treated with DAIR but 87,1% clinical success at D90 after application in the first stage of a two-stage revision procedure during PJI (Hunter *et al*, Zimmer laboratory data 2019)
- Specific population → majority of elderly people unable to assume major surgeries and chronic PJI previously treated on numerous occasions
- A wide range of possible clinical situations (acute or late PJI ; total knee prosthesis, total hip prosthesis or arthrodesis) requiring larger scales trials to define the place of these strategies