



## Four faces of Infective endocarditis – Cases where the Extended Endocarditis Team helped to bridge the grey areas of the ESC Guidelines

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### Introduction

Infective endocarditis (IE) continues to present significant challenges to treat effectively, despite advances in diagnostic techniques and antimicrobial therapy. This case series presents four challenging cases of IE, highlighting the importance of the Endocarditis team, with a multidisciplinary approach essential for optimizing patient outcomes.

### Cases

#### Case 1: Converting high-risk open-heart surgery to lower-risk lead extraction

An 82-year-old frail lady presenting with fever, malaise, vomiting. She was found to have a 25.4mm right atrial mass attached to the pacemaker lead and blood cultures were positive for staphylococcus aureus. Due to the patient's frailty, the endocarditis team elected to manage with prolonged IV antibiotic treatment and anticoagulation to reduce the size of the infected mass on the lead. This allowed for percutaneous device extraction resulting in complete recovery.

#### Case 2: The logistical challenge of managing relapsing Infective Endocarditis in non-compliant high-risk patient

A 32-year-old lady with relapsing staphylococcus aureus tricuspid infective endocarditis, with a background of Person Who Injects Drugs (PWID). The patient has been non-compliant with treatment on multiple admissions. The endocarditis team suggested two doses of Oritavancin to allow for sufficient treatment completion.

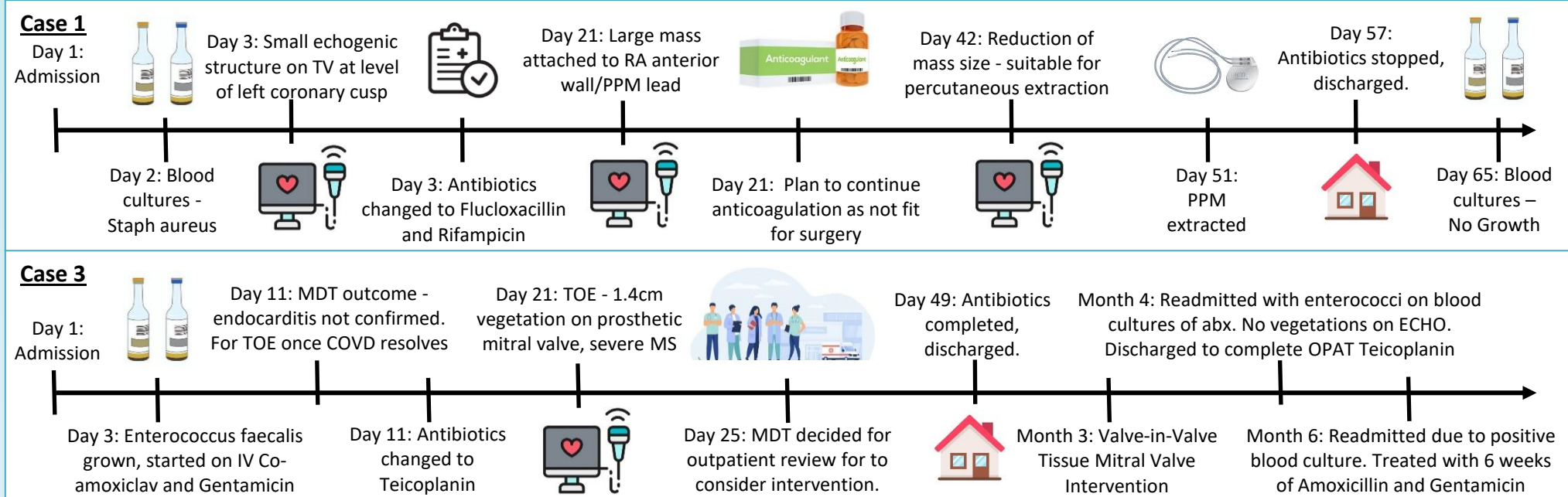
#### Case 3: The saga of relapsing prosthetic valve IE after structural valve degeneration and redo Valve-in-Valve Tissue Mitral Valve Intervention

A 72-year-old woman with hypertrophic cardiomyopathy, previous dual-chamber pacemaker implantation, and a bioprosthetic mitral valve replacement presented with pulmonary oedema due to severe degenerative mitral stenosis. Tissue Mitral Valve Endocarditis caused by Enterococcus faecalis was subsequently diagnosed. Given the patient's high surgical risk, the endocarditis team opted for a mitral valve-in-valve repair after a six-week antibiotic course, resulting in significant clinical improvement. However, a follow-up blood culture revealed recurrent Enterococcus infection, necessitating a further six-week course of antibiotics.

#### Case 4: Histopathological diagnosis of IE upon surgical removal of the degenerated AV bioprosthesis

A 55-year-old man who underwent re-do aortic valve, aortic root and ascending aorta replacement for progressive tissue valve aortic stenosis and a large saccular pseudo-aneurysm. Infective endocarditis was proposed as the cause of the valve deterioration post-operatively, when his aortic valve grew coagulase negative staphylococcus capitis and cutibacterium acne, and a sternal blood clot grew candida albicans. Following consultation through the Endocarditis Team, he was appropriately treated with extended course of antibiotics and antifungals.

### Timeline of events – Case 1 & 3



### Summary of cases

Case	Relevant Background	Source of infection	Blood culture	Echo findings	Management	Follow-up blood culture
1	82-year-old Female PPM for bradycardia ASA 3	CIED related endocarditis	Staphylococcus aureus	25.4mm*16.8 mm right atrial mass attached to PPM lead	Flucloxacillin (10 Weeks) Rifampicin (4 weeks) Extended anticoagulation for thrombotic mass reduction	No growth
2	32-year-old Female Person Who Injects Drugs Relapsing IE ASA 1	Native tricuspid valve endocarditis	Staphylococcus aureus	Tricuspid valve vegetation (10*5mm) and (15*7mm)	Flucloxacillin (6 weeks) Oritavancin (Single Dose – Antibiotic with extended effect to address non-compliance)	Did not attend
3	72-year-old Female Bioprosthetic mitral valve – Relapsing IE ASA 2	Prosthetic mitral valve endocarditis	Enterococcus faecalis	Mobile mass (14 mm) on the mitral valve leaflet	Amoxicillin & Gentamicin (6 weeks) After 3 <sup>rd</sup> relapse - lifelong oral antibacterial treatment	Enterococcus faecalis
4	55-year-old Male Bioprosthetic AVR - Case of histopathological diagnosis of IE ASA 1	Prosthetic aortic valve endocarditis	Staphylococcus capitis, Cutibacterium acne, Candida albicans Valve and Sternal cultures	No obvious vegetations	Several antibiotics Post-op in ICU Fluconazole and Caspofungin (6 weeks)	No growth

### Discussion

The four cases in this series each present their own unique challenges which require decision making within the grey areas of the current ESC guidelines.

In Case 1, ESC guidelines suggest management with surgical device extraction. However, due to the patient's functional status with comorbidities of myasthenia gravis, prior thoracotomy, and general frailty, this was deemed too high risk. Instead, the decision for prolonged conservative management with antibiotics and anticoagulation (the latter not recommended in the guidelines) allowed the patient to undergo a lower risk procedure and subsequent full recovery.

ESC guidelines advise that tricuspid valve infective endocarditis in PWID is treated with full course of adequate antibiotic therapy in absence of surgical intervention. However, this was not possible in Case 2, due to the patient's non-compliance and repeated premature termination of treatment. After relapsing, alternative long-acting antibiotic choices suggested by the endocarditis team have allowed for completion of her treatment.

Case 3 presented difficult management decisions of relapsing IE in view of the patient's comorbidities of HCM, PPM, and prior biological MVR. Whilst ESC guidelines recommend debridement of the infected valve, this option was deemed too high risk by the endocarditis team given the patient's background and functional status. She underwent ViV-TMVR and made good symptomatic recovery. However, she had several relapsing IE with Enterococcus Faecalis and subsequently lifelong antibiotic therapy was recommended.

Case 4 presents the potential insidious onset nature of infective endocarditis. This case was a structural valve degeneration of the bioprosthetic aortic valve. The diagnosis of infective endocarditis was only identified through intraoperative histopathology, which is believed to have contributed to the valve degeneration. Endocarditis team here was vital given the multi-microbial findings post operatively.

Each of the cases have highlighted the role the Endocarditis team plays beyond ESC guidance, with a multidisciplinary approach key in making decisions and patient focussed care at the centre.

### References

Delgado V, Marsan NA, de Waha S, Bonaros N, Brida M, Burri H, et al. ESC Scientific Document Group, 2023 ESC Guidelines for the management of endocarditis: *European Heart Journal*, Volume 44, Issue 39, 14 October 2023, Pages 3948–4042, <https://doi.org/10.1093/eurheartj/ehad193>