

CASE REPORT

PEER REVIEWED | OPEN ACCESS

Deep wound infection caused by *Enterococcus raffinosus* in a below-knee amputation: A rare post-surgical complication

Marielle Roberts-McDonald, Megan Brooker,
Shabnam Mansur, Eugene Vitvitsky

ABSTRACT

Enterococcus species are commonly associated with nosocomial infections including urinary tract infections, bacteremia, and endocarditis. *Enterococcus raffinosus* is rarely diagnosed; however, it has been reported more recently over the last few decades. The case presented below illustrates a rare wound infection with positive wound cultures for *E. raffinosus* in a 68-year-old male with significant comorbidities and recent surgeries. Early diagnosis and treatment are essential due to the high mortality rate associated with this bacterium. When considering deep wound infections, *E. raffinosus* should be considered on the differential when determining the management of these patients.

Keywords: Deep wound, Deep wound infection, *Enterococcus raffinosus*, *Enterococcus* species, Post-surgical complication

How to cite this article

Roberts-McDonald M, Brooker M, Mansur S, Vitvitsky E. Deep wound infection caused by *Enterococcus raffinosus* in a below-knee amputation: A rare post-surgical complication. J Case Rep Images Infect Dis 2025;8(2):1–4.

Article ID: 100017Z16MM2025

Marielle Roberts-McDonald¹, Megan Brooker¹, MD, Shabnam Mansur¹, MD, Eugene Vitvitsky¹, MD

Affiliation: ¹Western Reserve Health Education, 1350 E Market St, Warren, OH 44483, USA

Corresponding Author: Marielle Roberts-McDonald, Ross University School of Medicine, 10315 USA Today Way, Miramar, FL 33025, USA; Email: marielleroberts-mcdonald@mail.rossmed.edu

Received: 27 March 2025

Accepted: 16 June 2025

Published: 17 July 2025

doi: 10.5348/100017Z16MM2025CR

INTRODUCTION

Enterococcus species are a gram-positive facultative anaerobic coccus commonly associated with nosocomial infections. Among these, *Enterococcus faecium* and *Enterococcus faecalis* are the most common [1] with other rare species known including *E. casseliflavus*, *E. gallinarum*, and *E. raffinosus* [2]. Urinary tract infections, bacteremia, and infective endocarditis are the most commonly associated with the *Enterococcus* species, with rare reported cases of intra-abdominal infections and meningitis [3]. They are highly resilient species that can survive in a variety of conditions, including treatment with common antiseptic and disinfectant agents [3].

Reports of *Enterococcus raffinosus* (*E. raffinosus*), a non-motile, catalase-negative, raffinose-positive, facultative anaerobic bacteria, began over the past two decades [1, 2]. This bacterium species is the leading cause of nosocomial infections due to its widespread antibiotic and multidrug resistance gained over the last several years [1, 2]. Cases of *E. raffinosus* specifically have been described primarily in bacteremia, endocarditis, as well as reported in sinusitis, decubitus ulcer, vertebral osteomyelitis, vaginal infection, endophthalmitis, and urinary tract infections [1]. *E. raffinosus* has also been recovered from urine specimens and wound swabs, however, there is no literature published to confirm the ability of *E. raffinosus* to cause serious invasive disease [4]. A wide range of symptoms have been reported depending on the clinical diagnosis with positive culture for this bacterium; however, there are no clinical features specific to *E. raffinosus* [3, 4]. Of all enterococcal bacteremia events, only 0.6% are reported positive with *E. raffinosus* bacteremia with less than a handful reported in the literature related to *E. raffinosus* deep tissue wound infections [5].

We present a case of a 68-year-old male with pertinent past medical history of recent admission for below-knee amputation (BKA) with wound wash out, who returned to the hospital for evaluation of purulent drainage from the wound site, with subsequent wound cultures positive for *E. raffinosus*.

CASE REPORT

The patient was a 68-year-old male with past medical history of BKA five days prior, diabetes mellitus (DM), myelodysplastic syndrome (MDS), stem cell transplant in 2008, and deep vein thrombosis (DVT), brought from a nursing facility, who presented to the ED for profuse purulent foul smelling drainage from his R BKA wound, and was admitted to the intensive care unit due to sepsis secondary to BKA wound infection. Two weeks prior, the patient underwent BKA wound washout and debridement with delayed primary closure. Wound cultures were ordered and the patient was treated with unasyn and discharged back to the nursing facility on augmentin. After discharge, the patient continued to display altered mental status/cognitive decline, decreased appetite, and urinary incontinence. This was a significant departure from his baseline as per nursing staff.

In the ED, the patient was disoriented, with significantly altered mental status, and hypotensive at 60/23 with a mean arterial pressure (MAP) of 35. The patient was afebrile at 97.1 F, normal heart rate of 79 beats per minute, and normal respiratory rate of 18 breaths per minute. The labs were significant for elevated white blood cells (WBCs) of 18.5 (trend seen in Table 1), lactic acid of 11.0, and C-reactive protein of 26.80 (trend seen in Table 2). Blood culture and wound cultures were

ordered and obtained. Vascular surgery and infectious disease (ID) were consulted. The patient was started on intravenous (IV) Vancomycin and Zosyn for broad coverage and above-knee amputation (AKA) with wound vacuum-assisted closure (VAC) placement was scheduled for the next day.

During R AKA procedure, an abscess cavity measuring 10 cm × 5 cm was identified tracking posteriorly to the femur. Acute purulent fluid drainage was noted, additional cultures were obtained, and the decision was made to perform guillotine amputation with wound vacuum-assisted closing (VAC) due musculature pallor. As there was no concern for methicillin-resistant *Staphylococcus aureus* (MRSA) growth, ID discontinued Vancomycin. Superficial wound cultures of BKA wound demonstrated Diphtheroid, mixed gram-negative rods, and *Enterococcus* species. Additionally, deep wound culture of the right lower extremity demonstrated mixed gram-negative rods, anaerobic gram-positive cocci, anaerobic gram-positive rods, and *E. raffinosus*. Infectious disease recommended discontinuing Zosyn and adding Unasyn for additional six weeks to cover gram-negative bacteria. A peripherally inserted central catheter (PICC) line was placed for administration of long-term antibiotics. The white blood cell (WBC) count continued to trend downward, stabilizing between 4.0–5.0 × 10³/μL.

Finally, the patient returned to the OR approximately two weeks after admission to formalize the R AKA with delayed primary closure. Upon inspection of the site, the wound was free of necrotic tissue, non-viable tissue, and purulent drainage. The procedure was completed successfully with placement of 10 French Jackson–Pratt (JP) drain within the surgical stump. Jackson–Pratt drain output was monitored for a few days, then removed, and

Table 1: White blood cell (WBC) trend during the first four days of admission

Admission day	Day 0	Day 1	Day 2	Day 3	Day 4	Reference range
White blood cell	18.5 × 10 ³ /μL	20.2 × 10 ³ /μL	18.0 × 10 ³ /μL	12.5 × 10 ³ /μL	8.3 × 10 ³ /μL	3.5–10.5 × 10 ³ /μL

Table 2: C-reactive protein trend during the first 10 days of admission

Admission day	Day 0	Day 3	Day 10	Reference range
C-Reactive protein	26.80 mg/dL	12.40 mg/dL	2.92 mg/dL	<0.5 mg/dL

the patient was discharged back to his nursing facility for further management.

DISCUSSION

Enterococcus raffinosus is not commonly recognized as part of the natural human bacterial flora and is rarely isolated from clinical specimens [4]. This case highlights a 68-year-old male with a deep wound infection in his right

BKA site, in which cultures were positive for *E. raffinosus*.

Previous reports have linked *E. raffinosus* infections to the biliary tract, bacteremia, endocarditis, and vaginitis [5]; however, documented cases of deep wound infections caused by this organism are exceedingly rare. A literature review identified one confirmed case—a 2008 report of a patient with a decubitus ulcer wound infection caused by *E. raffinosus*, which exhibited resistance to all antibiotics except beta-lactams, gentamicin, and ciprofloxacin [6]. Another study analyzing 49 cases of

E. raffinosus bacteremia found that 81.6% originated from the biliary tract [5]. The current case contributes to the growing body of evidence by presenting a rare association of *E. raffinosus* with deep wound infections.

E. raffinosus infections have been associated with a 60-day mortality rate of 4.1% [5], indicating a necessity for early identification and intervention. This case underscores the importance of considering *E. raffinosus* in the differential diagnosis when deep wound infections are being evaluated. With the significant mortality rate, obtaining cultures upon initial presentation in the emergency department is crucial for prompt and targeted antimicrobial therapy. The exact source of infection in this patient remains unclear; however, several risk factors may have contributed. Examining the patient's presentation above, the patient had multiple hospital admissions in the past year, resided in a nursing facility, and prior lower extremity procedures were performed—there are all significant predisposing factors that have contributed to the exposure of *E. raffinosus*. Recognizing these potential risk factors is vital when encountering *E. raffinosus* in clinical practice, particularly in patients with complex medical histories.

CONCLUSION

The case presented highlights a rare deep wound infection caused by *Enterococcus raffinosus*, emphasizing the importance of a thorough clinical evaluation. A good history is essential to identify possible risk factors for infection. The incidence of *E. raffinosus* continues to grow due to cross contamination, prior hospitalizations, and improper care in healthcare facilities. Early identification through bacterial sampling, adherence to proper wound care protocols, and timely antimicrobial treatment are critical in managing and preventing complications associated with this resistant organism.

REFERENCES

1. Toc DA, Pandrea SL, Botan A, Mihaila RM, Costache CA, Colosi IA, et al. *Enterococcus raffinosus*, *Enterococcus durans* and *Enterococcus avium* Isolated from a Tertiary Care Hospital in Romania—Retrospective study and brief review. *Biology (Basel)* 2022;11(4):598.
2. Zhao H, Peng Y, Cai X, Zhou Y, Zhou Y, Huang H, et al. Genome insights of *Enterococcus raffinosus* CX012922, isolated from the feces of a Crohn's disease patient. *Gut Pathog* 2021;13(1):71.
3. Said MS, Tirthani E, Lesho E. *Enterococcus* infections. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2025.
4. Sandoe JA, Witherden IR, Settle C. Vertebral osteomyelitis caused by *Enterococcus raffinosus*. *J Clin Microbiol* 2001;39(4):1678–9.
5. Lee YW, Lim SY, Jung J, Kim MJ, Chong YP, Kim SH, et al. *Enterococcus raffinosus* bacteremia:

Clinical experience with 49 adult patients. *Eur J Clin Microbiol Infect Dis* 2022;41(3):415–20.

6. Savini V, Manna A, Di Bonaventura G, Catavittello C, Talia M, Balbinot A, et al. Multidrug-resistant *Enterococcus raffinosus* from a decubitus ulcer: A case report. *Int J Low Extrem Wounds* 2008;7(1):36–7.

Acknowledgments

Verbal and written consent was obtained from the patient prior to publication submission.

Author Contributions

Marielle Roberts-McDonald – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Megan Brooker – Conception of the work, Design of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Shabnam Mansur – Conception of the work, Design of the work, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Eugene Vitvitsky – Conception of the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

Copyright

© 2025 Marielle Roberts-McDonald et al. This article is distributed under the terms of Creative Commons Attribution License which permits unrestricted use,

distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

Access full text article on
other devices



Access PDF of article on
other devices





INTERNATIONAL JOURNAL OF
CASE REPORTS AND IMAGES



VIDEO JOURNAL OF
CLINICAL RESEARCH



VIDEO JOURNAL OF
BIOMEDICAL SCIENCE



INTERNATIONAL JOURNAL OF
HEPATOBIILIARY AND
PANCREATIC DISEASES



INTERNATIONAL JOURNAL OF
BLOOD TRANSFUSION AND
IMMUNOHEMATOLOGY



EDORIUM JOURNAL OF
OPHTHALMOLOGY



Submit your manuscripts at
www.edoriumjournals.com



EDORIUM JOURNAL OF
MEDICINE



EDORIUM JOURNAL OF
CARDIOTHORACIC AND
VASCULAR SURGERY



JOURNAL OF CASE REPORTS
AND IMAGES IN ORTHOPEDICS
AND RHEUMATOLOGY



EDORIUM JOURNAL OF
PSYCHOLOGY



EDORIUM JOURNAL OF
CELL BIOLOGY



JOURNAL OF CASE REPORTS AND IMAGES IN
DENTISTRY



EDORIUM JOURNAL OF
CANCER



EDORIUM JOURNAL OF
PSYCHIATRY



JOURNAL OF CASE REPORTS AND
IMAGES IN INFECTIOUS DISEASES



EDORIUM JOURNAL OF
ANATOMY AND EMBRYOLOGY



EDORIUM JOURNAL OF
SURGERY



JOURNAL OF CASE REPORTS
AND IMAGES IN PATHOLOGY



EDORIUM JOURNAL OF
ANESTHESIA