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Postpartum Necrotizing Fasciitis with Unilateral Foot Gangrene in an Adolescent After Unsupervised Home Vaginal Delivery: A Case Re

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Case Report

Keywords: Postpartum necrotizing fasciitis, adolescent pregnancy, unsupervised home vaginal delivery, unilateral foot gangrene, transmetatarsal amputation, negative-pressure wound therapy, resource-limited setting

Posted Date: September 28th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10557691/v1

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Additional Declarations: No competing interests reported.

Postpartum Necrotizing Fasciitis with Unilateral Foot Gangrene in an Adolescent After Unsupervised Home Vaginal Delivery: A Case Re

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Abstract

Background

Necrotizing fasciitis is a rapidly progressive soft-tissue infection associated with substantial morbidity, limb loss, and mortality when diagnosis and surgical treatment are delayed. Postpartum necrotizing fasciitis is rare and is most commonly reported following cesarean delivery, episiotomy, or perineal infection. Distal lower-limb involvement with unilateral foot gangrene after vaginal delivery is particularly unusual.

Case presentation

A 15-year-old previously healthy postpartum adolescent from a rural community presented approximately two weeks after an unsupervised home vaginal delivery with progressive right lower-limb pain, swelling, foul-smelling discharge, inability to ambulate, and black discoloration of the right foot. On admission, she appeared critically ill and markedly pale. Laboratory investigations showed severe anemia with a hemoglobin concentration of approximately 4 g/dL, a C-reactive protein concentration of 70 mg/L, a white blood cell count of 7,000/μL, and coagulopathy with an international normalized ratio of 2.0. Computed tomography demonstrated extensive soft-tissue gas in the right foot and a posterior calf intramuscular abscess extending toward the plantar foot. Computed tomography angiography showed preserved major arterial flow without major arterial occlusion. Deep tissue cultures grew *Pseudomonas aeruginosa* and *Escherichia coli*. The patient underwent resuscitation, packed red blood cell transfusion, correction of coagulopathy, broad-spectrum intravenous antibiotic therapy, serial surgical debridements, and right transmetatarsal amputation for irreversible forefoot gangrene. Negative-pressure wound therapy was used to promote granulation tissue formation. During the fourth week of hospitalization, definitive closure of the transmetatarsal stump and skin grafting of the posterior ankle/Achilles soft-tissue defect

were performed. Infection was controlled, wound healing was satisfactory, and limb function proximal to the amputation level was preserved at discharge.

Infection was controlled, wound healing was satisfactory, and limb function proximal to the amputation level was preserved at discharge. At the 1-month postoperative follow-up, the transmetatarsal amputation stump and posterior ankle/Achilles wound remained satisfactorily healed without wound breakdown or clinical evidence of recurrent infection.

Conclusions

Postpartum necrotizing fasciitis should be considered in patients presenting with rapidly progressive limb pain, swelling, skin necrosis, or gangrene, even after vaginal delivery and in the absence of leukocytosis or major arterial occlusion. Early resuscitation, correction of physiological abnormalities, culture-guided antimicrobial therapy, aggressive surgical source control, and staged wound reconstruction are essential for controlling infection and preserving functional limb length.

Keywords

Postpartum necrotizing fasciitis; adolescent pregnancy; unsupervised home vaginal delivery; unilateral foot gangrene; transmetatarsal amputation; negative-pressure wound therapy; resource-limited setting

Background

Necrotizing fasciitis is a rapidly progressive infection of the fascia and subcutaneous tissues that can cause extensive tissue necrosis, septic shock, limb loss, and death. Because the early clinical manifestations may appear nonspecific, delayed recognition and treatment can result in rapid disease progression. Successful management requires prompt resuscitation, broad-spectrum antimicrobial therapy, and urgent surgical exploration and debridement [1, 2].

Necrotizing fasciitis occurring during pregnancy or the postpartum period is uncommon but represents a serious obstetric and surgical emergency. Previously reported postpartum cases have most frequently involved cesarean-section wounds, episiotomy sites, the vulva, perineum, or abdominal wall [3–6, 8]. Cases occurring after vaginal delivery without an identifiable operative wound are less frequently described. In resource-limited settings, unsupervised delivery, delayed presentation, severe anemia, inadequate access to emergency

surgical care, and other physiological disturbances may contribute to advanced infection at hospital admission.

We report an unusual case of postpartum necrotizing fasciitis associated with unilateral right foot gangrene in a 15-year-old adolescent who presented approximately two weeks after an unsupervised home vaginal delivery. Computed tomography demonstrated soft-tissue gas and a posterior calf intramuscular abscess, whereas computed tomography angiography showed preserved major arterial flow. The patient required resuscitation, serial surgical debridements, transmetatarsal amputation, negative-pressure wound therapy, definitive stump closure, and skin grafting. This case emphasizes the need to consider necrotizing soft-tissue infection in postpartum patients with rapidly progressive extremity pain, swelling, tissue necrosis, or gangrene, even in the absence of marked leukocytosis or major arterial occlusion.

Case presentation

A 15-year-old previously healthy postpartum adolescent from a rural community was referred to our institution approximately two weeks after an unsupervised home vaginal delivery in a resource-limited setting. She presented with progressive pain and swelling of the right lower limb, foul-smelling discharge, black discoloration of the right foot and distal lower limb, and inability to ambulate.

According to the patient and her family, the symptoms initially began with swelling and erythema of the right lower extremity. These were followed by progressively worsening pain, skin necrosis, foul-smelling discharge, and black discoloration of the foot. The postpartum period was also complicated by profound weakness and progressive fatigue. The newborn died during the peripartum period.

The patient had no known history of diabetes mellitus, hypertension, peripheral vascular disease, thromboembolic disease, trauma, chronic kidney disease, or other significant medical comorbidities.

Clinical findings

On admission, the patient appeared critically ill and markedly pale. Examination of the right lower extremity revealed diffuse swelling, foul-smelling discharge, extensive soft-tissue necrosis, and gangrenous involvement of the forefoot and distal foot.

The forefoot showed dry gangrene extending proximally to the metatarsal region, with surrounding soft-tissue compromise (Figure 1A). A closer clinical view demonstrated well-demarcated dry gangrenous changes involving the distal foot and metatarsal region, consistent with nonviable tissue (Figure 1B). The posterior ankle and Achilles region also showed necrotic and infected soft-tissue involvement, indicating extension of the disease beyond the forefoot (Figure 1C).

The overall clinical findings were consistent with an advanced necrotizing soft-tissue infection complicated by distal foot gangrene.

Diagnostic assessment

Initial laboratory investigations revealed severe anemia, with a hemoglobin concentration of approximately 4 g/dL. The white blood cell count was 7,000/µL, and the C-reactive protein concentration was elevated at 70 mg/L, indicating substantial inflammatory and infectious activity despite the absence of leukocytosis.

Coagulation testing demonstrated an elevated international normalized ratio of 2.0, consistent with coagulopathy. Routine biochemical investigations, including renal and liver function tests, serum electrolytes, blood glucose, and thyroid function tests, were within normal limits. There was no clinical evidence of disseminated intravascular coagulation.

Computed tomography of the right lower extremity demonstrated extensive soft-tissue swelling and multiple foci of gas within the soft tissues of the right foot, findings highly suggestive of necrotizing fasciitis (Figure 2A). A long-segment, peripherally enhancing fluid collection was also identified within the posterior calf musculature, extending into the plantar foot musculature and measuring up to 2 cm in anteroposterior diameter. These findings were consistent with an intramuscular abscess (Figure 2B).

Computed tomography angiography demonstrated preserved major arterial flow, with no evidence of major arterial occlusion (Figure 2A, B). The imaging findings supported the diagnosis of an advanced necrotizing soft-tissue infection complicated by distal foot gangrene.

The diagnosis was further supported intraoperatively by the presence of extensive necrotic soft tissue requiring radical debridement. Deep tissue specimens obtained during surgical debridement were submitted for microbiological analysis. Cultures grew *Pseudomonas*

aeruginosa and *Escherichia coli*, confirming a polymicrobial necrotizing soft-tissue infection.

Therapeutic intervention

Initial management focused on stabilization, correction of severe anemia with packed red blood cell transfusion, correction of coagulopathy with fresh frozen plasma, and immediate initiation of broad-spectrum intravenous antibiotic therapy. Antibiotic therapy was subsequently adjusted according to the deep tissue culture results and the patient's clinical response.

The patient underwent serial surgical debridements to achieve source control and remove nonviable tissue. Because of irreversible tissue loss and nonviability of the forefoot, a right transmetatarsal amputation was performed. Extensive debridement of the necrotic and infected tissues of the foot, distal lower limb, and posterior ankle/Achilles region was also undertaken **(Figure 3A–C).**

Following repeated debridement, the wounds showed progressive removal of nonviable tissue and improvement of the wound beds **(Figure 4A, B).** Negative-pressure wound therapy, also known as vacuum-assisted closure therapy, was applied to the transmetatarsal amputation site to promote granulation tissue formation and prepare the wound for definitive **closure (Figure 4C).**

During the fourth week of hospitalization, after adequate infection control and preparation of a healthy wound bed, definitive closure of the transmetatarsal amputation stump was performed. The remaining posterior ankle/Achilles soft-tissue defect was covered with a skin graft (**Figure 5A, B).**

The patient's clinical course, including the timing of presentation, operative interventions, wound management, discharge, and follow-up, is summarized in Table 1.

Table 1. Timeline of the patient's clinical course.

Time point	Clinical event
Day 0	The patient underwent an unsupervised home vaginal delivery in a rural setting.

Approximately 2 weeks postpartum	Progressive right lower-limb pain, swelling, foul-smelling discharge, black discoloration of the right foot, and inability to ambulate developed before presentation.
1 June 2026, hospital day 1	The patient was admitted with severe anemia, advanced right lower-limb soft-tissue infection, distal foot gangrene, and suspected necrotizing fasciitis. Initial management included packed red blood cell transfusion, fresh frozen plasma for correction of coagulopathy, and broad-spectrum intravenous antibiotics. Admission findings are shown in Figure 1A-C.
6 June 2026, hospital day 6	Initial surgical debridement was performed. Extensive necrotic soft tissue was identified intraoperatively, and deep tissue specimens were collected for microbiological culture.
6-12 June 2026, hospital days 6-12	Serial surgical debridements and wound care were performed to remove nonviable tissue, achieve source control, and prepare the wounds for further management (Figure 3B, C).
13 June 2026, hospital day 13	Because of irreversible forefoot tissue loss and nonviability, a right transmetatarsal amputation was performed (Figure 3A). Negative-pressure wound therapy was subsequently applied to promote granulation tissue formation and optimize the wound bed (Figure 4C).
Hospital weeks 3-4	Continued wound assessment and negative-pressure wound therapy demonstrated progressive

	improvement, healthy granulation tissue formation, and control of infection (Figure 4A, B).
During the fourth week	Definitive closure of the transmetatarsal amputation stump was performed. Residual soft-tissue loss over the posterior ankle/Achilles region was managed with skin grafting to achieve wound coverage (Figure 5A, B).
End of the 4-week hospital stay	The patient demonstrated satisfactory wound healing, infection control, and preservation of limb function proximal to the transmetatarsal amputation level. She was discharged with outpatient follow-up.
One-month postoperative follow-up	The transmetatarsal amputation stump and posterior ankle/Achilles wound demonstrated satisfactory healing, without wound breakdown, discharge, recurrent necrosis, or clinical evidence of recurrent infection (Figure 6A, B).

Follow-up and outcomes

The patient's condition improved progressively following multidisciplinary management, including blood transfusion, correction of coagulopathy, broad-spectrum intravenous antibiotic therapy, serial surgical debridements, transmetatarsal amputation, and negative-pressure wound therapy.

The infection was successfully controlled, and the wounds developed healthy granulation tissue during negative-pressure wound therapy (Figure 4A, B). During the fourth week of hospitalization, definitive closure of the transmetatarsal amputation stump was performed, and the residual posterior ankle/Achilles soft-tissue defect was covered with a skin graft (Figure 5A, B).

At the end of the four-week hospital stay, the patient demonstrated satisfactory wound healing, no clinical evidence of ongoing infection, and preservation of limb function proximal to the transmetatarsal amputation level. She was discharged with outpatient follow-up.

At the 1-month postoperative follow-up, the transmetatarsal amputation stump and posterior ankle/Achilles wound demonstrated satisfactory healing, without wound breakdown, discharge, recurrent necrosis, or clinical evidence of recurrent infection (Figure 6A, B).

Discussion

Necrotizing fasciitis is a rapidly progressive soft-tissue infection associated with substantial morbidity, limb loss, and mortality. Successful treatment depends on early recognition, prompt resuscitation, broad-spectrum antimicrobial therapy, and urgent surgical source control [1, 2, 9]. Although necrotizing fasciitis is uncommon during the postpartum period, it should be considered an obstetric and surgical emergency when a postpartum patient develops rapidly progressive pain, swelling, foul-smelling discharge, skin discoloration, or tissue necrosis.

Most previously reported obstetric and postpartum cases have involved cesarean-section wounds, episiotomy sites, vulvar or perineal infections, or abdominal wall involvement [3–6, 8]. In contrast, our patient developed an advanced necrotizing soft-tissue infection involving the distal right lower limb approximately two weeks after an unsupervised home vaginal delivery. The presence of unilateral forefoot gangrene and posterior ankle/Achilles involvement makes this presentation particularly unusual.

The precise relationship between the home delivery and the lower-limb infection could not be established. No confirmed anatomical route of spread from the genital tract to the lower extremity was identified. Therefore, the delivery should be considered an important temporal and clinical context rather than a proven direct cause of the infection. Nevertheless, delayed access to healthcare during the postpartum period may have contributed to the advanced disease at presentation.

Several factors may have worsened the severity of the infection. The patient presented approximately two weeks after delivery with profound anemia, demonstrated by a hemoglobin concentration of approximately 4 g/dL, and coagulopathy, with an international normalized ratio of 2.0. Severe anemia may have reduced tissue oxygen delivery and impaired the physiological response to infection. Delayed presentation and limited access to

specialized surgical care may also have allowed the infection to progress before definitive source control was achieved.

An important feature of this case was the development of distal foot gangrene despite preserved major arterial flow on computed tomography angiography. The absence of major arterial occlusion suggests that large-vessel obstruction was not the primary explanation for the tissue loss. Severe polymicrobial infection, local tissue destruction, inflammation, tissue hypoxia, and possible microvascular dysfunction may have contributed to the gangrene. However, because advanced investigations of the microcirculation were not performed, the exact mechanism and reason for the unilateral distribution remain uncertain.

The laboratory findings also demonstrate that severe necrotizing infection may occur without leukocytosis. The patient's white blood cell count was 7,000/μL, whereas the C-reactive protein concentration was elevated at 70 mg/L. A normal leukocyte count should therefore not exclude necrotizing fasciitis when the clinical findings are strongly suggestive of an aggressive soft-tissue infection. Clinical examination, imaging findings, and intraoperative assessment remain essential for diagnosis [1, 2, 9].

Computed tomography helped determine the extent of infection by demonstrating soft-tissue gas within the right foot and a posterior calf intramuscular abscess extending toward the plantar musculature. Computed tomography angiography also excluded major arterial occlusion. However, imaging should support clinical decision-making and should not delay surgical exploration when necrotizing fasciitis is strongly suspected [7].

Microbiological confirmation was obtained from deep tissue specimens collected during surgical debridement. Cultures grew *Pseudomonas aeruginosa* and *Escherichia coli*, confirming a polymicrobial necrotizing soft-tissue infection. This finding supports the immediate use of broad-spectrum empirical antimicrobial therapy, followed by adjustment according to deep tissue culture results and the patient's clinical response. Deep intraoperative specimens are more clinically informative than superficial wound swabs in advanced soft-tissue infection [1, 2, 9].

Surgical source control was central to the patient's recovery. Serial debridements were necessary to remove necrotic tissue and control progression of the infection. Because the forefoot was irreversibly nonviable, a right transmetatarsal amputation was performed to preserve the greatest possible functional limb length while achieving source control [1, 2, 9].

Negative-pressure wound therapy was subsequently used at the transmetatarsal amputation site and the posterior ankle/Achilles wound. This supported granulation tissue formation and prepared the wounds for definitive reconstruction. Once infection control and a healthy wound bed had been achieved, the transmetatarsal stump was closed, and the remaining posterior ankle/Achilles soft-tissue defect was covered with a skin graft [10].

This staged multidisciplinary approach resulted in infection control, satisfactory wound healing, and preservation of limb function proximal to the amputation level. At the 1-month postoperative follow-up, the clinical photographs demonstrated satisfactory wound healing without wound breakdown, discharge, recurrent necrosis, or clinical evidence of recurrent infection.

This case emphasizes that postpartum necrotizing fasciitis may present at an anatomical site distant from the genital tract or abdominal wall. It also shows that preserved major arterial circulation and the absence of leukocytosis do not exclude severe infection-associated tissue necrosis. In resource-limited settings, early suspicion, physiological stabilization, correction of anemia and coagulopathy, culture-guided antimicrobial therapy, repeated surgical debridement, amputation, when necessary, negative-pressure wound therapy, and staged reconstruction may achieve infection control while preserving functional limb length.

Limitations

This report describes a single patient; therefore, the findings cannot be generalized to all cases of postpartum necrotizing fasciitis. Although the patient demonstrated satisfactory wound healing during hospitalization and at postoperative follow-up, the available follow-up period was limited. Long-term functional outcomes, gait assessment, rehabilitation progress, prosthetic or orthotic requirements, and validated patient-reported outcome measures were not available.

Although computed tomography angiography demonstrated preserved major arterial flow without evidence of major arterial occlusion, advanced vascular investigations assessing the microcirculation were not performed. Consequently, the precise mechanism responsible for the unilateral distal foot gangrene remains uncertain.

In addition, a direct anatomical or microbiological relationship between the unsupervised home vaginal delivery and the lower-limb infection could not be established. The delivery

should therefore be regarded as the clinical and temporal context of the presentation rather than a confirmed direct cause.

The resource-limited setting also restricted access to advanced diagnostic investigations, reconstructive procedures, and structured rehabilitation services that might have provided additional information regarding the pathophysiology, treatment, and long-term functional outcome.

Conclusion

Postpartum necrotizing fasciitis is a rare but potentially life-threatening condition that requires early recognition and prompt multidisciplinary management. This case describes an unusual presentation of necrotizing soft-tissue infection with unilateral right foot gangrene in a postpartum adolescent approximately two weeks after an unsupervised home vaginal delivery.

The absence of leukocytosis and the preservation of major arterial flow did not exclude severe infection-related tissue necrosis. Delayed presentation, profound anemia, coagulopathy, polymicrobial infection, and limited access to healthcare may have contributed to the advanced disease at admission.

Early resuscitation, correction of anemia and coagulopathy, broad-spectrum antimicrobial therapy followed by culture-guided treatment, serial surgical debridement, transmetatarsal amputation, negative-pressure wound therapy, definitive stump closure, and skin grafting were essential for infection control and preservation of functional limb length. This case highlights the importance of maintaining a high index of suspicion for necrotizing fasciitis in postpartum patients presenting with rapidly progressive limb pain, swelling, skin discoloration, necrosis, or gangrene, even when routine laboratory or vascular findings appear reassuring.

Patient perspective

The patient and her family reported relief following control of the infection and improvement in her general condition. Although she underwent multiple surgical procedures, including serial debridements and transmetatarsal amputation, she was encouraged by the successful wound healing, definitive closure of the amputation stump, skin graft coverage of the posterior ankle/Achilles defect, and preservation of the remaining limb.

At the 1-month postoperative follow-up, the patient and her family remained satisfied with her recovery and optimistic about continued healing and rehabilitation.

This case report was prepared and reported in accordance with the CARE guidelines.

Declarations

Ethics approval and consent to participate

This case report was reviewed and approved by the relevant institutional authority at Mogadishu Somali Türkiye Recep Tayyip Erdoğan Training and Research Hospital, Mogadishu, Somalia. The study was conducted in accordance with institutional and local ethical requirements. Written informed consent to participate was obtained from the patient's parent or legal guardian because the patient was 15 years old.

Consent for publication

Written informed consent for publication of the patient's clinical information and potentially identifiable clinical images was obtained from the patient's parent or legal guardian. A copy of the written consent is available for review by the Editor-in-Chief of the journal upon request.

Availability of data and materials

All data relevant to this case report are included within the published article. Additional information may be obtained from the corresponding author upon reasonable request, subject to patient confidentiality and institutional requirements.

Competing interests

The authors declare that they have no competing interests.

Funding

The authors received no financial support for the research, authorship, or publication of this article.

Authors' contributions

AMA was involved in the conception of the case report, clinical management of the patient, collection and interpretation of clinical data, preparation of the initial manuscript, and revision of the final manuscript.

OMA contributed to the clinical management of the patient, data collection, and critical revision of the manuscript.

MAO contributed to the clinical management of the patient, interpretation of the clinical findings, and revision of the manuscript.

SAW contributed to clinical evaluation and critical revision of the manuscript.

MODA contributed to interpretation of the radiological findings and revision of the manuscript.

MMM contributed to emergency and critical care management, interpretation of clinical data, and revision of the manuscript.

AAO contributed to microbiological and laboratory evaluation and revision of the manuscript.

ARHH contributed to academic supervision and critical revision of the manuscript.

All authors read and approved the final manuscript.

Acknowledgements

The authors thank the clinical, surgical, nursing, radiology, laboratory, and wound-care teams at Mogadishu Somali Türkiye Recep Tayyip Erdoğan Training and Research Hospital for their contributions to the patient's care.

The authors also thank the patient and her family for granting permission to publish this case and its accompanying clinical images.

Authors' information

Not applicable.

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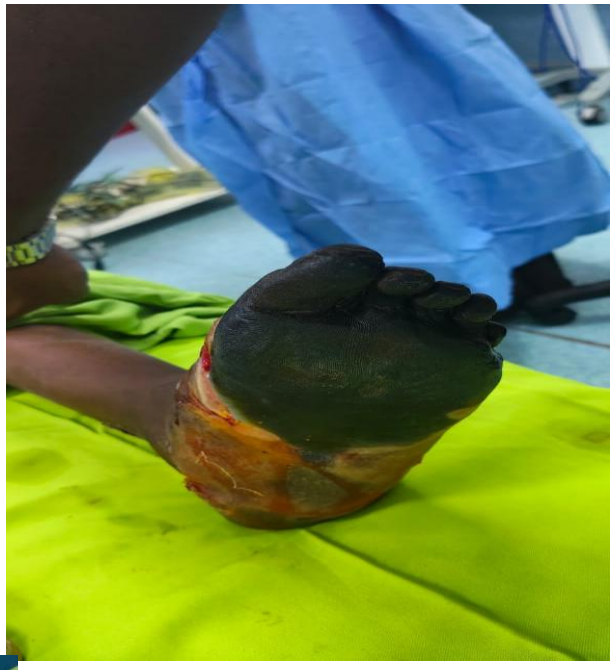


Fig 1B



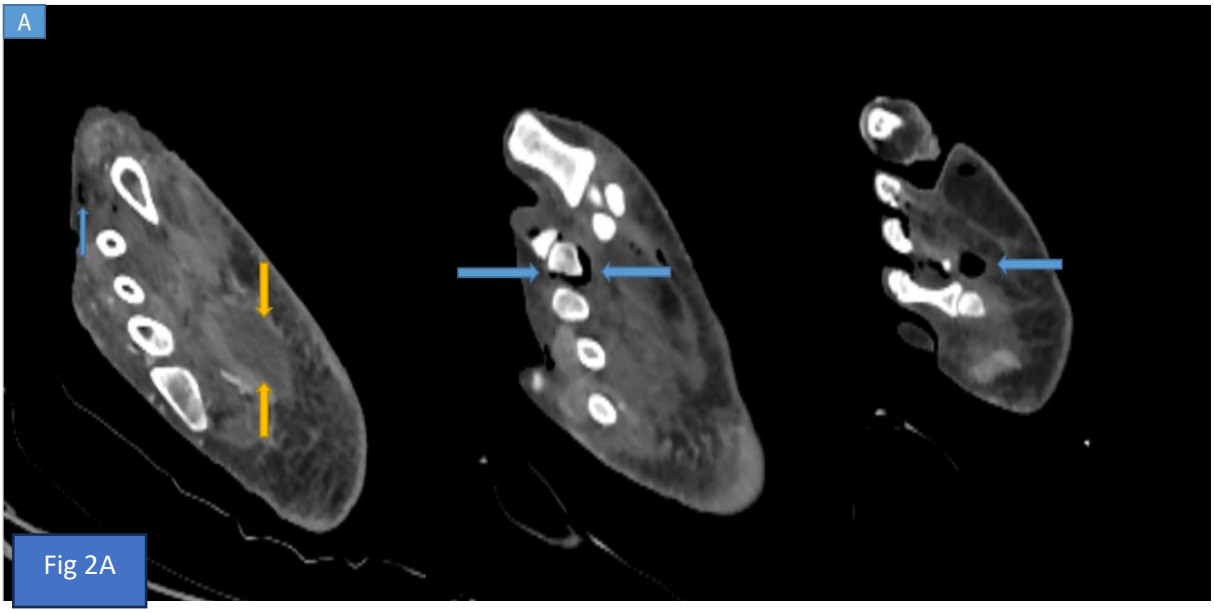
Fig 1C

Figure 1. Clinical presentation at admission.

(A) Clinical photograph of the right foot at admission showing dry gangrene of the forefoot extending proximally toward the metatarsal region, with surrounding soft-tissue compromise.

(B) Closer clinical view demonstrating well-demarcated gangrenous changes involving the distal foot and metatarsal region, consistent with nonviable tissue.

(C) Clinical photograph of the posterior ankle/Achilles region showing necrotic and infected soft-tissue involvement extending beyond the forefoot..



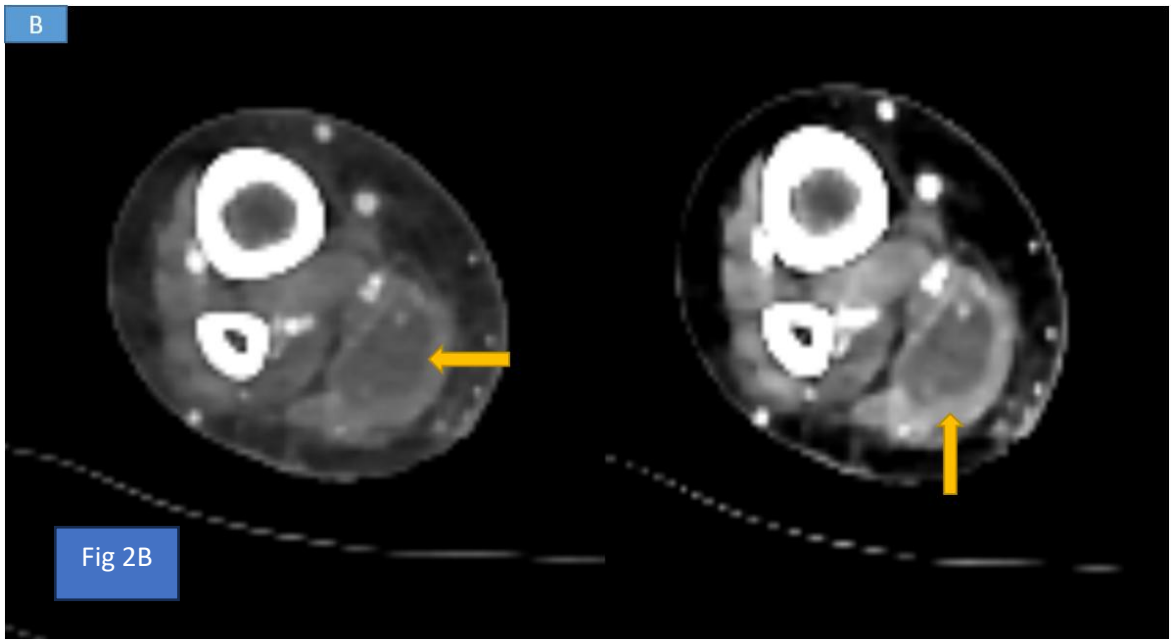


Figure 2. Computed tomography findings of the right lower extremity.

(A) Contrast-enhanced computed tomography image demonstrating extensive soft-tissue gas and surrounding inflammatory changes within the right foot, findings highly suggestive of necrotizing fasciitis. Opacification of the major arterial vessels is preserved.

(B) Contrast-enhanced computed tomography image showing a long-segment, peripherally enhancing fluid collection within the posterior calf musculature extending toward the plantar foot musculature, consistent with an intramuscular abscess. Adjacent soft-tissue gas is also present.







Figure 3. Intraoperative debridement and transmetatarsal amputation.

(A) Intraoperative clinical photograph showing right transmetatarsal amputation performed because of irreversible forefoot gangrene and nonviable tissue

(B) Intraoperative clinical photograph showing extensive debridement of necrotic and infected soft tissue of the right foot and distal lower limb.

(C) Intraoperative clinical photograph showing additional debridement of the posterior ankle/Achilles wound to remove necrotic tissue and achieve source control.

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Figure 4. Serial wound management and negative-pressure wound therapy.

(A) Clinical photograph obtained after serial surgical debridements, showing removal of nonviable tissue and progressive improvement of the wound bed.

(B) Clinical photograph showing the posterior ankle/Achilles wound after surgical debridement, with removal of necrotic and infected soft tissue.

(C) Clinical photograph showing negative-pressure wound therapy applied to the trans metatarsal amputation site to promote granulation tissue formation and prepare the wound for definitive closure.

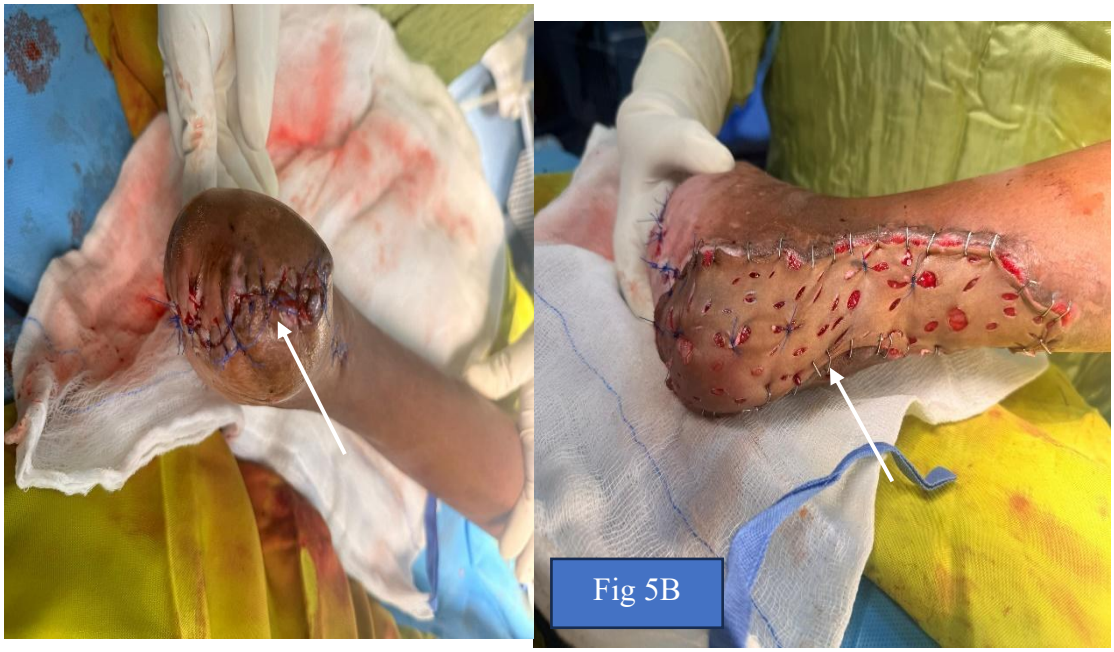


Figure 5. Definitive wound closure and skin grafting.

(A) Clinical photograph showing definitive closure of the right transmetatarsal amputation stump after serial debridement and vacuum-assisted closure therapy.

(B) Clinical photograph showing skin graft coverage of the posterior ankle/Achilles soft-tissue defect after adequate wound bed preparation.



Figure 6. One-month postoperative follow-up showing satisfactory wound healing. healing.

(A) Clinical photograph obtained 1 month after surgery showing satisfactory healing of the right transmetatarsal amputation stump and posterior ankle/Achilles wound from the medial aspect.

(B) Clinical photograph obtained at the same follow-up visit showing the healed wound from the opposite aspect, without wound breakdown, discharge, recurrent necrosis, or clinical signs of recurrent infection.