Case Report | Journal of Orthopaedic Case Reports 2026 September:16(9):Page 286-290

Proximal Midfoot Amputation as a Functional Alternative to Major Amputation in Advanced Diabetic Foot Infection: A Case Report

Abdulaziz F Aljehani[1], Magdi S Alzir[2], Abdulrahman Bin Haidarah[2], Mohammed O Alnadhairi[3], Abdulelah K Alqawlaq[4], Hani Mohammed Badahdah[3,5]

Learning Point of the Article:

Proximal midfoot amputation can preserve a functional, plantigrade limb, and avoid major amputation in selected patients with advanced diabetic foot infection when supported by revascularization and sustained multidisciplinary care.

Abstract

Introduction: Diabetic foot infection complicated by severe ischemia is associated with high morbidity and frequently culminates in major amputation.

Case Report: We report the case of a 62-year-old man with poorly controlled type 2 diabetes mellitus (HbA1c 11.0%), severe peripheral arterial disease, and chronic heavy smoking who presented with a chronic gangrenous, non-healing right foot wound after multiple failed partial amputations and lower-extremity angioplasties. The patient repeatedly refused major amputation. A multidisciplinary limb-salvage approach involving vascular surgery, infectious disease, endocrinology, podiatric surgery, and wound care was, therefore, undertaken. Management included repeat revascularization, targeted antimicrobial therapy, serial debridement, proximal midfoot amputation with Achilles tendon lengthening, negative pressure wound therapy, acellular dermal matrix grafting, and local flap coverage. The wound gradually stabilized with progressive granulation and resolution of infection. At 12-month follow-up, the patient remained free of recurrent infection, required no further amputation, reported minimal pain, and was ambulating independently with custom footwear.

Conclusion: This case highlights proximal midfoot amputation as a functional alternative to major amputation in selected high-risk patients when supported by sustained multidisciplinary care.

Keywords: Diabetic foot infection, limb salvage, midfoot amputation, multidisciplinary care, peripheral arterial disease.

Introduction

Diabetic foot infection (DFI) is a serious complication of diabetes mellitus and a major cause of non-traumatic lower-extremity amputation worldwide. It is associated with high morbidity, prolonged hospitalization, increased healthcare costs, and reduced quality of life [1]. Its pathogenesis is multifactorial, commonly involving peripheral neuropathy, peripheral arterial disease, impaired immunity, and poor glycemic control, all of which contribute to tissue breakdown and delayed wound healing [1,2]. Recurrent ulceration and infection further increase the risk of limb loss and mortality, making prevention and early intervention essential [3]. Current guidelines emphasize infection control, restoration of perfusion, pressure offloading, and metabolic optimization as cornerstones of management [4,5].

Access this article online

Website: www.jocr.co.in

DOI: https://doi.org/10.13107/jocr.2026.v16.i09.8066

Author's Photo Gallery

Dr. Abdulaziz F Aljehani | Dr. Magdi S Alzir | Dr. Abdulrahman Bin Haidarah | Dr. Mohammed O Alnadhairi | Dr. Abdulelah K Alqawlaq | Dr. Hani Mohammed Badahdah

[1]Department of Medicine, Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia,
[2]Department of Orthopedic and Spine Surgery, International Medical Center, Jeddah, Saudi Arabia,
[3]Department of Podiatric Foot and Ankle Surgery, Dr. Sulaiman Al Habib Medical Group, Jeddah, Saudi Arabia,
[4]General Medicine Practice Program, Batterjee Medical College, Jeddah, Saudi Arabia,
[5]Department of Podiatric Foot and Ankle Surgery, International Medical Center, Jeddah, Saudi Arabia.

Address of Correspondence:
Dr. Abdulelah Khamis Alqawlaq,
General Medicine Practice Program, Batterjee Medical College, Jeddah, Saudi Arabia.
E-mail: 150170.abdulelah@bmc.edu.sa

Submitted: 19/06/2026; Review: 06/07/2026; Accepted: August 2026; Published: September 2026

DOI: https://doi.org/10.13107/jocr.2026.v16.i09.8066

Figure 1: Pre-operative clinical photograph demonstrating gangrenous changes of the right forefoot with extensive necrosis.

Figure 2: Immediate post-operative clinical photograph following proximal midfoot (Lisfranc) amputation, showing local flap coverage with stable wound margins and preservation of a plantigrade foot.

Historically, patients with advanced infection and severe ischemia, especially after failed prior interventions, were frequently managed with major amputation. However, major amputation in diabetic patients is associated with substantial functional decline and high long-term mortality [6]. For this reason, multidisciplinary team (MDT) care has become central to the management of complex DFI. Combined input from vascular surgery, infectious disease, endocrinology, podiatric surgery, wound care, and rehabilitation has been associated with improved limb salvage and survival [4, 7]. Partial foot and midfoot amputations have also emerged as limb-preserving alternatives in selected patients, particularly when adequate perfusion and wound care can be achieved [8].

This case demonstrates the feasibility of proximal midfoot amputation as a limb-sparing alternative to major amputation in advanced DFI through sustained MDT care.

Case Report

A 62-year-old man with poorly controlled type 2 diabetes mellitus presented with a painful, chronic, non-healing right foot wound. His comorbidities included severe peripheral arterial disease and chronic heavy smoking. Admission laboratory findings were consistent with uncontrolled diabetes, active infection, and chronic inflammation: HbA1c 11.0%, white blood cell count 14.8 × 10^9/L, hemoglobin 10.2 g/dL, platelet count 412 × 10^9/L, C-reactive protein 126 mg/L, erythrocyte sedimentation rate 92 mm/h, serum creatinine 1.1 mg/dL, blood urea nitrogen 24 mg/dL, serum albumin 2.8 g/dL, and random blood glucose 286 mg/dL. His history was notable for multiple failed limb-salvage attempts, including repeated debridements, first and second ray amputations, and multiple lower-extremity angioplasties. He reported severe ischemic pain requiring high-dose analgesics, with a pre-operative visual analog scale (VAS) pain score of 9/10. Despite repeated counseling, he consistently refused major amputation.

Examination revealed absent pedal pulses. The right foot showed an open ischemic wound with extensive slough, necrotic and fibrotic tissue, minimal pale granulation tissue, periwound maceration, and epidermal lysis. Gangrene involved the third and fourth toes (Fig. 1). Imaging confirmed advanced peripheral arterial disease with severe distal arterial insufficiency and poor pedal runoff. Given the persistent ischemia, progressive tissue loss, previous failed interventions, and refusal of major amputation, a limb-salvage strategy was pursued through coordinated MDT care. Pre-operative planning included repeat vascular assessment for revascularization, targeted antimicrobial therapy directed by the infectious disease team, and glycemic optimization by the endocrinology team.

The patient initially underwent a right Lisfranc amputation. However, persistent ischemia and exposed bone necessitated

Figure 3: Post-operative clinical photograph demonstrating wound dehiscence with partial separation of the surgical incision and exposed soft tissue.

further operative management. As part of the ongoing MDT plan, vascular surgery performed repeat revascularization, and the podiatric surgery and wound care teams proceeded with proximal midfoot revision and Achilles tendon lengthening to address equinus deformity. Immediate post-operative assessment showed local flap coverage with stable wound margins and preservation of a plantigrade foot (Fig. 2). During the post-operative course, wound dehiscence developed, with partial separation of the surgical incision and exposed soft tissue (Fig. 3). Serial debridements were then performed, followed by negative pressure wound therapy, acellular dermal matrix grafting (Fig. 4), and local flap coverage to promote healing and preserve function.

The patient remained under close MDT follow-up. Serial investigations showed progressive improvement: white blood cell count decreased to 8.9×10^9/L, C-reactive protein to 18 mg/L, erythrocyte sedimentation rate to 38 mm/h, serum albumin improved to 3.5 g/dL, and random blood glucose decreased to 154 mg/dL. Renal function remained stable, with a serum creatinine level of 1.0 mg/dL. Clinically, the wound showed progressive granulation, resolution of necrotic tissue, and stabilization without evidence of systemic infection.

At 12-month follow-up, the patient was ambulating independently with custom footwear, reported minimal residual pain with a VAS score of 2/10, remained free of recurrent infection, and required no further amputation. Final assessment showed complete wound healing with a stable, plantigrade foot suitable for weight-bearing (Fig. 5).

Discussion

The major difficulties in this case were the coexistence of severe peripheral arterial disease, uncontrolled diabetes, recurrent infection, extensive tissue necrosis, multiple prior failed limb-salvage procedures, and the patient's refusal of major amputation. Together, these factors created a very high risk of persistent wound failure, progressive infection, and eventual major limb loss. Previous studies have shown that DFI complicated by ischemia is strongly associated with poor healing, repeated interventions, and a higher risk of amputation, particularly in the presence of advanced peripheral arterial disease [1,2]. Poor glycemic control, nonviable tissue, and repeated prior surgical failure are also recognized predictors of adverse outcomes [2, 9].

Figure 4: Intraoperative clinical photograph showing placement of acellular dermal matrix over the midfoot wound.

Figure 5: Final follow-up clinical photograph demonstrating complete wound healing with a stable, plantigrade foot suitable for weight-bearing.

A further challenge was attempting limb preservation after repeated unsuccessful debridements, ray amputations, and angioplasties. In such settings, major amputation is often considered the most definitive treatment, especially when ischemia and tissue loss coexist [4,6]. However, major amputation is associated with marked functional decline and substantial long-term mortality in diabetic patients [6]. In this case, the patient's refusal of major amputation made functional limb salvage the only acceptable pathway.

This case suggests that proximal midfoot amputation can be a practical limb-preserving alternative in selected high-risk patients when supported by sustained MDT care. The favorable result was likely attributable not only to the amputation level itself but also to coordinated management of perfusion, infection, glycemic control, wound bed preparation, and soft-tissue reconstruction. This is consistent with reports showing improved limb salvage when diabetic foot care is delivered through multidisciplinary models [4,7]. Restoration of perfusion was especially important, as ischemia is a major determinant of poor healing in diabetic foot disease [2].

Our findings also align with the literature supporting partial foot and midfoot amputation as alternatives to major amputation when preservation of a plantigrade, functional foot is achievable [8]. In our patient, despite severe disease and post-operative wound complications, the final outcome was a stable plantigrade foot that allowed independent ambulation with custom footwear, supporting the functional value of this approach [8]. In addition, the use of negative pressure wound therapy is supported by prior evidence demonstrating its role in promoting granulation tissue formation and wound bed preparation in complex diabetic wounds [10].

This report has limitations. As a single-case study, its findings cannot be generalized broadly. Successful implementation required repeated interventions, prolonged follow-up, advanced wound care, vascular optimization, patient adherence, and access to an experienced MDT. The long-term durability of limb function and the risk of recurrent infection or ulceration after proximal midfoot amputation remain uncertain and require further study.

Conclusion

This case highlights that proximal midfoot amputation, when supported by coordinated MDT care, can preserve limb function and avoid major amputation in selected patients with advanced DFI and poor prognostic factors. Sustained multidisciplinary management may achieve functional limb salvage, maintain independence, and improve quality of life even when major amputation appears inevitable.

Clinical Message

Selected patients with advanced diabetic foot infection may achieve functional limb salvage with proximal midfoot amputation when perfusion, infection, glycemic control, wound reconstruction, and offloading are managed through a coordinated multidisciplinary team.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this article

How to Cite this Article

Aljehani AF, Alzir MS, Haidarah AB, Alnadhairi MO, Alqawlaq AK, Badahdah HM. Proximal Midfoot Amputation as a Functional Alternative to Major Amputation in Advanced Diabetic Foot Infection: A Case Report. Journal of Orthopaedic Case Reports 2026 September;16(09): 286-290.