

Introduction

- Pyoderma gangrenosum (PG) is a rare autoinflammatory ulcerative dermatosis associated with neutrophil dysfunction. [1]
- PG typically begins as a pustule that rapidly progresses to a painful necrotic ulcer with undermined borders. [1]
- The clinical course is unpredictable, making management challenging.
- Surgical intervention is controversial due to the risk of pathergy, where minor trauma can trigger lesion expansion. [2]
- Consequently, limited evidence exists regarding safe surgical techniques.
- This creates a significant gap in treatment strategies for medication-refractory cases. [3]

Case Presentation

- 38-year-old female with extensive pyoderma gangrenosum affecting the right lower extremity for >2 years.
- Wound complicated by dense fibrosis, chronic infection, and prior DVT, with poor edema control.
- Previously treated with maximal immunosuppressive therapy by dermatology.
- Referred to plastic surgery for further management.

Methods

- In collaboration with dermatology, the patient's pyoderma gangrenosum was determined to be inactive.
- Despite this, the wound continued to progress, becoming increasingly painful and limb-threatening.
- Operative sharp excisional debridement of fibrotic tissue was performed to prepare the wound for reconstruction.
- Negative pressure wound therapy with instillation and dwell (NPWTi-d) and four-layer compression were initiated for wound care and edema control.
- Wound cultures grew *Pseudomonas aeruginosa*.
- After adequate granulation tissue formation, a staged split-thickness skin graft was performed with negative pressure wound therapy.
- Initial graft take was 100%.

References

- Eisendle, Klaus et al. "Surgical Treatment of Pyoderma Gangrenosum with Negative Pressure Wound Therapy and Skin Grafting, Including Xenografts: Personal Experience and Comprehensive Review on 161 Cases." *Advances in wound care* vol. 9 7 (2020): 405-425. doi:10.1089/wound.2020.1160
- Attinger, Christopher E., et al. "Surgical débridement." *Clinics in Podiatric Medicine and Surgery*, vol. 17, no. 4, Oct. 2000, pp. 599-630. https://doi.org/10.1016/s0891-8422(23)01152-7
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Results

Initial Wound and Stage One Debridement



Figure 1A: Initial Presentation of severe right lower extremity Pyoderma Gangrenosum.



Figure 1B: 5 days status-post sharp excisional debridement and STSG, followed by NPWTi-d

1 Month Post Operative



Figure 2A: Debrided wound to the right lower leg, 1 month post operative (lateral view)



Figure 2B: Debrided wound to the right lower leg, 1 month post operative (aerial view)

2 Month Post Operative



Figure 3A: Skin graft to the right lower limb with mild skin tearing due to edema (right lateral view) with no sign of recurrent PG



Figure 3B: Skin graft to the right lower limb undergoing wound care for skin tear (aerial view) with no sign of recurrent PG.



Figure 3C: Skin graft to the right lower limb with mild skin tearing due to edema (left lateral view) with no sign of recurrent PG.

Key Pearls

- Pyoderma Gangrenosum is a rare ulcerative dermatosis that unpredictably worsens without aggressive treatment.**
- In collaboration with dermatology, surgical intervention was found to be the most appropriate course of treatment.**
- Surgical intervention such as debridement and skin graft are often necessary for healing and minimizing the threat of limb loss.**

Results

- 1 month post-op: ~95% graft take with no evidence of pathergy.
- No early complications observed (infection, cellulitis, or graft failure).
- Patient reported significant pain reduction and satisfaction with the aesthetic outcome.
- 2 months post-closure: return to work led to increased leg edema and partial wound reopening.
- Dermatology evaluation showed no concern for recurrent pyoderma gangrenosum.
- Patient is currently improving after one additional debridement and FMLA leave to allow adequate healing before returning to work.

Conclusion

- Excisional sharp debridement followed by split-thickness skin grafting can be a viable management strategy for select patients with pyoderma gangrenosum.
- Surgical intervention was necessary due to progression toward a limb-threatening wound recalcitrant to dermatologic management.
- Patient adherence to wound care protocols is crucial in the prevention early postoperative complications.
- Long-term success requires careful wound monitoring and edema control to maintain healing.
- Further study is needed to identify the PG phenotypes that may respond best to surgical management.