

Skin Cell Suspension Autograft from Glabrous Donor for Wet Gangrene: A Case Study

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Introduction:

- Diabetic foot wounds present significant reconstructive challenges
- Traditional grafting methods often fail to provide durable coverage due to limited donor availability and high mechanical stress
- This case highlights the use of **skin cell suspension autograft (SCSA)** from glabrous donor skin with a meshed split-thickness skin graft (mSTSG) to achieve durable wound healing and limb preservation in a wound caused by wet gangrene

Objective:

To demonstrate the utility of SCSA combined with mSTSG for the management of challenging plantar foot wounds

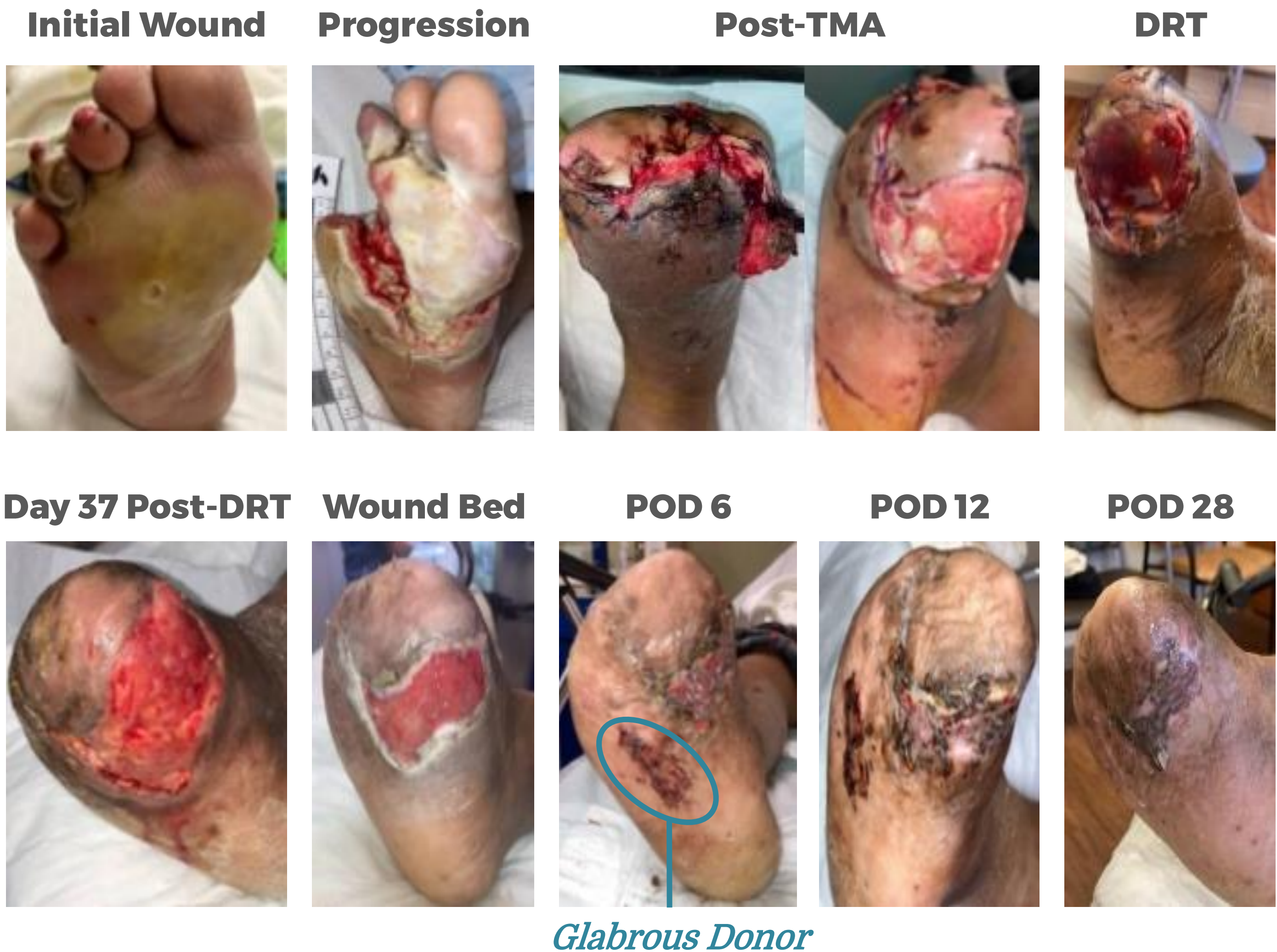
Methods:

1. **Pre-treatment:** debridement and transmetatarsal amputation (TMA)
2. **Wound bed prep:** Dermal regenerative template (DRT)
3. **Closure:** glabrous skin-derived SCSA and 3:1 mSTSG

Case Description:

- **Patient:** 51 y/o female with 18 cm² foot wound from wet gangrene
- **Comorbidities:** type 2 diabetes (A1C 11.6), tobacco usage, mild PAD
- **Hospital Course:**
 - **Initial:** DRT applied post-TMA to vascularize the wound bed
 - **Post-DRT Day 37:** the wound bed was prepared for grafting
 - **POD 0:** Glabrous skin from the plantar foot was used to prepare SCSA in 2 passes: 1st pass harvested at 0.020” which was kept and secured with suture, 2nd pass at 0.008” used to prepare SCSA and was applied over 3:1 mSTSG
 - **Follow-up period:** POD 6, POD 12, and POD 28 post-grafting

Case Photos:



Results:

- **On POD 6:** plantar donor site completely healed
- **On POD 28:** plantar surface foot wound with the SCSA and mSTSG was completely healed (100% re-epithelialization)
- **On POD 65:** the graft and donor site were still healed
 - Walking for a month
- **On POD 90:** no issues with durability noted

Conclusions:

- Prompt management of wet gangrene along with utilization of SCSA and mSTSG facilitated limb salvage.
- SCSA can be prepared from glabrous donor skin which can **improve mSTSG durability on the plantar foot** while improving wound healing and minimizing donor site morbidity.
- This case demonstrates that glabrous skin-derived SCSA combined with mSTSG can provide a **durable, functional, and aesthetically acceptable reconstruction option** for complex plantar wounds in high-risk patients.