



Utilization of Autologous Skin Shave Micrografting (ASSM) for Treatment of Advanced Stage Pressure Injuries: A Seven-Patient Case Series

Igor Melnychuk, MD^{1,2}; Jordan Besh, BS, MS⁴. ¹Charles George VAMC, Asheville, NC. ²UNC School of Medicine, Chapel Hill, NC.



References

Background

- Pressure injuries (PIs) are highly prevalent and impose a substantial burden on the healthcare system globally. The highest cost is driven by stage 3 and 4 PIs.
- The reconstructive ladder for patients with stage 3-4 PIs includes primary wound closure, skin grafting, regional flaps, and free flaps.
- Split-thickness skin grafts (STSGs) are rarely used for the treatment of PIs because these ulcers often have poor wound bed conditions, and STSGs poorly respond to shear and pressure.
- ASSM not only offers epithelization of advanced PIs but also promotes tissue granulation in the wound bed.



ASSM Technique

- Requires only basic instruments (razor blade, forceps, and scissors) and can be performed in any clinical setting.
- Donor site, roughly 1/4 to 1/5 area of the recipient wound bed, is anesthetized using local anesthesia.
- Skin is harvested using a sterile razor blade in a right-to-left horizontal motion. The average skin micrograft has a thickness of under 0.2mm.
- Skin strips are then cut into smaller 0.1-0.2cm skin micrografts using scissors.
- Skin micrografts are applied evenly across the recipient wound surface without regard for the orientation of the dermis, covered with a nonadherent layer, Vaseline, and foam that are changed weekly.

Cases

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| <p>Case 1 An 80-year-old wheelchair-bound male with quadriplegia due to SCI and a recurrent stage 4 sacral PI.</p> | <p>Case 2 A 76-year-old male with DM and chronic venous insufficiency and a stage 4 calcaneal PI.</p> | <p>Case 3 A 67-year-old, mostly wheelchair bound, male with DM, PAD, history of tobacco use, and a stage 4 calcaneal PI along with a stage 3 device-related PI on the BKA stump.</p> | <p>Case 4 A 61-year-old paraplegic male due to SCI and stage 4 bilateral calcaneal and a device-related shin PIs.</p> | <p>Case 5 An 89-year-old wheelchair-bound male with ALS and stage 3 5th metatarsal head PI.</p> | <p>Case 6 An 80-year-old male with active tobacco use, PAD (ABI 0.5) and device-related stage 3 lateral malleolar PI.</p> | <p>Case 7 An 81-year-old male with bladder cancer, mild PAD, COPD, and DM and a stage 4 lateral malleolar PI.</p> |

Results

- The average age of included patients was 76 years.
- The group had ten stage 3 and 4 PIs, with an average depth of 0.3cm.
- All patients demonstrated complete healing between three weeks and four months.
- Five of the seven patients remained recurrence-free during a six-month follow-up period. Two patients (cases 1 and 6) experienced recurrence.
- Only one of the ten PIs (case 6) was open at nine months.

Conclusions

- ASSM technique offers a highly accessible, cost-efficient alternative in the treatment of selective PIs that are up to 0.5cm deep.
- This technique eliminates the need for an operating room, general anesthesia, or specialized surgical equipment. It can also be safely and effectively executed by trained midlevel providers.
- ASSM micrografts are ultra-thin STSGs, translating into better graft take in the often hostile environment of chronic PIs when graft survival depends on nutrient diffusion during the imbibition phase of engraftment.
- Skin micrografts not only promote ulcer epithelization but also induce robust tissue granulation, which enhances tolerability of healed PIs to shear and friction.