Application in a **Two-Step Procedure**

For less well-vascularized wound beds or if a 2 mm thick MatriDerm® is necessary, then the Two-Step Procedure should be used, because in these cases it cannot be safely assumed that the wound bed is capable of ensuring immediate and adequate nutrition of a split-thickness skin graft (STSG) applied at the same time.

In a Two-Step Procedure MatriDerm® is not immediately covered with a STSG, nevertheless the single steps of the therapy described before do not differentiate from the One-Step Prodedure. Follow the application steps from the One-Step Procedure as described below:

- Apply and repeat, if necessary, steps 1 (Wound Bed Preparation), 2 (MatriDerm® Application) and 4 (Wound Coverage of STSG) till growth of healthy granulation tissue is observed through the matrix. Often 5 – 6 days are sufficient. However, NPWT may be placed for additional 5 – 6 days, if required.
- Ensure that MatriDerm® does not dry out prior to application of the STSG, by maintaining a closed moist wound environment (e. g. with NPWT).

Place STSG as soon as granulation tissue has grown through the matrix:

- If applicable remove potential debris and/or hypergranulation from the wound surface before grafting.
- Place STSG as described in step 3 (Application of STSG) and apply and repeat step 4 (Wound Coverage of STSG) and step 5 (Dressing Changes and Aftercare) as described before.

Appearance of STSG at 1st **Dressing Change**

Wound appearance may not be as pink as with STSG only (Ghosting Effect). The suspicion could be that the graft did not take. However, at day 5, vascularization starts but MatriDerm® has not been fully converted to dermal tissue yet. Therefore, a pale appearance of the wound at the first dressing change might occur but healing proceeds normally. Re-assess the wound at the next dressing change.

Example: day 5 post-operative (Ghosting Effect)

Example: day 14 post-operative (95 % take rate)

1. Panayi A. et al. Evidence based review of negative pressure wound therapy, World J Dermatol. Feb 2, 2017; 6(1): 1-16

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Marketed and distributed in India by:
GR Health Aids Private Limited
406 Global Foyer Golf Course Road
Sector 43 Gurugram 122002
+91-9809803300
support@healthaids.in
www.healthaids.in

GRH™
Committed Partners to Healthcare Providers

medskin solutions DR. SUWELACK

MedSkin Solutions Dr. Suwelack AG, Josef-Suwelack-Strasse 2, 48727 Billerbeck, Germany
+49 (0) 2543 2182-0 info@medskin-suwelack.com medskin-suwelack.com matriderm.com

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Flexible solutions for **complex** wound reconstruction

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Application Guide

MatriDerm® Application in a One-Step Procedure

In a One-Step Procedure MatriDerm® is immediately covered with a split-thickness skin graft (STSG). The One-Step Procedure can be used if the wound bed is capable of supplying nutrients to the overlying graft even through the 1mm thick matrix by diffusion. The patient benefits in particular from the avoidance of a second operation and early mobilization.

1 Wound Bed Preparation

+ Optional

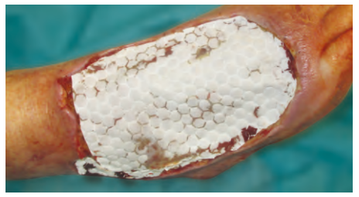
- Negative Pressure Wound Therapy (NPWT) may be used to optimize the wound bed by stimulating granulation tissue formation, blood vessel sprouting (vascularization) and cell proliferation (e.g. to reduce the area of exposed structures like tendons or bones).[1]
- In case of wound infection, use NPWT until infection has been resolved. See manufacturer's instructions for use.

Example: Wound bed after proper debridement

- Appropriate debridement to obtain a clean and well-vascularized wound bed which must be free of infections and necrosis
- If applicable: excise scar tissue completely
- If applicable: shave granulation tissue and refresh wound edges (chamfer wound edges if necessary)
- Achieve hemostasis according to surgeon's preferred method: e.g. saline + adrenaline, mild cauterization
- Thoroughly clean and irrigate wound according to local protocol using normal saline or other solution as indicated by treating physician

! Note: Do not use antiseptics containing iodine or enzymatic debridement agents in direct conjunction with MatriDerm®, as the collagen elastin matrix can be damaged as a result. Rinse wound thoroughly to wash off the antiseptic or enzymatic debridement agents prior to MatriDerm® application.

2 MatriDerm® Application



Example: Dry application of MatriDerm® Flex Dermal Matrix and trimmed to wound bed size

- Dry application of MatriDerm® is recommended. If more than one sheet of MatriDerm® is used, the sheets should overlap by approximately 2–3 mm
- Trim roughly to fit the skin defect

Example: Rehydrated MatriDerm® Flex Dermal Matrix

- Rehydrate in wound bed using saline or Ringer's solution. Please ensure the solution is not warmer than room temperature
- Make sure MatriDerm® evenly adheres to the wound bed
- Gently remove air bubbles

3 Application of STSG

Example: Applied meshed skin graft (1:1.5)*

- Use STSG with optimal thickness of 0.006 inch or 0.2 mm
- Unmeshed graft shows best aesthetic results (fenestrate STSG slightly)
- Mesh the STSG if necessary (e.g. limited donor site availability). Less extension leads to better aesthetic results, with good results demonstrated for 1:1.5
- Ensure direct contact between the matrix and the skin graft
- Ensure there is no gap between the wound edge and STSG

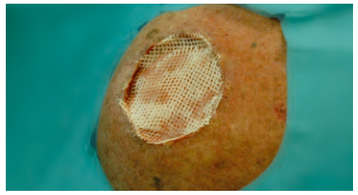
* In this case, STSG has been placed in a Two-Step Procedure.

Example: STSG secured with staples

- Attach MatriDerm® and split-thickness skin graft (STSG) using surgeon's preferred fixation method (e.g. sutures, staples or fibrin glue)
- If more than one piece of MatriDerm® is required, it is advisable to have the seams of the STSG at right angles to the MatriDerm® seams

4 Wound Coverage of STSG

Primary Dressing:



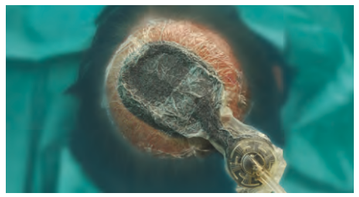
Example: Placement of non-adherent dressing on top of STSG

- Place a non-adherent wound contact layer (e.g. fatty gauze, Cutimed® Sorbion® Plus, ADAPTIC™, Mepitel®) on top of STSG with 1cm skin overlap
- If required you may additionally use an antimicrobial dressing (e.g. silver impregnated dressing) to prevent infection

Secondary Dressing:

Select a secondary dressing based on surgeon's preference, localization of the wound and amount of exudate:

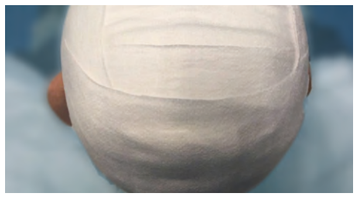
A: NPWT



Example: NPWT therapy initiated

- Apply dressing immediately after graft placement
- Set therapy at 75 mmHg continuous suction if used in areas that are not subject to shear forces; set therapy at 125 mmHg if used in areas where shear forces are present or in highly contoured areas. The higher pressure may help to hold the graft more firmly in place
- For skin protection guidelines follow NPWT manufacturer's instructions

B: Conventional Dressing

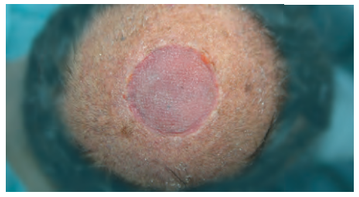


Example: Fixation with tight bandaging

- Apply 3–4 layers of bulky dressing; add bolsters if necessary
- Moisten with saline to prevent MatriDerm® and STSG from drying out
- Fixation with tight bandaging is mandatory for optimal cell ingrowth and to avoid shear forces and hematoma/seroma formation

- Ensure appropriate immobilization/splinting according to localization of the wound
- Leave dressing and therapy on for 5–7 days for optimal splinting effect

5 Dressing Changes and Aftercare



Example: Wound appearance after 12 days

- Do not let the graft dry out
- Perform first dressing change after 5–7 days (if possible not earlier to avoid disruption of the implant)
- The non-adherent wound contact layer may stay in place
- Perform further dressing changes every 5–7 days

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