INTRODUCING THE XPANSION MICRO-AUTOGRAPHRAFTING KIT FOR OUTPATIENT PROCEDURES IN THE WOUND CLINIC

CLOSING THE WOUND WITH AUTOLOGOUS SKIN MICROGRAFTS
WHY USE XPANSION MICRO-AUTOGRRAFTING KIT?

- Autologous wound closure is the gold standard
- Epidermis and dermis provide the most durable closure
- Minimal donor site required
- Procedure can be performed in Wound Clinic under local anesthesia
- The micro-autograft can be expanded up to 100 times the size of the donor site
- Orientation of the micro-autografts does not matter
TRADITIONAL SPLIT-THICNESS GRAFTING TECHNOLOGY

Split-thickness autologous skin grafts are the gold standard in wound closure.

BUT...

Cumbersome dermatome harvesting large, painful sheet of skin as an operating room procedure

Meshing the graft expands the sheet only 1.5, 3, 6, or 9 times
THE GOAL OF CLOSURE IS TO HAVE BOTH AUTOLOGOUS EPIDERMIS AND DERMIS IN THE GRAFT WITH RETE PEGS TO PREVENT SHEARING
LIVING SKIN EQUIVALENTS SUCH AS APLICRAF® or DERMAGRAFT® DO NOT CONTAIN NATURAL RETE PEGS
CULTURED EPITHEIAL AUTOgraft or Cellutome™ grafts consist only of epidermal cells.
Successful Microdermagrafting Using the Meek-Wall Microdermatome

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Tissue will migrate from each edge at 0.5 to 1mm per day

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Graft at left is oriented right side up at day 0 (bottom) day 6 (in the middle) and day 10-14 (at the top)

Graft at the right is oriented upside down at days 0, 6, and 10-14
AT 10 DAYS MICRO-GRAFTS 3\textsuperscript{RD} FROM LEFT AND UPPER FAR RIGHT WERE ORIGINALLY UPSIDE DOWN, BUT NOW HAVE EPIDERMIS ON THE TOP AND BOTTOM
AT 14 DAYS THE MULTIPLE MICRO-GRAFTS HAVE COALESCED GIVING AN INTACT GRAFT SURFACE AND THE ORIGINAL ORIENTATION IS INDISTINCT AND NOT IMPORTANT
THE XPANSION MICRO-AUTOGRAFTING KIT COMES STERILE AND IS FOR SINGLE USE, AND CAN BE USED IN THE OUTPATIENT CENTER.
1. Wound bed preparation
   - Key to a successful graft.
   - Necrotic, nonviable tissue, debris, and slough must be removed.
   - Minimize exudate
   - No active Bleeding, but adequately vascularized wound bed
   - Tissue bacteria level must be minimized, ideally $10^5$ or fewer bacteria per gram of tissue

2. Surgical Technique
   - Donor site must have hair removed, be surgically prepped, and anesthetized
   - Graft is harvested with dermatome using a sawing motion.
   - Dermatome should only be advanced in a sawing motion perpendicular to the direction of the harvest.
   - Graft is minced in both directions after adding saline.
   - Minced graft is transferred and evenly spread on recipient wound with spatula.

3. Postoperative care
   - Non-adherent perforated dressing can be used (e.g., bridal veil or Mepitel®) as contact layer.
   - Secure non-adherent dressing to wound with Steri-Strips™.
   - Maintain a moist environment (e.g., hydrogel or moisture-holding dressing).
   - Split or immobilize if in mobile area.
   - Outer dressing can be changed at 5-7 days leaving contact layer intact.
   - Contact dressing can be gently teased off graft at 10-14 days using saline irrigation to prevent any dressing adherence.
Surgical Technique

Harvest skin graft with dermatome.

Do not push the dermatome forward, allow it to progress with natural sawing motion.
PRE-CALIBRATED DERMATOME WILL HARVEST A MODERATELY THICK SPLIT-THICKNESS SKIN GRAFT (.012-.016 in)
PATENED SKIN GRAFT MINCING PROCESS

Graft is minced in both directions after adding saline. This Process will create small particles < 1mm in size.
EXAMPLE OF PREPARED WOUND (LEFT) AND AFTER APPLICATION OF MICRO-GRAFTS (RIGHT)
MICRO-GRAFTS COVERED WITH NON-ADHERENT PERFORATED DRESSING (LEFT) AND 8 DAYS POST-GRAFTING (RIGHT)
SIX WEEKS FOLLOW-UP PHOTOS OF MICRO-GRAFTED WOUND (LEFT) AND DONOR SITE (RIGHT)
5 MONTH LONG-TERM FOLLOW UP AFTER XPANSION
GRAFT SITE (LEFT) DONOR SITE (RIGHT)
Conclusions

- Micrografts provide autologous wound closure in the wound clinic with a minimal donor site.

- Small minced skin particles can be transplanted to full thickness wounds and will survive (independent of orientation) in a moist environment.

- Proliferation takes place from the borders, skin appendages, and basal layer, independent of orientation.

- Proliferating minced skin particles move at a speed of 0.5-1mm per day to complete closure of the wound.

- Xpansion Micro-autografting Kit (SteadMed Medical LLC) provides the disposable equipment to allow outpatient micrografting.
Please Complete Post-Test For Xpansion Micro-autografting Kit Certification
1) Meshed split-thickness skin grafts allow expansion of the graft 1.5-fold, 3-fold, 6-fold, or 9-fold. Mincing the graft with the Xpansion micro-autografting kit allows expansion up to:
   a) 4-fold
   b) 10-fold
   c) 20-fold
   d) 100-fold

2) Including both epidermis and dermis in a wound closure is important to:
   a) Provide rete pegs in the final healed wound
   b) prevent shearing of the healed graft
   c) minimize contraction of the healed wound
   d) all of the above
3) **For successful results with the Xpansion micro-autografting kit it is important to have:**
   a) proper wound bed preparation
   b) no active bleeding in the recipient site
   c) no necrotic tissue in the recipient site
   d) all of the above

4) **When using the patented dermatome in the Xpansion micro-autografting kit, it is important to:**
   a) use a sawing to and fro motion without attempting to push the blade forward
   b) push the dermatome forward to obtain the desired size of graft
   c) tip the dermatome blade down to assure obtaining adequate dermis
   d) re-sterilize the blade when using for multiple patients
5) The patented dermatome is designed to take a split-thickness skin graft of what thickness:
   a) 0.02-0.05 inches
   b) 0.05-0.09 inches
   c) 0.012-0.016 inches
   d) 0.018-0.020 inches

6) Histology of healing and healed wound has determined that:
   a) it is important that the dermal side of the minced grafts be placed against the wound bed
   b) it is important that the epidermal side of the minced grafts be placed against the wound bed
   c) initial orientation of the minced grafts is unimportant and does not affect the outcome of the grafting procedure
   d) none of the above
7) **Mincing of the split-thickness skin graft with the patented mincer:**

a) is not necessary to obtain the desired expansion of the graft

b) can be done in one direction to obtain the desired expansion of the graft

c) must be done in two perpendicular directions to obtain the desired expansion of the graft

d) can be performed on the wound bed to obtain the desired expansion of the graft