Giving New Life to Complex Wounds

AMNIOEXCEL® Amniotic Allograft Membrane is a novel human placental-based tissue product. The membrane forms a protective covering over the wound while providing the key components found in human amnion including an intact ECM (extracellular matrix), cytokines and other growth factors. It easily integrates into the wound and helps provide the optimal environment to repair, reconstruct and replace wound tissue.
Why Amniotic/Placental Tissue?

These immune-privileged allografts rarely evoke an immune response and have been recognized as versatile wound coverings with clinical results cited extensively in the literature.

The amnion membrane is composed of:

- Collagen, elastin, fibronectin and proteoglycans that provide a three-dimensional architecture to promote reconstruction of damaged tissue.
- Regenerative growth factors, such as PDGF, VEGF, TGF-β, FGF and IGF, as well as other proteins, anti-inflammatory cytokines and peptides that promote tissue repair.

The science behind AMNIOEXCEL®

Retains the structure of unprocessed human amniotic membrane including ECM

Laboratory analyses and assays demonstrated that DRYflex™ processing preserves continuous, intact epithelium, basement membrane, compact and fibroblast layers of the amniotic tissue, as illustrated in the histology section on the right. Other histological assessments demonstrate the presence of collagen and proteoglycans, including glycosaminoglycans (GAGs).

Retains key signaling proteins of unprocessed human amniotic membrane

Laboratory analyses and assays demonstrated that the presence of cytokine and growth factors were maintained with particularly high quantities of EGF, PDGF, TGF-α, and TIMPs 1 and 2.

<table>
<thead>
<tr>
<th>AMNIOEXCEL®</th>
<th>Native human amnion</th>
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<tbody>
<tr>
<td>Growth factors</td>
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<tr>
<td>bFGF</td>
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<tr>
<td>EGF</td>
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<td>PDGF-BB</td>
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<tr>
<td>TGF-β1</td>
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<tr>
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<tr>
<td>Interleukins</td>
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</tr>
<tr>
<td>IL-4</td>
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</tr>
<tr>
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<td>IL-8</td>
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<td>IL10</td>
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| Tissue inhibitors of metalloproteases | |
| TIMP-1 | + | + |
| TIMP-2 | + | + |
| TIMP-4 | + | + |
Multicenter RCT demonstrates AMNIOEXCEL® + SOC significantly increases closure of chronic DFUs¹

This prospective, multicenter, randomized, controlled clinical trial (RCT) with standardized ulcer care and off-loading incorporated a 2 week run-in period. Despite a short 6-week study period, AMNIOEXCEL® + SOC achieved significantly greater (p=0.008) ulcer closure rates over SOC alone.

A PROSPECTIVE, RANDOMIZED, MULTICENTER AND CONTROLLED EVALUATION OF THE USE OF DEHYDRATED AMNIOTIC MEMBRANE ALLOGRAFT (DAMA) COMPARED TO STANDARD OF CARE FOR THE CLOSURE OF CHRONIC DIABETIC FOOT ULCERS.

Robert J. Snyder, DPM, MSc; Kenneth Shimozaki, DPM; Arthur Tallis, DPM; Michael Kerzner, DPM; Alexander Reyzelman, DPM; Dimitrios Lintzeris, DO; Desmond Bell, DPM; Randi L. Rutan; and Barry Rosenblum, DPM

WOUNDS, March 2016

In this trial:

- Stratified randomization yielded a statistically balanced demographic and wound characteristic distribution between groups
- Endpoint of complete ulcer closure objectively adjudicated with photographs and ulcer tracings
- Comparable adverse event profile between groups
- Both the Intent To Treat (all randomized subjects) and the Per Protocol (all completing the study) populations demonstrated statistically significantly greater ulcer closure rates with the addition of AMNIOEXCEL® to the standard of care regimen.
AMNIOEXCEL® Membrane Case Studies

Case 1

WOUND TYPE: DFU  
PRODUCTS USED/APPLICATIONS: AMNIOEXCEL® x 4  
TIME TO CLOSE: 8 WEEKS

Post-Amputation Diabetic Foot Ulcer

**Patient History:** 78-year-old male with diabetes, CAD, hyperlipidemia & HTN presented with post-amputation wound at his great left toe site measuring 4.0 x 3.3 x 0.6 cm.

**Challenges:** Diabetes and vascular insufficiency.

**Initial Assessment:** After 1 month of limited progress with standard wound care strategies and HBOT, he was treated with NPWT. Although he had previously been revascularized, his toe pressures had diminished to 25 mmHg, which is consistent with poor to lack of wound healing.

**Treatment Strategy:** Due to the slow rate of wound progression and failed therapies, AMNIOEXCEL® Membrane was initiated at week 13 (Figure 1.) AMNIOEXCEL® Membrane was applied every 2 weeks with a total of 4 applications. (Figure 2.)

**Wound Progress:** Within 2 weeks, the wound was more granular (95%) and decreased in size.

**Outcome:** Wound closed 8 weeks after initial application of AMNIOEXCEL® Membrane (Figure 3.)

Case provided by Dimitrios Lintzeris, DO, CWS  
Medical Director, Wayne Memorial Hospital  
Clinical Preceptor, Campbell University Jerry M. Wallace School of Osteopathic Medicine  
Goldsboro, NC

Case 2

WOUND TYPE: DFU  
PRODUCTS USED/APPLICATIONS: AMNIOEXCEL® x 2 AND TCC-EZ®  
TIME TO CLOSE: 6 WEEKS

Diabetic Foot Ulcer with Vascular Insufficiency

**Patient History:** 91 year old male with CVA, diabetes, ABI 0.49, DFU with exposed tendon following failed vascular intervention.

**Challenges:** Diabetes and vascular insufficiency.

**Initial Assessment:** Wound measured 1.2 x 1.2 x 0.7 cm (Figure 1.) Patient was ambulatory with a brace.

**Treatment Strategy:** AMNIOEXCEL® was applied every 2 weeks.

**Wound Progress:** Wound progressively decreased in size as new granulation tissue formed (Figure 2).

**Outcome:** The wound closed at week 6 following 2 applications of AMNIOEXCEL® (Figure 3). As of week 9, the patient tolerated independent ambulation and resumed wearing diabetic footwear with inserts.

Case provided by Margaret Doucette, DO, FABPM, CWSP  
Chief, Physical Medicine and Rehabilitation, Medical Director;  
Amputee/Wound Care/High Risk Foot, Boise VAMC  
Boise, ID
AMNIOEXCEL® Membrane Advantages

- Helps provide the optimal environment to repair, reconstruct and replace wound tissue
- AMNIOEXCEL® is only the 2nd dehydrated amniotic allograft to have RCT evidence supporting its use on DFUs1

- DRYflex™ Processing
  - Easy to apply & conforms intimately with the wound surface
  - Off-the-shelf: Room temperature storage with 5 year shelf life
  - Preserve the inherent extracellular matrix, growth factors, and cytokines

- Cost Effective
  - Comes in 11 different sizes to reduce cost
  - At least 7 sizes are available for under $1,000 (more depending on contract)
  - A VA hospital was shown to save 50% vs. other leading allografts on per membrane basis (based on both cost and size availability)2
  - Reduced contract pricing is available on most major national and government accounts. Please contact customer service for details.

FDA Regulation
AMNIOEXCEL® Membrane is regulated as a Human Cellular and Tissue-Based Product (HCT/P) under Section 361 of the Public Health Service Act and is governed by the FDA Center for Biologics Evaluation and Research (CBER).

"DAMA (AMNIOEXCEL®), in combination with SOC...is more likely to lead to complete wound closure, to accelerate the rate of wound closure and presents no additional safety risks when compared to SOC alone in the treatment of DFUs."1
### AMNIOEXCEL® Membrane Ordering and Reimbursement Information

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**AMNIOEXCEL® has been assigned to the high cost skin substitute reimbursement category by CMS**

The Derma Sciences Reimbursement Hotline team of reimbursement professionals from Argenta reSource will help with:

- Case preauthorization
- Coding and reimbursement
- Verification of benefits
- Appeal support for denied claims

The Derma Sciences Reimbursement Hotline is an ongoing Derma Sciences commitment to healthcare professionals and facilities using our regenerative medicine products to treat patients.

**DERMA SCIENCES REIMBURSEMENT HOTLINE**

1-800-474-9511

**HOURS:** Monday to Friday, 9 AM – 6 PM ET  
**FAX:** 1-844-868-0930  
**EMAIL:** reimbursementsupport@dermasciences.com

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