Ovine collagen extracellular matrix (CECM) dressing assisted nonsurgical closure of the acute wound, following Mohs surgical excision for cancer.

• **Michael N. Desvigne, MD, CWS, FACS, FAACWS - Plastic & Reconstructive Surgery, Wound Care & Hyperbaric Medicine**
English Dermatology, Phoenix, Arizona

Introduction:

CECM is an advanced wound care dressing comprised of non-reconstituted collagen derived from ovine extracellular matrix and it retains the innate biological structure and function of the native extracellular matrix. In vitro studies have shown that CECM exhibits broad spectrum activity against MMPs.[1] CECM may be used for a variety of wound types, one of which is post-surgical wounds. Mohs surgical excision is characterized by the removal of skin cancer with immediate topographic pathologic analysis to ensure all tumor cells are removed. If not, then further excision is performed during that same setting, and repeated until complete tumor excision is confirmed. Mohs surgical excision is performed by dermatology and recommended for skin cancers located in cosmetically sensitive areas on the face. The resulting defects are often large, deep, and may expose underlying cartilage. Closure of these defects can be challenging and often requires the additional expertise of a plastic surgeon. General principles of closure are to replace like tissue with like tissue. This includes local flaps which involves local tissue rearrangement that will require a surgical procedure with anesthesia. Additional incisions are made to create a donor defect to transpose onto the original defect. The donor site is then closed primarily. The result is additional incisions and scars outside of the margin of the original. These procedures must be timely and coordinated with the additional specialist and often are performed the following day. Other options for closure may include primary closure, skin graft or healing secondarily. Primary closure often creates distortion of anatomic land marks, and skin grafting while it may allow for timely healing, once healed the skin graft often is noticeably different than the surrounding tissue. Healing by secondary intention is an option frequently frowned upon because of the inherent risk of secondary contracture that may distort anatomic landmarks such as the nares, eyes, and or around the mouth. However, a nonsurgical option is the preferred choice for many patients.

Method/Results:

The use of CECM to assist with closure following Mohs excision was used in 5 patients (N=5). All excisions were performed for basal cell carcinomas on the face (nose 3, forehead 1, lip 1). All patients achieved satisfactory cosmetic closure by 21 days. No infections. No additional surgeries were required. No secondary contracture with anatomic distortion occurred. All patients were satisfied with considerations of cosmetic result, time to heal, and care and treatment required.

Conclusion:

In summary, in this series of cases CECM provided a non-surgical alternative to surgical flap procedures following Mohs surgical excision. Early experience with CECM dressings to assist with closure for the acute wound following Mohs surgical excision on the face suggests a timely, satisfactory cosmetic result. While further research is needed, early experience resulted in no significant secondary contracture and or anatomic distortion. This differs from what we might expect from secondary healing alone, and suggest further cellular regulation may play a role.

Case Study 1

Patient: 42-year-old female post Mohs excision left forehead.

Past medical history:

- None.

Wound treatment:

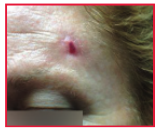
- CECM dressing applied to wound covered with non-adherent dressing. Antibiotic ointment applied four times a day. Additional CECM applied and non-adherent dressings changed weekly.

Day 1
1.5 cm x 1.3 cm post excision

Day 1
CECM covered with non-adherent dressing and antibiotic ointment

Day 7

Day 14



Day 21
100% Re-epithelization and minimal scar contracture

Case Study 2

Patient: 75-year-old female status post Mohs excision basal cell carcinoma upper lip.

Past medical history:

- Previous skin cancer excisions same location.

Wound treatment:

- CECM dressing applied to wound covered with non-adherent dressing. Antibiotic ointment applied four times a day. Additional CECM applied and non-adherent dressings changed weekly.

Day 1
1.2 cm x 1.2 cm post excision

Day 1
CECM covered with non-adherent dressing and antibiotic ointment

Day 7
Defect smaller

Day 7
CECM cut into confetti-like pieces and applied to wound

Day 7
Then a whole piece of CECM over the confetti covered with non-adherent dressing and antibiotic ointment

Day 14
Defect smaller, depth reduced

Day 21
100% re-epithelialized. Minimal scar contracture and no distortion of cupids bow

Case Study 3

Patient: 59-year-old female post Mohs excision of basal cell carcinoma on nasal ala.

Past medical history:

- Previous basal cell carcinoma.

Wound treatment:

- CECM dressing applied to wound covered with non-adherent dressing. Antibiotic ointment applied four times a day. Additional CECM applied and non-adherent dressings changed weekly.

Day 1
1.0 cm x 1.0 cm post excision

Day 1

Day 21
100% re-epithelization, minimal scar contracture

Case Study 4

Patient: 48-year-old male post Mohs excision of basal cell carcinoma on the left nasal tip

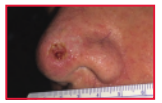
Past medical history:

- None.

Wound treatment:

- Presented with an acute, complex wound with full thickness loss, left tip
- Treatment options discussed were flap repair vs. CECM. Patient requested to use CECM dressing
- CECM dressing applied to wound covered with non-adherent dressing. Antibiotic ointment applied four times a day. Additional CECM applied and non-adherent dressings changed weekly.

Day 1



Day 7

Day 7

Day 14
100% re-epithelization

Case Study 5

Patient: 68 year old male with basal cell carcinoma on 2 areas of the nose, nasal sidewall and nasal ala.

Past medical history:

- None.

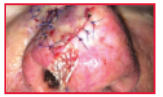
Wound treatment:

- Post Mohs surgery resulted in full thickness loss to nasal sidewall and nasal ala
- Surgery performed to close the nasal sidewall defect
- Nasal ala wound left to heal by secondary intention using CECM dresssing
- CECM dressing applied to wound covered with non-adherent dressing. Antibiotic ointment applied four times a day. Additional CECM applied and non-adherent dressings changed weekly.

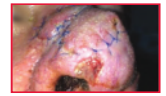
Initial Visit
2 defects: nasal ala and nasal side wall

Pre-op markings

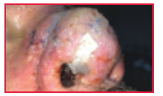
Post-op



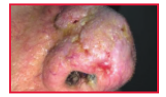
Day 0
Application of CECM covered with antibiotic ointment and non-stick dressing.



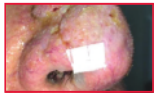
Day 7
Wound continues to reduce in size. Wound edges are smooth with epithelialization noted



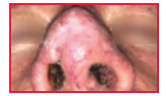
Day 7
Application of CECM



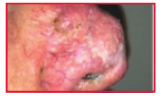
Day 14
Defect smaller



Day 14
Wound edges are smooth with epithelialization noted



Day 21
100% re-epithelization



Day 21
100% re-epithelization

Reference: 1. Negron L, Lun S, May BC. Ovine forestomach matrix biomaterial is a broad spectrum inhibitor of matrix metalloproteinases and neutrophil elastase. Int Wound J. 2012 Nov 1.
*Endoform dermal template. Distributed by Hollister Incorporated.
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