Aseptically Processed Dehydrated Allograft Placental Membrane for Incisional Management Prior to Surgical Closure

Michael N. Desvigne, MD, FACS, CWS, FACCWS; Krista Bauer (Montgomery), RN, WCC, OMS; Kurt Holifield, RN, BSN, WCC, OMS; Kari Day, RN, BSN, WCC; Denise Gilmore, RN; Ashley L. Wardman, LPN

Abrazo Arrowhead Hospital, Glendale, AZ

INTRODUCTION

Surgical site infections represent a significant economic burden of the US Healthcare dollars spent per year. When these complications occur, they result in additional hospital stay and cost. Incisional dehiscence and/or infection may occur singularly or simultaneously. Surgical reconstruction of chronic wounds using complex closure techniques and/or soft tissue flaps is a routine approach to achieve closure, and such complications are not uncommon.

Placental allografts are frequently used in the management of chronic wounds, specifically to provide native matrix proteins and encourage wound progression. Incisional management following closure of chronic wounds may benefit from the addition of aseptically processed dehydrated allograft placental mini-membrane to assist in optimizing the tissue for surgical healing and assist with reducing the risk of post-surgical complications at the incision site.

METHODS/RESULTS

We present 5 cases of incisional management utilizing placental allograft as a mini matrix prior to closure of surgical reconstruction (Lower extremity, knee, n=2, Abdomen, n=3) where placental tissue was utilized. The dehydrated placental mini-membrane* was placed prior to incision closure. Negative pressure was applied postoperatively and continued for 7-10 days.

Primary healing was achieved in all 5 cases without postoperative infection and/or surgical site dehiscence.

DISCUSSION

The addition of dehydrated allograft placental mini-membrane without terminal sterilization to surgical reconstruction may improve surgical outcomes. While the exact mechanisms are not known, the aseptically processed placental tissue without terminal sterilization is known to maintain the inherent growth factors and native matrix proteins, which support wound closure. We found that surgical outcomes were improved with a reduced incidence of post-operative complications well below the reported 25-58%.

In this case series, we observed improved primary surgical success with the addition of aseptically processed placental matrices intraoperatively at the incision site.

CASE 1

Patient Information: 48 year old obese male with complex wound with large pannus.
Medical History: Hypertension, Asthma, Multiple abdominal surgeries
Treatment:

- Taken to OR for excision of non-healing wound and panniculectomy.
- Dehydrated placental mini-membrane was placed to assist with healing.
- Incisional V.A.C® Therapy was initiated with a PREVENA™ Customizable™ Dressing immediately following surgical closure.

Outcome: Incision healed without dehiscence, infection, or seroma. Historically, these cases have a high risk of complications.

Figure 1A. Pre-incision (Day 1)

Figure 1B. Placement of dehydrated placental mini-membrane (Day 1)

Figure 1C. Surgical closure (Day 1)

Figure 1D. Incision Healed (Week 6)

CASE 2

Patient Information: 56 year old female with prolonged hospital course for sepsis following bowel perforation s/p GYN procedure, Underwent laparotomy with drainage of abscess and small bowel resection with ventral hernia repair and biologic mesh. She developed a post operative fistula that resolved with medical management. Presents for abdominal wall closure.
Medical History: Diabetes Mellitus, Hypertension
Treatment:

- Taken to OR for excision wound and debridement.
- Staged reconstruction performed with identification of fistula flap mobilization to pelvis.
- Meshed human reticular dermis (HR-ADM)** placed for soft tissue support.
- Dehydrated placental mini-membrane was placed to optimize healing.
- Incisional V.A.C.® Therapy initiated with a PREVENA™ CUSTOMIZABLE™ Dressing immediately following closure

Outcome: Incision healed without dehiscence, infection, or seroma in this very high risk patient.

Figure 2A. Wound at initial presentation (Day 1)

Figure 2B. Surgical flap created (Day 1)

Figure 2C. Placement of dehydrated placental mini-membrane with meshed HR-ADM (Day 1)

Figure 2D. Surgical closure (Day 1)

Figure 2E. Incision healed (Week 6)

CASE 3

Patient Information: 67 year old male with non-healing wound perineum after excision due to anal cancer, chemotherapy, and XRT. Has chronic pain and extensive draining from non-healing wound perineum.
Medical History: Anal cancer, Lives independently
Treatment:

- Taken to OR for excision wound and debridement.
- Staged reconstruction performed with identification of fistula flap mobilization to pelvis.
- Meshed human reticular dermis (HR-ADM) placed for soft tissue support.
- Dehydrated placental mini membrane was placed to optimize healing.
- Incisional V.A.C.® Therapy initiated with a PREVENA™ CUSTOMIZABLE™ Dressing immediately following closure

Outcome: Incision healed without dehiscence, infection, or seroma.

Figure 3A. Non-healing perineum (Day 1)

Figure 3B. Rectus muscle flap mobilized (Day 3)

Figure 3C. Application of dehydrated placental membrane with meshed HR-ADM (Day 3)

Figure 3D. Surgical closure (Day 3)

Figure 3E. Wound closed (Day 10)

CASE 4

Patient Information: 69 year old female with non-healing surgical wound 4 weeks after Open Reduction and Internal Fixation distal femur fracture.
Medical History: Multiple surgeries right hip and previous left femur fracture DM, HTN, chronic opioid use
Treatment:

- Taken to OR for excision of non-viable tissue. V.A.C. Verafio® Therapy initiated for wound bed preparation.
- Returned to OR for definitive closure.
- Dehydrated placental mini-membrane was placed to assist with healing.
- Incisional V.A.C® Therapy initiated with a PREVENA™ CUSTOMIZABLE™ Dressing immediately following closure.

Outcome: Incision healed without dehiscence, infection, or seroma and no further surgical intervention required in this patient who otherwise would have required an above the knee amputation.

Figure 4A. Wound at initial presentation (Day 1)

Figure 4B. Excision of non-viable tissue (Day 1)

Figure 4C. Placement of dehydrated placental mini-membrane (Day 4)

Figure 4D. Incision closed but edematous (Day 14)

Figure 4E. Incision healed (Day 28)

CASE 5

Patient Information: 47 year old male with chronic infection in the left knee after total knee replacement 1 year prior with washout and hardware removal 1 month later. 6 months later suffered patellar dislocation requiring surgical repositioning. Since then, he had chronic drainage and pain.
Medical History: Hypertension
Treatment:

- Taken to OR for excision of non-viable tissue and phlegmon.
- Dehydrated placental mini membrane was placed to assist with healing.
- V.A.C Therapy was initiated to assist with STSG take.
- Incisional V.A.C® Therapy initiated with a PREVENATM CUSTOMIZABLETM Dressing immediately following closure.

Outcome: Incision healed without dehiscence, infection, seroma, or need for further surgical intervention.

Figure 5A. Wound at initial presentation (Day 1)

Figure 5B. Debridement performed (Day 1)

Figure 5C. Placement of dehydrated placental mini-membrane (Day 1)

Figure 5D. Surgical closure (Day 1)

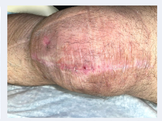

Figure 5E. Incision healed (Week 6)

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***Salera® Mini Membrane (MTF Biologics, Edison, NJ)**
****SomaGen® (MTF Biologics, Edison, NJ)**