Successful Wound Closure with Cryopreserved Human Placental Membrane in Peripheral Arterial Disease Despite Revascularization Challenges

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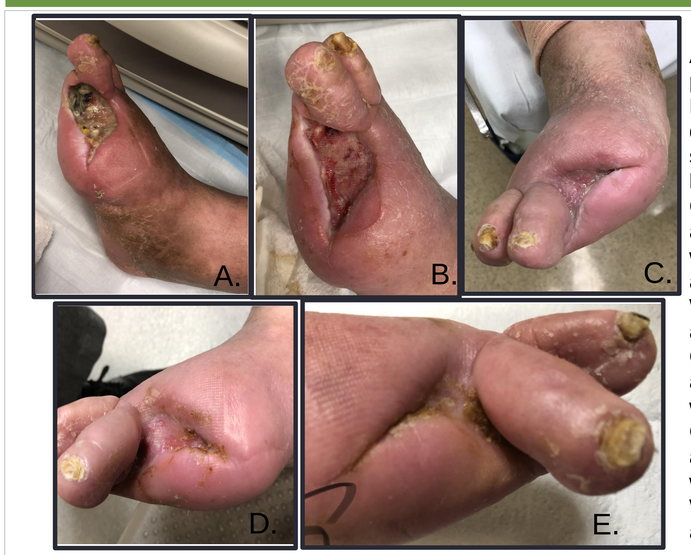
PURPOSE & LITERATURE REVIEW

Interdisciplinary approach is necessary when treating patients with peripheral arterial disease (PAD) especially between vascular and podiatry when attempting lower extremity wound closure. With little to no vascular status, wound closure remains a challenge for both disciplines. These patients often present with multiple comorbidities and revascularization is not always an option leaving little left to do for these patients.

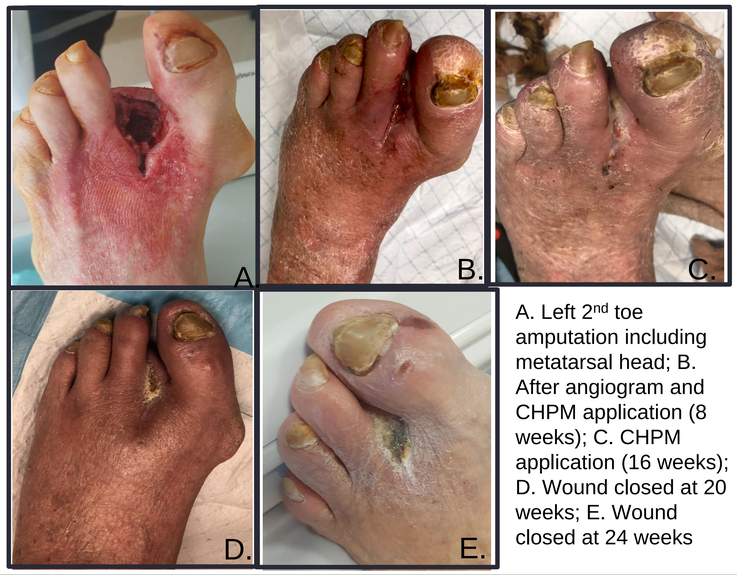
Utilizing Pubmed, a literature review was performed on mesh terms use of cryopreserved human placental membrane (CHPM) and lower extremity wounds with reference to vascular status. Through the search of these articles (n=8), only two articles mentioned wound closure with CHPM but used exclusion criteria of ABIs <0.8[1] and < 0.5[2]. A third study discusses successful bypass and subsequent wound closure with CHPM[3]. The last of the studies addressing discusses three diabetic smokers diagnosed with PAD 2 or 3 according to the Fontaine classification who were not candidates for revascularization[4]. They achieved successful wound closure with CHPM but did not elaborate on their current vascular status. Here we present four cases with documented non compressible flat waveforms with comorbidities deeming the patients not candidates for revascularization but successful wound closure was achieved with CHPM.

CASE STUDY 1: FIGURE 1A. – E.



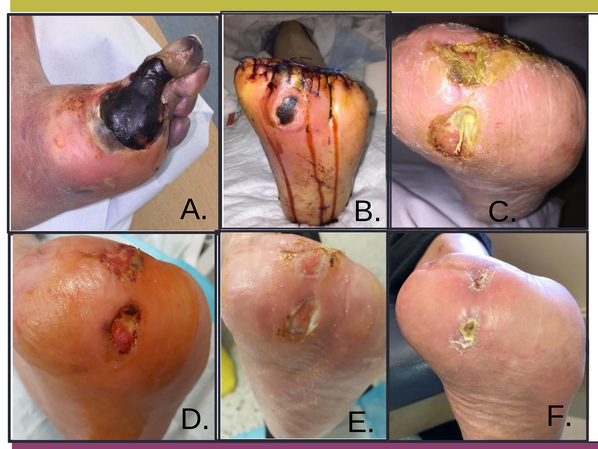
A. Left 1st & 2nd partial TMA; B. Hydrojet debridement of soft tissue and bone and CHPM application (10 weeks s/p amp); C. Wound healing and after CHPM application (5 weeks); D. CHPM application (16 weeks) E. Wound closed at 24 weeks

CASE STUDY 2: FIGURES 2A. – E.



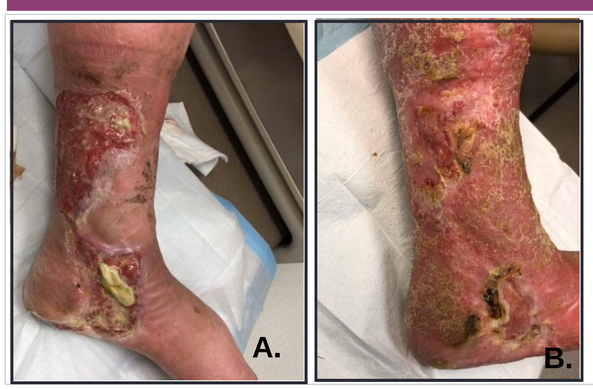
A. Left 2nd toe amputation including metatarsal head; B. After angiogram and CHPM application (8 weeks); C. CHPM application (16 weeks); D. Wound closed at 20 weeks; E. Wound closed at 24 weeks

CASE STUDY 3: FIGURES 3A. – E.



A. Ischemic to digits; B. s/p TMA; C. Wound healing stalled; D. 7 days s/p CHPM application; E. s/p 2nd CHPM application (3 weeks from 1st CHPM); F. s/p 3rd CHPM and complete wound closure (6 weeks from 1st CHPM)

CASE STUDY 4: FIGURES 4A. – E.



A. Lower extremity chronic wounds stalled with daily dressing changes; B. s/p 4 separate CHPM applications in 4 week intervals

RESULTS & DISCUSSION

There are various vascular interventions for patients with PAD but in the presence of comorbidities these options are not always reliable. In these four cases presented, remarkable and complete wound closure was achieved. All patients underwent unsuccessful revascularization attempts and were at high risk for proximal amputation. To date, literature on limb salvage is mainly focused on risk factors, available surgical techniques and their outcomes. There is a wide use of cryopreserved human placental membrane for diabetic feet and other chronic ulcerations in which optimal vascular status is already present. On the contrary, the use of these advanced biologic grafts is often underused and contraindicated in patients with moderate to severe peripheral arterial disease. In these four cases, we are the first to detail how limbs were preserved with cryopreserved human placental membrane with little to no vascular status recorded in the lower extremity. Through four successful wound closures utilizing cryopreserved human placental membrane and weekly dressing changes, we were able to prove a new indication for these grafts to include severe PAD. We hope to continue this hypothesis in larger studies and give patients an option superior to proximal amputation. We hope others will begin to try more conservative options in their patients before jumping to proximal amputations.

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