

Repair of Facial Wound Utilizing Cryopreserved Human Umbilical Cord Allograft

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CASE HISTORY

- A 10-year-old female presented to the emergency department after suffering a dog bite to her left cheek and upper lip.
- The wound was approximately 4 cm x 3 cm.
- Significant tissue loss, including the lateral vermilion and skin of the upper lip to the oral commissure prevented complete primary closure.
- Wound was partially closed with sutures. A 3 x 2.5 cm piece of cryopreserved umbilical cord (UC) allograft was used to cover the area of tissue loss and sutured into place.



Figure 1: Facial wound of the left cheek and upper lip with significant cutaneous and soft tissue loss.

METHODS

- This is a single case report of a patient that presented to an academic tertiary pediatric hospital.
- Operative and post-operative clinic notes were reviewed after obtaining IRB exemption.
- Consent was obtained to take pictures of the patient.

INTRODUCTION

- Craniofacial injuries are the most frequently observed traumas of the pediatric population in the United States and healing of these acute wounds can be complex.¹
- The use of human UC has been shown to enhance and improve healing as growth factors, cytokines, and signaling molecules present in the tissue for fetal development can be harnessed for tissue regeneration and wound healing.²

RESULTS

- At 1-week follow up, the wound was healing well with the allograft still in place.
- At 3-week follow-up the central portion with missing tissue was healing well with some contraction and thickened subcutaneous scarring. UC allograft was no longer present.
- At 4-month follow up the wound was continuing to heal well but causing some retraction of the lateral lip due to the wound location.
- 1 year after the dog bite, the patient underwent scar revision surgery, including wedge lip resection.



Figure 2: Patient at 1-week follow up with the UC allograft present within the wound bed.

Figure 3: Patient at 3 weeks with excellent healing in site of tissue loss with graft no longer present.



DISCUSSION

- Complex wounds require treatments that can not only provide wound closure but result in optimal reconstructive outcomes.
- Human UC has been shown to promote epithelialization, containing epidermal growth factor, keratinocyte growth factor, and keratinocyte growth factor receptor, enhancing the epithelial cells' ability to proliferate, migrate, and differentiate.³
- Anti-inflammatory and anti-scarring actions of human UC have also been identified, due to the HC-HA/PTX complex located in the stroma of the amniotic membrane and umbilical cord, making UC an especially attractive tool in reconstructive surgery.⁴
- Due to the unique nature of traumatic injuries, there is limited literature on UC products in this setting but is an attractive candidate for reconstruction.

Figure 4: Patient at 4-month follow up with continued healing of the wound.



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