Preparation of Levamisole-Induced Facial Necrosis for Grafting with the Use of Noncontact, Low-Frequency Ultrasound

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Introduction

Noncontact, low-frequency ultrasound (NLFU)* has been shown to accelerate healing of chronic wounds in clinical studies.1-3 Levamisole is a veterinary drug frequently used as a diluter in cocaine. In 2011, a serious side effect of levamisole was identified and termed levamisole-induced necrosis syndrome (LINES). Several cases of LINES have been reported since 2006, with the face and ears most commonly affected. This case study demonstrates that NLFU can be used to successfully prepare levamisole-induced facial wounds for grafting.

Patient and Wounds

- A 48-year-old woman
- History of hypertension, obesity, alcohol abuse, and type 2 diabetes
- Admitted with progressive neck and face swelling
- After 9 days of medical management, suspected massive cellulitis and levamisole-induced necrosis was diagnosed.
- Extensive facial debridement (skin, muscle, subcutaneous tissue of the face including eyelids, cheeks, and lips) was performed and repeated 3 days later.

Wound Status Prior to NLFU

Bilateral facial wounds of full thickness with minimal serosanguineous exudate

- Right Facial Wound:
  - Volume: 140.4 cm³
  - 25% viable
  - 75% slough
  - Left upper eyelid graft performed

- Left Facial Wound:
  - Volume: 56.1 cm³
  - 20% viable
  - 80% slough
  - Left eyelids sewn together

Outcomes after NLFU

- After 2 NLFU treatments:
  - 70% (right) and 60% (left) viable tissue
- After 3 treatments:
  - Left upper eyelid graft performed
- After 4 treatments:
  - 100% (right) and 95% (left) viable tissue
- After 8 treatments:
  - Additional grafting of the lower eyelid
- After 17 treatments:
  - Wound volume decrease of 50% (right - 27.5 cm³) and 75% (left-36 cm³) - full thickness skin graft to nose, ears, eyelids, and lips to achieve wound closure

Conclusions

NLFU proved to be an effective method for graft preparation of massive facial wounds due to levamisole-induced necrosis syndrome.

References


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NLFU Treatment Summary

- After 2 treatments: 70% (right) and 60% (left) viable tissue
- After 3 treatments: Left upper eyelid graft performed
- After 4 treatments: 100% (right) and 95% (left) viable tissue
- After 8 treatments: Additional grafting of the lower eyelid
- After 17 treatments: Wound volume decrease of 50% (right - 27.5 cm³) and 75% (left-36 cm³) - full thickness skin graft to nose, ears, eyelids, and lips to achieve wound closure

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