USE OF A HYDROCONDUCTIVE DRESSING TO TREAT A TRAUMATIC AVULSIVE INJURY OF THE FACE - A CASE REPORT

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Introduction

Traumatic avulsive injuries present complex therapeutic decisions. Radical and repeated debridement of all foreign material, necrotic tissue, bacteria, and deleterious chemicals followed by control of the bacterial bioburden and wound closure has been the gold standard. However, when such injuries occur in the face, the treatment requires modification. Specialized structures, nerves, and a maximum amount of tissue must be preserved. Topical antimicrobials may lead to dessication and further injury to tissue. Therefore, alternative treatments must be considered. Recently, a hydroconductive dressing * has been demonstrated to decrease edema by removing excess exudate, to remove debris and necrotic tissue, and to decrease bacteria and deleterious cytokines in wounds [1]. A case report is presented to show the effectiveness of this hydroconductive dressing in the treatment of a severe traumatic avulsive injury to the face.

Methods

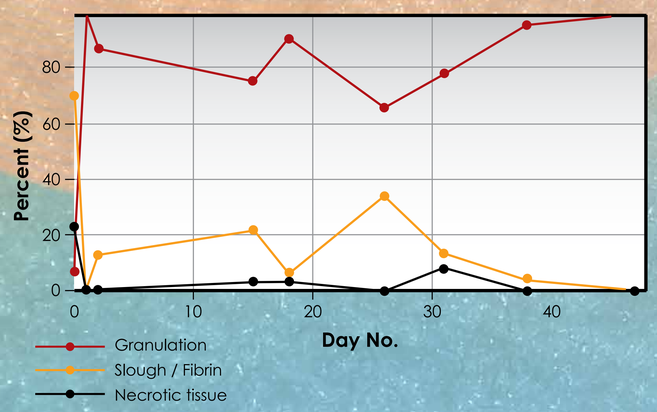
A 39-year-old woman presented to the Emergency Department eight days after being involved in a motor vehicle accident in which a metal bar protruding out of another vehicle had rammed into the left side of her face. There was severe disruption of soft tissue architecture of the left face with a malodorous septic wound consisting of loose bone fragments, grass, pieces of glass, stone and sand.

Clinical examination revealed a fracture of the left lateral orbital wall, the floor of the orbit and a comminuted fracture of the left zygoma. The patient presented with enophthalmos and trismus as well as an intraoral communication with the external degloving injury. There were no cranial nerve defects.

Following an initial conservative debridement and reconstruction whilst attempting to preserve as much of the normal structure as possible, the wounds were dressed with a hydroconductive dressing. At the first dressing change in 24 hours the wound appeared clean, so the decision was made to continue with the hydroconductive dressing change at three-day intervals. No topical or systemic antimicrobials were used.

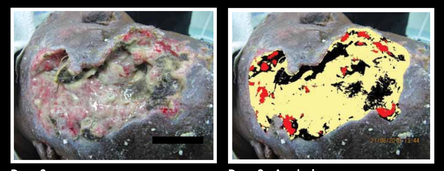
On discharge, the patient was able to function well with a reasonably good aesthetic result. She was subsequently lost to follow up.

Wound Measurement Results

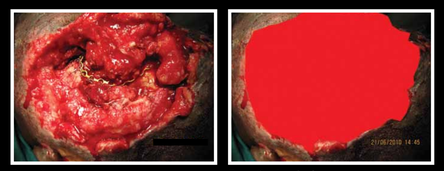


Wound Image Gallery

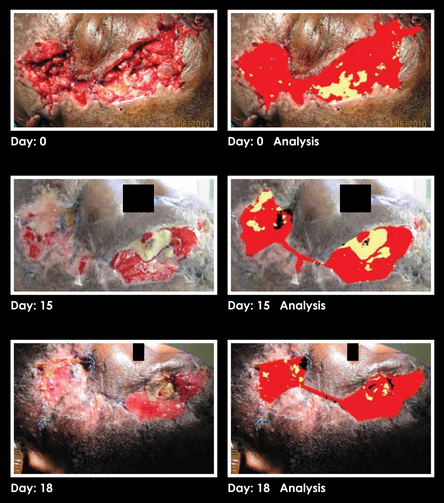
Pre-surgical debridement



Post-surgical debridement



Suturing & implementation of Drawtex



*** DRAWTEX® Hydroconductive Wound dressing. Beier Drawtex Healthcare**

This study was sponsored in part by Beier Drawtex Healthcare.

Documentation

All photographs of the wound bed were taken at each dressing change using the same digital camera by the same operator with the same camera settings .The distance of the camera from the wound remained constant.

Wound bed analysis from photographic images was done (Image care Ltd, London, UK). EliXr; a statistical pattern- recognition algorithm that classifies each wound colour pixel in a wound image, providing a documented area measurement variance of only 1% (with flat wound images) to 5% (with rounded wound images) was used. Accurate readings of granulation, slough and eschar found in the wound bed were provided.

Results

Using only selective conservative debridement following bony reconstruction and repeated hydroconductive dressing changes, this severe injury healed with preservation of the important facial features. The wound showed signs of rapid healing by day 10 and near complete healing by day 52 with re-epitheliazation. On Discharge the patient was able to function well with reasonably good asthetic result. No further extensive surgical procedures were done.

Conclusion

The effectiveness of a hydroconductive dressing with specialized LevaFiber technology in the management of avulsive facial injury has been demonstrated. The properties of the hydroconductive dressing mainly:

- It's ability to mould to the wound bed and wound periphery.
- Its very strong capillary force against gravity on wound fluids, which aids in the removal of nutrient rich inflammatory exudates essential for biofilm survival[2].
- The creation of a natural vacuum under the hydroconductive dressing
- The choice of applying a single layer or multiple layers of the hydroconductive dressing depending on the wound fluid burden.
- No special training being required for the application and replacement of the hydroconductive dressing.

makes this hydroconductive dressing a versatile alternate to traditional wound management protocols by creating an ideal environment for healing to take place.

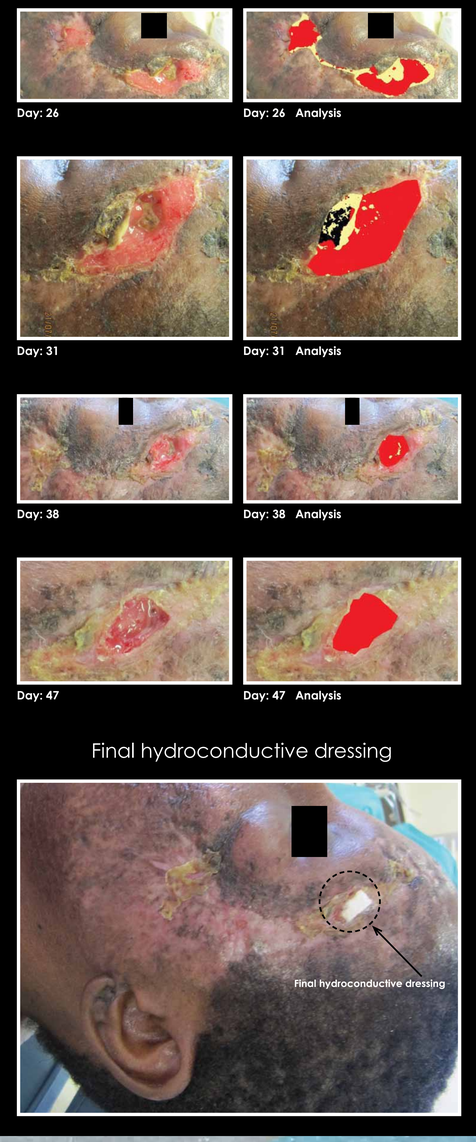
This case report demonstrates further, that a hydroconductive dressing can be useful for traumatic avulsive injuries and can remove deterrents to wound healing without resorting to therapies that might result in additional loss of tissue in situations where maximal tissue preservation is paramount.

Wound Measurement Results

Day No.	a	p	w x h	Status/ whr (%)	g	f	n	Date	No.
Day 47	-	-	-	-	100.00%	0.00%	0.00%	06/08/2010	9
Day 38	-	-	-	-	96.00%	4.00%	0.00%	28/07/2010	8
Day 31	-	-	-	-	78.30%	13.40%	8.40%	21/07/2010	7
Day 26	-	-	-	-	65.70%	34.30%	0.00%	16/07/2010	6
Day 18	-	-	-	-	91.20%	5.70%	3.10%	18/07/2010	5
Day 15	-	-	-	-	75.20%	21.70%	3.10%	05/07/2010	4
Day 0	-	-	-	-	87.00%	13.00%	0.00%	21/06/2010	3
Day 0	-	-	-	-	100.00%	0.00%	0.00%	21/06/2010	2
Day 0	-	-	-	-	6.90%	70.00%	23.10%	21/06/2010	1

Day No. = Day Numbers
p = parameters
whr = wound healing rate
F = slough / fibrin
a = area
w x h =
g = granulations
n = necrotic tissue
No. = No of slides analysed

Wound Image Gallery



Final hydroconductive dressing

References:

1. Costerton JW, Lewandowski Z, Caldwell DE, et al. Microbiol biofilms. Annu Rev Microbiol. 1995, 49: 711-745.
2. James GA, Swagger E, Walcott R, et al. Biofilm in chronic wounds. Wound Repair Regen. 2008, 16(1): 37-44.