The UKM StimuGold (UKMSG) Wound Bed Preparation Method: A Unique Technique Combining Superabsorbent Polymer Polyacrylate Sodium with Collagen Glycerine Amorphous Base Dressing

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Introduction

UKMMC is a Quaternary Referral Centre and Level 1 Trauma Centre situated in Kuala Lumpur, Malaysia. Our multi-disciplinary Wound Care Team manages the full spectrum of wounds. Wound bed preparation (WBP) is the process of removing local barriers to wound healing so as to maximize the potential for successful healing.

Case series & method

WBP can be achieved through debriding nonviable tissue, pathogens (biofilm), contaminants & foreign (or other) material and also drains areas of infection. Chronic wounds may require serial surgical wound debridement (WD) to sufficiently prepare the wound bed[1].

Between July 2014 to October 2015, we discovered a unique dressing technique of combining Superabsorbent Polyacrylate Sodium (Gold Dust®) with Collagen-Glycerine base amorphous gel (Stimulen®), termed the UKM StimuGold (UKMSG) Method, in six patients with acute & chronic wounds of various aetiology; referred for recalcitrant, non-healing wounds. All wounds were initially managed by respective primary teams with dressings and surgical WD done at least once but healthy wound bed was still not achieved. Informed consent was obtained prior to commencing the UKMSG method. Regular wound assessment & monitoring was performed on all patients.

Discussion

Difficult, non healing wound contains exudate with high levels of inflammatory mediators like matrix metalloproteinases (MMPs)[2], polymorphonuclear granulocyte-derived elastase (PMN elastase), increase activities of protease [3] & high concentrations of free radicals[4]. Removal of the above will have major therapeutic effect on granulation tissue formation & WBP[2]. Superabsorbent polyacrylate (SAP) can inhibit MMP activity[5] & exhibit a high binding capacity for PMN elastase, protease & can inhibit free radical formation[6]. It takes up multiple amount of bio-fluids & exudate of their own dry weight which is crucial in wounds with moderate to high exudative level. Its ability to retain proteins, cell debris & micro-organisms[6] serve as a good autolytic debridement agent. Collagen, on the other hand, creates the most physiological interface between wound surface & its environment & it is impermeable to bacteria[7]. Collagen also inhibit the actions of MMPs and facilitate migration of fibroblasts into the wound[8]. Glycerin is found in many common products such as cosmetics, conditioners, soaps, etc. It is a humectant by definition and has the ability to absorb moisture from the wound. From our case series, UKMSG is easy to apply and removed. Generally comfortable & does not need expensive secondary dressings. No adverse reaction in all patients. Less peri-wound complications like itchiness, irritations and eczema. However, some patients did complaint of slight tingling sensation upon initial application of UKMSG and unpleasant odour if dressing was kept for too long. But, all these quickly go away once dressing is changed.

Conclusion

The UKMSG is part of our Wound Care Team approach to wound management across a variety of wounds that have failed to progress though the stages of wound healing. We found UKMSG to be a viable option in managing recalcitrant, difficult wounds. In the future, we aim to perform a RCT and comparison study to further evaluate the UKMSG method.

References

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(1a) Before UKMSG (1b) After 24 days

Case 1:

72 years old man with lower abdominal necrotizing fasciitis, Fournier's gangrene. 8 surgical WD done.
(1a) Started UKMSG for WBP along with serial surgical WD.
(1b) Healthy less exudative granulation tissue.

(2a) Before UKMSG (2b) After 28 days

Case 2:

64 years old man, post CABG 2 weeks, excoriation at sacral region progressed into pressure ulcer, grade II. WD done once, refused further WD. (2a) slough with discharge prior to UKMSG. (2b) Healthy granulation tissue with minimal slough.

(3a) Before UKMSG (3b) After 7 days

Case 3:

41 years old lady, post total hysterectomy for symptomatic multiple uterine fibroid. Presented with SSI & wound breakdown. Surgical WD done once. (3a) Highly exudative wound, slough at base & foul smelling discharge prior to UKMSG. (3b) Healthy moist granulation tissue.

(4b) Before UKMSG (4b) After 42 days

Case 4:

2 years old girl admitted for 23% mixed thickness infected burn wounds at posterior trunk. 2 surgical WD done. (4a) resistant exudative wound with discharge.
(4b) Healthy epithelized wound.

(5a) Before UKMSG (5b) After 3 days

Case 5:

30 years old man, Retro-viral (RVD) positive, presented with gangrenous penis due to penis siliconoma. Surgical WD done once. (5a) Sloughy base with discharge. (5b) Healthy granulating tissue.

(6a) Before UKMSG (6b) After 24 days

Case 6:

43 years old man with traumatic paraplegia for 20 years & complex network of clean, static pressure ulcers. Multiple admission for infected pressure ulcer at sacrum, grade IV. At least 3 surgical wound debridement done.
(6a) Deep communicating cavity with discharge.
(6b) Obliterated communicating cavity, clean.