

Utility of a Microcurrent Generating Device in Surgical Dehiscence Wounds of Varying Etiology



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Background

Despite the array of advanced wound care options available on the market, surgically dehisced wounds continue to present a therapeutic challenge to the practitioner. When primary closure methods fail, there is a need for efficacious solutions to reduce chance for infectious complications and expedite healing. A growing evidence base supports the use of the microcurrent generating device* in enhancing healing outcomes of both acute and chronic wounds (1-2).

Methods

A case series was conducted to document experience with MCD in the treatment of surgically dehisced wounds. The effects of the MCD were assessed in the following patients: 1) an abdominal wound dehiscence; 2) a painful ulceration at an ileostomy site; 3) a gangrenous infected surgical dehiscence of the foot following toe amputation; 4) a surgical incision dehiscence following AKA; and 5) two dehisced surgical incisions on the anterolateral and lateral lower leg.

Results

Successful wound healing was achieved in all these cases that had failed to respond positively to other advanced wound healing modalities, including NPWT and silver dressings. Of the 3 painful wounds, all patients had decreased pain medication usage following application of the MCD. In cases 1-2, the patient was allowed to return home to continue her role as primary caregiver; the decrease in pain and the resolution of the ulceration allowed her to be properly fitted for an ileostomy containment system; Cases 3-4 were allowed to return home; Case 5 went on to undergo TKR.

Conclusion

These observations further support the wound healing potential of the MCD in open wounds. Findings from this series point to the use of a microcurrent-generating device as a valuable tool for the induction of wound healing in various complex wounds.

References

- Whitcomb E, Monroe N, Hope-Higman J, Campbell P. Demonstration of a Microcurrent-Generating Wound Care Device for Wound Healing within a Rehabilitation Center Patient Population. Journal of the American College of Clinical Wound Specialists 2013; 4(2):32-39.
- Blount AL, Foster S, Rapp DA, Wilcox R. The Use of Bioelectric Dressings in Skin Graft Harvest Sites: A Prospective Case Series. J Burn Care Res 2012;33(3):354-357.

#1 Abdominal Surgical Dehiscence #2 Excoriated Ileostomy Site

Patient History: 74 y/o female encountered an 11 day hospital stay. Previously seen in the Colon-Rectal Surgical Clinic for recurring diverticulitis. Admitted for laparoscopic surgery to convert to open sigmoid colectomy, appendectomy, and small bowel resection with diverting ileostomy. On post-op day 9 a KUB was performed showing an ileus. She had increased ostomy output and large BM from the rectum. IV fluid replacement and patient d/c'd to rehab facility 2 days later.

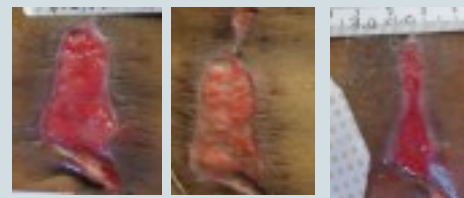
Dx: H/o DVT, TKR, diverticulitis, s/p appendectomy, sigmoid colectomy, small bowel resection, ileostomy with post-op complications, pulmonary embolism, hypokalemia, acute/chronic anemia, polymyalgia rheumatica, DM II, long-term insulin use, HTN, long-term anticoagulant use, cardiac failure, pernicious anemia, obesity, diverticulosis, asthma, rectovaginal fistula, OA, edema, malnutrition, long-term steroid use, arteriosclerosis, Vitamin D deficiency, intestinal abscess, abscess inguinal region, CHF

Treatment and Significant Dates:
10/5/13 Started on collagenase and foam dressing for necrotic film/change qd
10/8/13 Started on MCD, with dressing -change 2x/wk
10/26/13 Discharged home

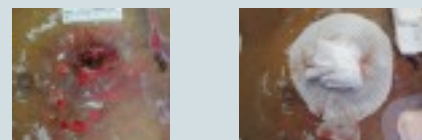
Patient received an ostomy system that was not fitting properly and leaked feces onto her skin. She suffered from painful open lesions around her ostomy site. Any movement was very painful for her.

Treatment and Significant Dates:
10/23/13 Applied MCD to painful excoriation around ostomy site.

Patient reported that pain was decreased from a "10" on the pain scale to "0 - 1" within 10 minutes of applying the MCD.



10-8-13 10-14-13 10-23-13



Wound appearance MCD application

#3 Gangrenous Infected Surgical Dehiscence

Patient History: 63 y/o male admitted to the hospital on 5/10/13 for mitral valve replacement and a CABG. Admitted to ICU post-op with sepsis and diagnosed with VRE Endocarditis. Patient suffered a CVA. He had a h/o at least one other CVA prior to this admission. He received a PEG tube on 5/24/13 and also suffered an embolic phenomenon in his RLE. Attempted embolectomy on 5/31/13 with unsuccessful outcome as evidenced by the discoloration in his right foot. On 6/4/13 he underwent a right transmetatarsal amputation due to DVT. Both the right groin and right transmetatarsal surgical incisions dehisced. Discharged to hospital on 6/27/13 for debridement of the dehisced right groin surgical site. Re-admitted to rehab facility on 7/3/13. Patient suffered severe UTI during treatment period and received IV antibiotics.

Dx: Post-op infection, MRSA, VRE, right transmetatarsal amputation, CAD, DABG, right groin surgical site infection, DVT, gangrene due to DVT, endocarditis due to VRE infection, multiple CVAs, right hemiplegia, dysphagia, COPD, HTN, hernia, gastritis, right THR, hyperlipidemia, epilepsy, depressive disorder, pleural effusion, aphasia, vitamin D deficiency, DM II, hypokalemia, ataxia, UTI

Treatment and Significant Dates:
6/13/13: Original admission to rehab facility, non-adherent gauze, covered and wrapped daily
6/25/13: ¼ Strength Dakin's moistened gauze, covered and wrapped daily
6/27/13: Discharged from rehab facility to hospital for debridement of right groin surgical incision dehiscence
7/03/13: Re-admitted to rehab facility continue with ¼ strength Dakin's moistened gauze, covered and wrapped
7/07/13: Sutures removed
7/09/13: Area sharp debrided to remove devitalized tissue. Started treatment with MCD, covered and wrapped, changing 2x/wk
7/25/13: Area sharp debrided to remove devitalized tissue. Continue with MCD and 2x/wk dressing changes.
8/08/13: Discontinued MCD due to area being too small to pack. Changed treatment to MDP, covered and wrapped daily
8/16/13: Wound area closed



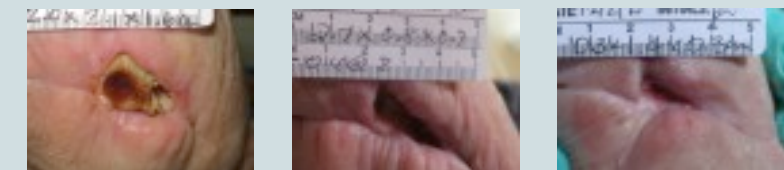
7/9/13 7/15/13 7/25/13 8/15/13

#4 Surgical Dehiscence-Left AKA

75 y/o female admitted to the hospital on 8/23/13 for a 10 day hospital stay following an episode of fever, chills, decreased strength and mobility. She had undergone a L BKA 3 wks prior due to occlusive PVD. On admission the L BKA surgical incision was dark and dusky appearing. She had urinary retention, elevated white count, COPD exacerbation and cellulitis of the L BKA. On 8/27/13 she underwent a surgical revision to an AKA. Admitted to BHC on 9/3/13.

Treatment and Significant Dates:
9/3/13: Admitted with L AKA
9/5/13: Incision line warm, red, and painful
9/24/13: Staples removed by surgeon
9/26/13: 2 areas open on incision line on medial & lateral sides
10/4/13: Lateral site healed, medial site open and necrotic
10/15/13: Debrided and started on enzymatic debriding agent
10/24/13: Started MCD, changed Qwk with secondary dressing changed 2x/wk
10/27/13: Discharged home with MCD and home health care
12/2/13: Discontinued MCD due to small size and location of wound

Dx: LLE cellulitis, abscess, L AKA, occlusive PVD, venous insufficiency, anemia, COPD, emphysema, asthma, DM, HTN, OA, depression, anxiety, CVA w/L side hemiplegia, vitamin D deficiency, L limb phantom pain, h/o tobacco use, spondylosis, metabolic brain disease, pleural effusion, neuropathy, MRSA, dyspnea.



10/14/13 10/23/13 12/2/13

#5-#6 Surgical Sites Dehiscence

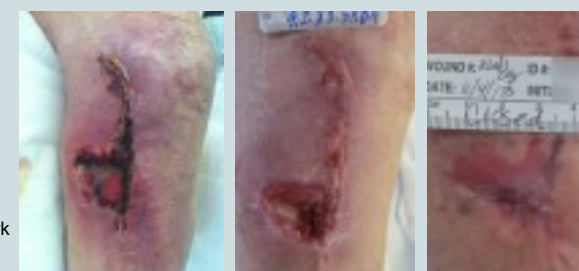
Patient History: 77 y/o female admitted to acute care hospital on 8/30/13 for a scheduled right TKR arthroplasty. H/o right knee fx s/p ORIF and underwent removal of tibial plateau in May 2013. On admission bursal fluid was aspirated and X-ray showed severe OA and valgus deformity. No RTK arthroplasty but a right proximal tibial bursal excision with lateral gastrocnemius flap and right knee joint aspiration was performed. NPWT placed.

Dx: OA, vitamin B deficiency, L distal femur fx s/p mega prosthesis, ataxia, non-Hodgkin's lymphoma, malignant pleural effusion (chronic due to lymphoma), stage I heart disease, reduced ejection fraction 50 - 60%, HTN, left knee joint effusion, left knee and femur deformity, traumatic fx of pubic, vertebrae, and humerus, asthma, long-term steroid use, dyspnea, supplemental O2 dependent, chronic non-healing non-union left humerus fx, h/o chemotherapy for CA, multiple vertebral fx with multi-vertebroplasty procedures, falls, idiopathic scoliosis, colostomy (s/p colon perforation), h/o thromboembolic disease/ DVT history (s/p Greenfield Filter placement), hiatal hernia w/elevated diaphragm, dependent edema, long-term use of diuretics, vitamin D deficiency, hypokalemia, anxiety, inguinal hernia repair, COPD, uterine disease, hypoxia, infection R TKR

Treatment and Significant Dates:
Left Anterolateral Site
9/13/13: Incision line declining, started antibiotics
9/16/13: Follow up with surgeon, started enzymatic debriding agent, d/c'd antibiotics
9/19/13: Sharp debrided, cleaned up nicely
10/1/13: Started MCD, dressing changed 1x/wk and covered with foam, changed 3x/wk
10/23/13 - 10/30/13: Hospitalized for pleurisy and pneumonia
11/4/13: Wound closed

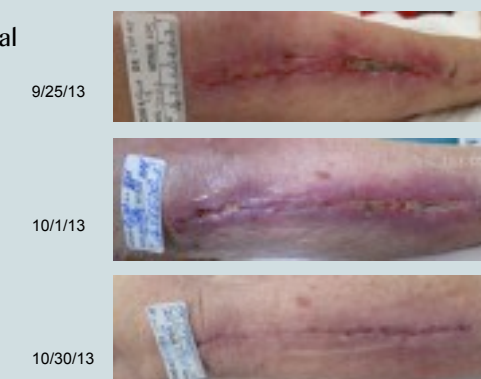
Left Lateral Incision Line
9/25/13: Incision turned black with a boggy feel
10/1/13: Enzymatic debriding agent started
10/8/13: Started MCD with dressing changed 1x/wk and covered with foam, changed 2x/wk
10/23/13 - 10/30/13: Hospitalized for pleurisy and pneumonia
10/30/13: Incision closed

Anterolateral



9/25/13 10/1/13 11/4/13

Lateral



9/25/13 10/1/13 10/30/13