

Successful Management of Complex Pediatric and Neonatal Wounds with Methylene Blue and Gentian Violet Foam Dressings

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BACKGROUND:

Topical antimicrobial application in pediatric and neonatal patients can be challenging due to increased systemic absorption, damaging inflammatory cytokines and oxygen radicals release during bacterial death. A product combining all wound bed preparation principles is desired. Methylene blue/gentian violet (MB/GV) foam dressings can keep wound beds moist, decrease ongoing inflammation, provide non-cytotoxic antibacterial coverage and promote healthy wound edges. There are two foam types of the MB/GV foams that were used: Polyvinyl Alcohol(PVA) and Polyurethane(PU).

CASES:

We share the use of MB/GV antimicrobial foam technology in pediatric patients, including neonates with injuries such as giant omphaloceles epidermal stripping, dehiscent abdominal wound, peristomal dermatitis, extravasations and adolescents with stage 4 pressure injury. Eight patients (6 infants and 2 adolescents) received MB/GV foam dressings every 2-3 days depending on the wound, in addition to standard of care management (SOC).

RESULTS:

Effective debridement, bioburden elimination, moisture balance and edge enhancement were achieved in all wounds. Every wound bed was well prepared to receive other SOC products, as necessary. Three cases were determined to benefit from negative pressure wound therapy (NPWT), yet clinical characteristics and wound location were challenging. The MB/GV polyvinyl alcohol (PVA) foam provided capillary wicking action that enhanced closure without the need for NPWT. No side effects were noted.

MB/GV TECHNOLOGY:

*MB/GV foams-- microporous structure enhances absorption and creates a capillary action that resembles the NPWT pulling action. Bacteria in the exudate is drawn into the foam where it comes into contact with MB and GV, organic dyes. The dyes work via interference with the oxidation-reduction (redox) potentials in the electron chain transport steps of oxidative metabolism.

*Effective absorption of exudate, including inflammatory mediators likely contributes to decrease inflammation.

*The PVA foam supports wound edges. It activates edge keratinocytes and enhances migration across the wound. It flattens epibole minimizing the need for aggressive sharp debridement.

CASE 1



Fig 1A. Newborn with giant omphalocele

1B. After complete epithelialization, an area of breakdown, with ongoing exudate noted

1C. Less slough and improved dryness 2 days after MB/GV PVA dressing application

CASE 2

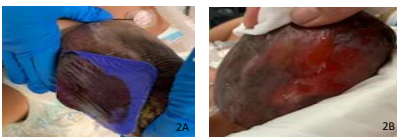


Fig 2A. MB/GV PVA foam saturated with exudate. Wound developed on giant omphalocele, colonized with MSSA

2B. 1 week later healthy granulation is visible; all slough successfully removed

CASE 3

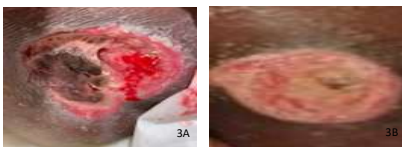


Fig 3A. Sacral PI in a 13y/o after car accident and paralysis MB/GV PVA was used to remove slough, provide antimicrobial coverage and NPWT-like pulling action

3B. 2 weeks later

CASE 4



Fig 4A. Pre-term neonate with TPN-related PIVE: Copious slough, significant depth to the wound bed

4B. MB/GV PVA foam was used to remove slough and provide capillary NPWT-like pulling action to enhance granulation tissue growth

4C. Noticeable decrease in slough, islands of granulation tissue 4 days later

CASE 5



Fig 5A. Another example of PIVE-related injury with slough and bacterial colonization

5B. Wound bed was clean after 6 days of MB/GV PU foam

CASE 6



CASE 7

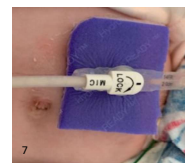


Fig 6. MB/GV PVA foam was used to pack this dehiscent abdominal wound to remove slough and enhance closure

Fig 7. Peri-gastrostomy breakdown was managed with MB/GV PU foam

CONCLUSION:

Our positive outcomes support MB/GV foam dressings as a safe alternative for anti-bacterial, moisture and debridement management in neonatal and pediatric patients.

*Hydrofera Blue Classic®, Hydrofera Blue Ready®, Hydrofera LLC, Manchester, CT, USA

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