CASE SERIES: PORTABLE NEGATIVE PRESSURE WOUND THERAPY FOR POST-SURGICAL ORTHOPEDIC PROCEDURE

Nazmi A.T, Nur Syahirah A, Norsaidatul A.A.M, Noorwina M.N
Department of Orthopaedic, Hospital Sultan Idris Shah.

WOUNDBUSTERS
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INTRODUCTION

The first Negative Pressure Wound Therapy (NPWT) machine was developed in the 1990s and has evolved into a wound exudate removal therapy that is recognized by Medicare insurance since 2001. Usage of controlled negative pressure machine to remove wound exudate is still not widely available in many hospitals in the country. This is due to the cost of acquiring hardware, maintenance, and affordability of disposable dressings in comparison to traditional wound care dressing that is much more economical.

In an orthopedic set up in a public hospital, NPWT therapy is a tool that demonstrate to be useful in specific post-operative orthopedic procedures, especially those that involves slow healing wound closure present with heavy exudate. The exudate discharges are usually high in pro-inflammatory cytokines, MMPs, neutrophils elastase, with degraded fibronectin and altered fibroblast mitosis, which is mostly a by-product during the inflammatory stage of wound healing. NPWT introduced constant negative pressure to the wound bed, can actively draw out these exudate discharges of fluids, liquid, drainage that is known to be detrimental in the wound reparative process, reducing dehiscence and surgical site infection with a better wound edge advancement.

METHODOLOGY

Our hospital team were introduced a new portable NPWT system in orthopedic ward not long ago. The NPWT system UNO+ from Genadyne Biotechnologies, Inc. weighs about 400 gram (without canister) and is about the size of a single hand-held device. It is essentially a full function NPWT system that is miniaturize. UNO+ comes with 300ml exchangeable canister for collection of exudate fluids, can be remove and discard when it is full. New cannister is then replaced for continue treatment. The UNO+ dressing is a new patented technology multiple-layer hybrid green foam dressing that enable better hydrolytic stability, providing increased performance under pressure.

2 separate post-surgery wound case with different etiology were chosen to be featured in this case series:

RESULT

NPWT is a useful tool in management of acute and chronic wound to reduce the its size and moisture, as well as promoting healthy healing process. It also increased the patient's satisfaction and cost as it requires less frequent dressing.

CONCLUSION

An active NPWT machine that introduced negative pressure -125mmHg on a wound site, coupled with a closed dressing system will enable active removal of undesirable exudate from the wound into a canister that is later being discarded. This continuous action of exudate removal is proven to be beneficial in the process of wound healing.

On top of that, the Variable mechanical suction mode introduced macro-deformation on the wound edges drawing them together. Suction power also introduces micro-deformation that promote granulation faster than traditional wound dressing.

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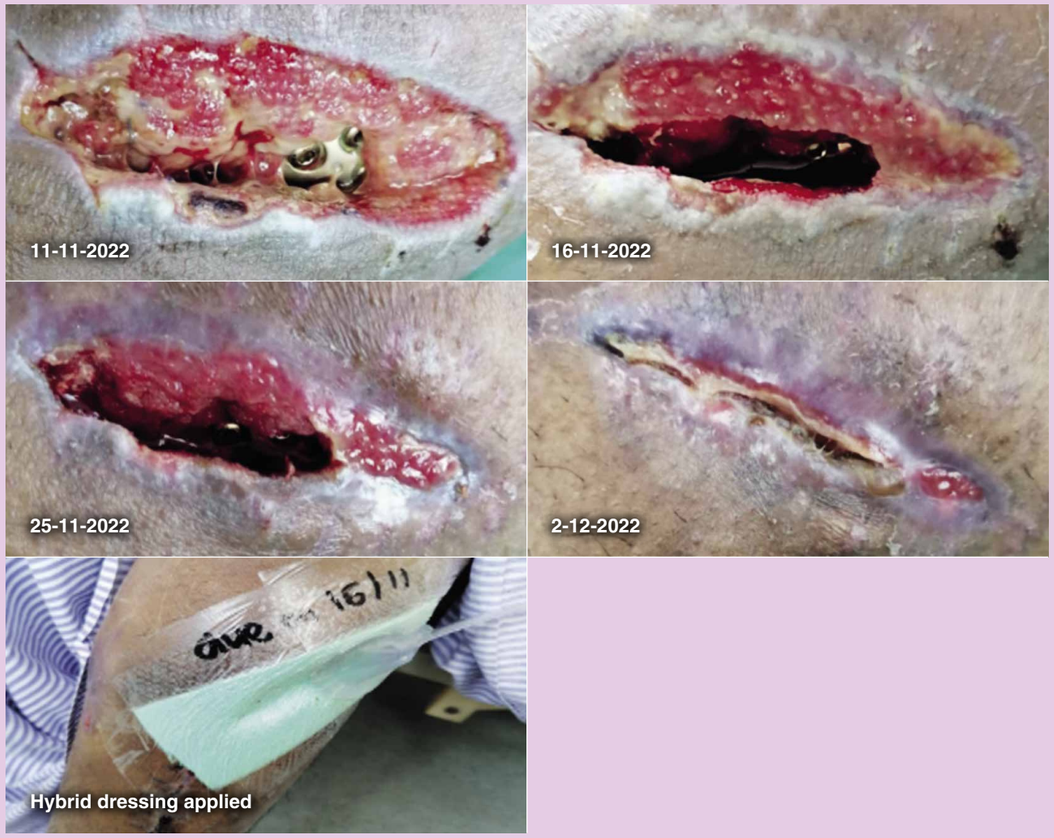
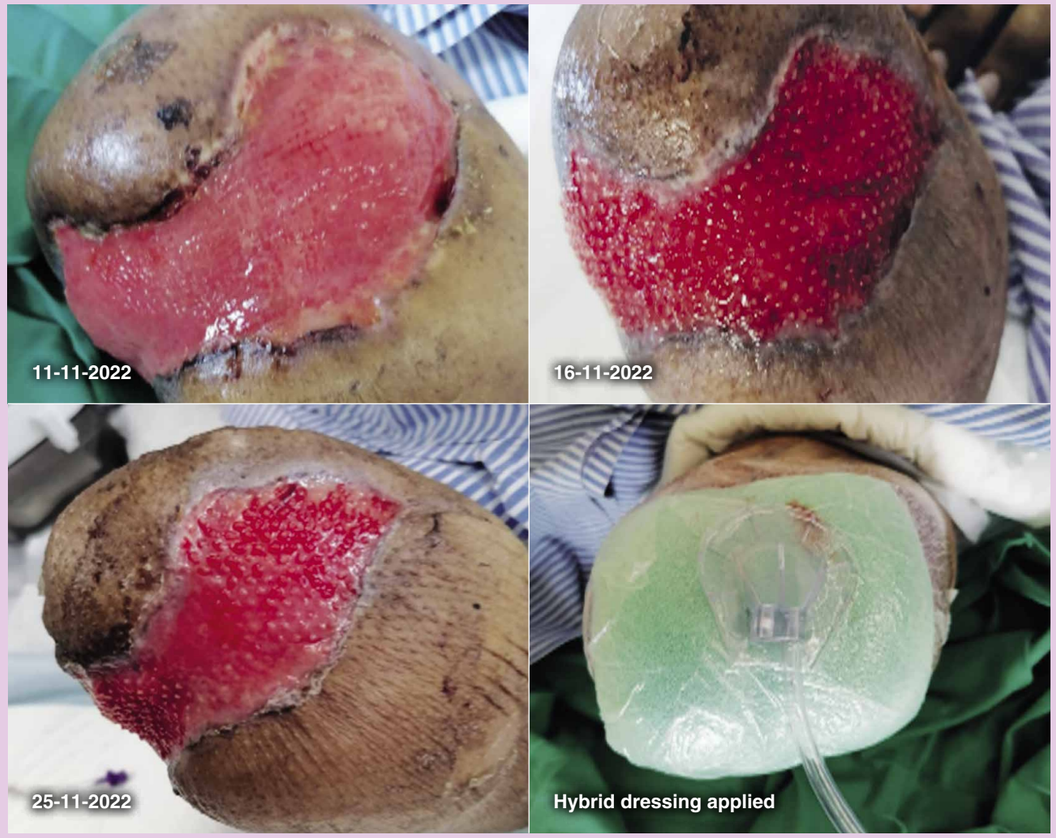
CASE 1



A 30y male with malunited tibia fracture which had undergone corrective osteotomy to correct angulation deformity and restore the tibial length. Post op 2 weeks patient had wound dehiscence because of high tension at wound closure due to the lengthening of tibia. After 2 cycles of NPWT, wound edges were able to approximate and full closure with secondary healing after 1 week of simple dressing at home.

CASE 2



Elderly man with infected above knee amputation (AKA) stump which underwent multiple debridement and resulted in large, deep wound with high exudate. With 2-3 cycles NPWT, we were able to reduce the exudates, allowing healthy granulation tissue to form and reduce the size of the wound.

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