

Positive clinical outcomes using a portable NPWT on single-stage biomatrix and skin graft: Evaluation of 10 consecutive cases

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Introduction & Aim

This study highlights the efficacy of using a single patient, portable NPWT* device over an advanced biomatrix and split thickness skin graft (STSG) in a single-stage. NPWT is a clinically proven therapy to assist in the healing of a STSG or a bi-layer biomatrix***.

The biomatrix (collagen-glycosaminoglycan/poly-siloxane) adds dermal thickness and provides a scaffold for dermal cells under the STSG and has become a standard in complex wounds/burns. STSG or biomatrix is normally placed on a wound in separate stages; however, this study elucidates the efficacy of using NPWT over both biological layers in a single stage(1 operation) over a large surgical wound.

Dynamic Pressure Management System intelligently controls prescribed pressure at the wound site

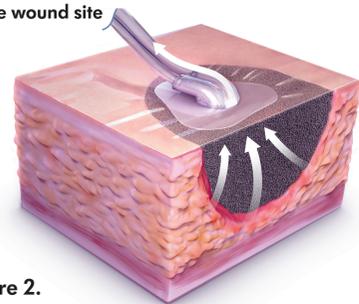


Figure 2.

Methods

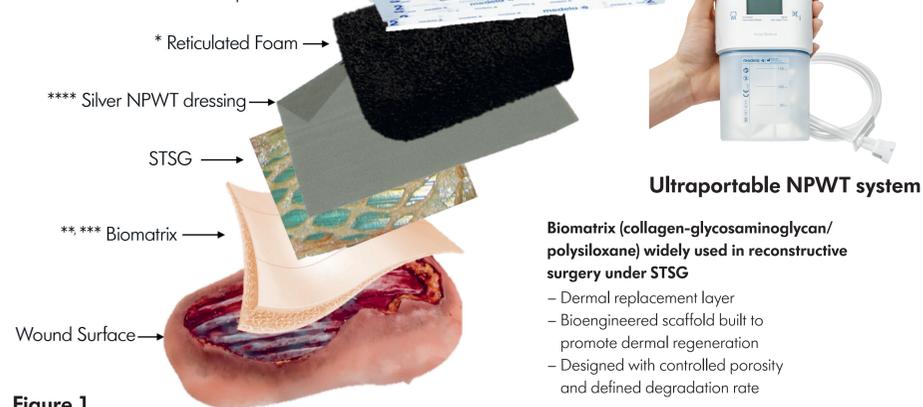
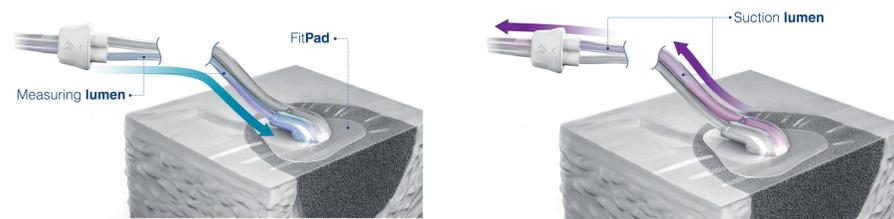


Figure 1

Biomatrix**, STSG, and NPWT* (-125mmHg) and interface layer**** were used to reconstruct large radial forearm flap donor sites. Wound and Graft Size, STSG/biomatrix take, therapy duration, hospital length of stay (LOS), and infection rate were assessed on a series of 10 consecutive patients.

Additional safety features of the NPWT system* utilized in this study include the management of negative pressure at wound site to maintain set pressure. The pump actively helps prevent blockages with airflow cycles that dynamically adapt to volume and viscosity of exudate to optimize system performance from the pump to the dressing (Fig. 2).



Results

Table 1. Radial Forearm Donor Site Management Comparison

	Standard Protocol	New Protocol
Operating Room	Biomatrix + NPWT	Biomatrix + STSG + NPWT
LOS (days)	5	5
5th day Post Op discharge home with NPWT	Yes	Yes
Outpatient STSG surgery	POD 14 days	No
Operations	2 separate	1
Total NPWT (days)	21	10-14 (mean 12)
Results	Good	Good
Added benefits	-	*No painful removal of NPWT *Uninterrupted NPWT *Patient satisfaction +++ *Significant cost savings



Figure 4

Follow up after 3 months Biomatrix/STSG show improved cosmesis and function.



Figure 3

100% STSG take + Biomatrix, immediately after removal of ultra portable NPWT, POD 14

Unique NPWT System*

Small footprint & light weight without sacrificing full NPWT features

Other disposable NPWT pumps currently available has limited functionality:

- single predefined pressure setting
- limited exudate removal capacity
- minimal safety notifications
- limited pump run times

The use of a full featured pump* that can last for up to 15 days

Mobility and reliability and ease of use of the device facilitated patient compliance

One device through entire duration of NPWT:

OR > Inpatient > Outpatient (Home care)

Results

Table 2. Patient characteristics and Results

Patient characteristics Standard Protocol	
Patients	n = 10
Age	29.4 ± 6.8 years
Gender	
Male	10
Female	0
Hospital Stay	
Inpatient (days)	5
Outpatient (days)	10-14

Study results	
Wound	
Skin graft donor site	150 cm2
STSGs/Biomatrix take range	98% mean (range 90-100%)
Infections	0
Re-operations / Complications	0
Therapy Duration	
Length of time NPWT	12 days (range 10-14 days)
Length of time hospital	5 days



Figure 5

Ultra portable device and NPWT dressing

Poster Number: GR-11

Conclusion



Figure 6

Patient follow up

- Portable NPWT supports take of single-stage STSG and Biomatrix provides strong evidence > powerful tool for reconstructive surgery (complex acute wounds)
- Improved cosmesis
- Biomatrix + STSG + Portable NPWT > excellent results for healing
- Favorable 1 stage technique compared to current standard (2 stage procedure)
- Added benefits: Shortened LOS, decreased costs, improved clinical outcomes and patient satisfaction
- No skin staining and less pain with the use of antimicrobial contact layer****.

Notes:

Product notation:

- * Invia® Motion™ NPWT system,
- ** Integra® Mono Layer (Thin) Wound Matrix,
- *** Integra Bi Layer Wound Matrix,
- **** Invia Silverlon

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Although the manufacturer's instructions for use with the NPWT system* recommends a dressing change every 48-72 hours, the primary researcher in this study has been investigating extended times between NPWT dressing changes in the management of wounds and has experience with extended dressing change times together with an antimicrobial wound contact layer**** and therefore applied extended dressing change times commensurate with this experience.

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