

Inpatient Surgical Setting Transition to Outpatient: Supportive Role of a New Personal and a Reusable Negative Pressure Wound Therapy (NPWT) System with Double Lumen

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Introduction & Aim

NPWT has revolutionized the management of complex wounds and becoming an indispensable tool in the management of acute and chronic wounds in both the inpatient and outpatient care setting. NPWT in the inpatient setting remains in constant demand as a “bridge” therapy after excisional debridement in preparation to a surgical graft or flap. NPWT in the outpatient surgical setting addresses a growing need to decrease length of stay (LOS) while providing an optimal healing environment for post debridement and/or graft procedures. A new NPWT system^{*,**} was utilized in the current case series addressing those needs.

Methods

A portable personal NPWT device^{*} and/or a reusable NPWT device^{**} was applied in the operating room immediately post-operation on patients (see Table 1 for the case series data). Some of the patients underwent debridement, thereafter skin grafts were applied. The NPWT dressing stayed in-situ for 5 – 10 days (7.2 days average). All patients were educated on the portable personal^{*} or reusable^{**}NPWT device and the majority were discharged to home. All patients returned to the office for dressing removal.

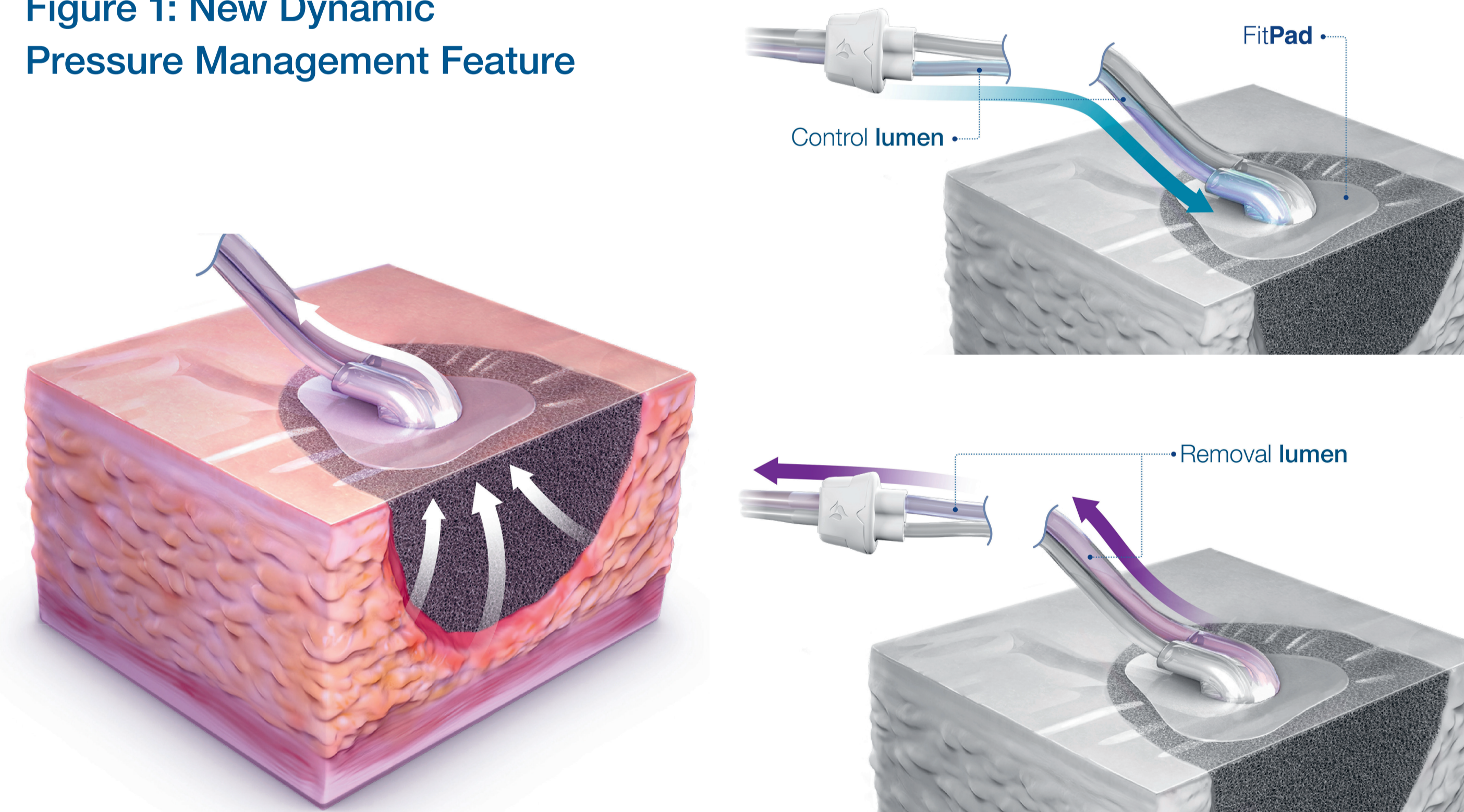
Patient Outcomes

We found that patients treated with the personal NPWT device^{*} were able to be discharged home on the same day, shortening LOS. Financial savings and ease of use with the system were evident, but more importantly continuity of care was maintained since therapy was initiated in the clinic and followed up later in office/hospital.

The clinician stated they had greater control and was confident with the new system, since pressure is controlled at the wound site and the exudate is dynamically removed (which helps avoid potential blockages). Moreover, unlike other disposable NPWT pumps currently available with limited functionality (i.e. single predefined pressure setting; limited exudate removal capacity; minimal safety notifications; and limited pump run times); the current ultraportable personal NPWT system^{*} is a full featured pump that can last for up to 15 days.

Alternatively, a reusable NPWT system^{**} was used. The simple design of the pump was easy to operate with a minimal learning curve. Common to both device^{*,**} pressure is controlled at the wound site through the double lumen tubing that extends from the NPWT pump to the low profile suction port^{***} (see Figure 1). The dressing kit's components including the adhesive film, foam and low profile suction port were familiar and easy to apply. The expected goal of therapy was met and a beneficial clinical performance was observed through the cases.

Figure 1: New Dynamic Pressure Management Feature



The new NPWT system, manages negative pressure at the wound site to maintain set pressure. The pump dynamically adapts to the volume and type of exudate and detects blockages to optimize system performance from the pump to the dressing.

Table 1: Case series summary

Patient	Inpatient/Outpatient	Surgery Date	Length of Stay (LOS) from Surgery to discharge	NPWT Device	Diagnosis	Procedure
P1 (♂, 64 yrs.)	Inpatient	25.06.17	7 days	Reusable	Right leg complex open wound, localized swelling of right lower limb, right knee open wound from crushing injury	Right leg surgical wound preparation by excisional debridement of skin and subcutaneous tissue, muscle, deep soft tissue biopsy of right leg, intramuscular, placement of NPWT dressing, exploration of complex wound of right leg.
P2 (♀, 36 yrs.)	Outpatient	12.07.17	7 days	Personal	Ventral hernia without obstruction or gangrene, disruption of internal operation surgical wound, abdominal wall defect.	Abdominal wound (Incisional flap). Right rectus muscle flap, Left rectus muscle flap, Repair of initial ventral hernia
P3 (♀, 35 yrs.)	Outpatient	12.07.17	7 days	Personal	Bilateral macromastia with mastodynia, cervicgia, lower back pain, left breast cancer.	Bilateral breast parenchymal pedicle fasciocutaneous advancement flap, bilateral reduction mammoplasty.
P4 (♂, 60 yrs.)	Outpatient	02.08.17	5 days	Personal	Left leg complex wound (history of crush injury)	Debridement followed by local flap
P5 (♂, 65 yrs.)	Outpatient	15.08.17	10 days	Personal	Left leg complex open wound	Debridement, followed by a Full thickness skin graft (3x3 cm)

CONCLUSION

To summarize, we observed the supportive role of both the portable personal and reusable NPWT device^{*,**}, enabling safe and effective use from the post-operative setting to the home setting. Factors assisting patient compliance, were the reliability and ease of use of the device. As well as allowing full mobility due to the compact and light weight design of the personal device^{*}. This small case series, shows the use of a full featured personal or a reusable NPWT device for outpatient post surgical procedures easily meets our goal of therapy. In addition to meeting the clinical requirements, the personal NPWT device is cost-effective and reliable. Further research with increased number of patients is needed to confirm the clinical benefits captured in this case series.

Notes:
Product notation:
^{*} Invia® Motion™ NPWT System (Medela AG, 6340 Baar, Switzerland)
^{**} Invia® Liberty™ NPWT system, ^{***} Invia® FitPad

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Reference
1 <http://hcupnet.ahrq.gov/HCUphenet.jsp?id=28BC0B9F3A461490&Form=DispTab&JS=Y&Action=Accept>