

Using a new technique for Negative Pressure Wound Therapy (NPWT) for the management of chronic, non-healing wounds*

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Introduction:

Selecting optimal treatment conditions for acute and chronic wound requires certain criteria for readiness to heal. Most clinicians would agree these include a clean wound free from bacterial invasion, manageable amounts of exudate from the wound, optimal co-morbidities and an established goal of therapy.

Negative pressure wound therapy (NPWT) has become an acceptable adjunctive therapy in the management of acute and chronic wounds. Review of the literature reveals a limited number of prospective randomized trials as most outcomes have been reported as anecdotal case reports. While results of this therapy is undisputed, more robust clinical data is warranted as new and different modes of NPWT are becoming available. The patient's quality of life, comfort level and clinical outcome are complimented by the ease of application technique.

In this monocentric, prospective, clinical study of 30 patients with chronic, non-healing wounds impressive outcomes support the use of Controlled Negative Pressure Therapy (CNP) as a new technique for negative pressure wound therapy.

Material and Methods

From December 2006 to March 2008 an open, monocentric, prospective, clinical study was performed to generate data on using a new Negative Pressure Wound Therapy (NPWT) system. Both digital documentation and digital photography documentation (with an automated measurement system for wound size) were used for data collection. During this investigation data was collected on 30 patients with chronic, non-healing wounds of different etiologies. Specific endpoints for this study included:

- Comparison of CNP vs. continuous pressure therapy (CPT)
- Edema reduction
- Exudate, microbial and inflammation control
- Ease of use with the system (pump and dressing)
- Patient's quality of life (e.g. pain profile, verbal survey)
- Readiness for wound healing as evidenced by the eruption of clean granulation

Results

| Table 1 | Study Group Total | Controlled Negative Pressure Therapy CNP | Continuous Pressure Therapy (CPT) |
|---------------------------------------|----------------------------|--|-----------------------------------|
| Number of cases | 30 | 26 | 4 |
| Length of treatment | 1296 days | 1137 days | 123 days |
| Total days | 3-142 days | 3-142 days | 7-64 |
| Mean | 43,2 days | 43,4 days | 30,75 days |
| Improved or closed | 27 (90 %) | 23 (88,5 %) | 4 (100 %) |
| Unchanged | 1 (3,3 %) | 1 (3,8 %) | 0 |
| Worsened | 0 | 0 | 0 |
| Dropouts (for final result) | 2 (6,7 %) | 2 (7,7 %) | 0 |
| Reduction of edema | 30 (100 %) | 26 (100 %) | 4 (100 %) |
| Control of exudate and inflammation | 29 (96,7 %) | 25 (96,2 %) | 4 (100 %) |
| Frequence of dressing changes | 3 to 7 days | 3 to 7 days | 3 to 6 days |
| Pain (between/during dressing change) | No pain to acceptable pain | No pain to low pain | Mild pain to acceptable pain |

Conclusion

The use of a new system to deliver NPWT was found to be an adequate adjunctive therapy for the treatment of patients with chronic wounds. Use of this new variable negative pressure application technique (Controlled Negative Pressure Therapy CNP) has shown superior clinical results. Among these findings were advantages in handling, especially in patient's comfort of therapy including patient's quality of life, and clinical efficacy by promoting formation of granulation tissue and wound closure. Special application techniques and decreased frequency of dressing changes facilitate cost effectiveness. More data are needed to compare different methods of negative pressure application.

*NPWT pump: PROSPERA Pro-I™/ Suprasorb® CNP P1

Case report male patient, 76 years old, St. p. transmetatarsal amputation (>4 weeks ago)

Diagnosis: Diabetes; **Co-Morbidity:** Peripheral artery disease, Organic brain syndrome; **Comments:** Poor nutrition status



Day 1 (Start of CNP therapy)

Exudate: +++, fully controlled
Dressing change: Every 3 days
NPWT Settings: Continuous mode, 80 mmHg



Day 64 (End of CNP therapy)

Exudate: +++, fully-controlled
Dressing change: Every 3 days
NPWT Setting: Continuous, 80 mmHg
Reduction of Wound Area: 16.8 cm² to 4.5 cm²
Length of NPWT Therapy: 64 days