[OP013] SAFETY AND EFFECTIVENESS OF NEGATIVE PRESSURE WITH INSTILLATION (I-NPWT) IN THE MANAGEMENT OF SEVERELY INFECTED DIABETIC FOOT ULCERATION (DFU)

Alberto Piaggesi[1], Pisa, Italy , Chiara Goretti[1], Pisa, Italy , Chiara Mattaliano[1], Pisa, Italy , Elisabetta Iacopi[1], Pisa, Italy , Alberto Coppelli[1], Pisa, Italy

[1]*Azienda Ospedaliero-Universitaria Pisana; Sezione Dipartimentale Piede Diabetico - Dipartimento DI Area Medica*

Wednesday, May 13, 2015

Free Paper Session: Negative Pressure Wound Therapy 1

Aim: To evaluate the safety and effectiveness of Negative Pressure Wound Management with Instillation (i-NPWT) in the management of the severely infected ulceration of the diabetic foot (DF).

Method: A group of consecutive type 2 diabetic inpatients with acutely infected ulceration (Group A - N. 22; age 68.4±12.1 yrs, duration of diabetes 21.7±12.3 yrs, HbA1c 8.8±2.1%, BMI 28.6±2.9 kg/m2), was treated, with i-NPWT on top of standard treatment consisting in surgical debridement, revascularization if needed, offloading and systemic antibiotic, while admitted. Instillation of a polyhexanide solution was delivered for 15' every three hours on a continuous NPWT application scheme. Patients, compared with a matched control group with the same clinical characteristics treated with NPWT without instillation (Group B), were followed up for 6 months to evaluate Healing Rate (HR), Healing Time (HT), Negativization of Cultural Exams (NCE), Duration of Antibiotic Therapy (DAT) and adverse events.

Results / Discussion: HR was of 91% in Group A and 85% in Group B (n.s.); HT in Group A was 68.5±18.4days vs 97.4±29.1 days in Group B ($p<0.05$). NCE during he observation period was reached in 95% of Group A patients vs 45% in Group B ($p<0.01$), DAT was 12.4±5.9 days in Group A vs 28.9±11.6 days in Group B, respectively. No difference in adverse events was observed throughout the study period between the two groups.

Conclusion: On top of standard treatment ì-NPWT proved to be as safe and more effective than NPWT, in the management of the infected lesions of the diabetic foot.

[OP014] INFLUENCE OF NEGATIVE-PRESSURE WOUND THERAPY ON TISSUE OXYGENATION IN DIABETIC FEET

Seung-Kyu Han[1], Seoul, Korea, Rep. of South , Ye-Na Lee[2], Seoul, Korea, Rep. of South

[1]*Korea University College of Medicine; Department of Plastic Surgery*
[2]*Korea University Guro Hospital; Department of Plastic Surgery*

Wednesday, May 13, 2015

Free Paper Session: Negative Pressure Wound Therapy 1

Aim: Several previous studies have reported that negative-pressure wound therapy (NPWT) increases blood flow in the wound bed. However, almost all of these studies evaluated perfusion changes by using Laser Doppler, which might be inappropriate in this setting. NPWT might decrease tissue oxygenation in the wound bed since the foam sponge and the pad of NPWT compress the wound bed under the influence of the applied negative pressure. Adequate tissue oxygenation is an essential consideration during diabetic foot management and the foot is more sensitive to ischemia than any other region. The aim of this study was to evaluate the influence of NPWT on tissue oxygenation in diabetic feet.

Method: Transcutaneous partial oxygen pressures ($TcpO_2$) were measured to determine tissue oxygenation levels beneath NPWT dressings on 21 feet of 21 diabetic foot ulcer patients. A $TcpO_2$ sensor was fixed at the tarsometatarsal area of contralateral unwounded feet. A suction pressure of -125mmHg was applied until $TcpO_2$ reached a steady state. $TcPO_2$ values for diabetic feet were measured before, during, and after NPWT.

Results / Discussion: NPWT decreased $TcPO_2$ levels in all 21 study subjects. Mean $TcPO_2$ before NPWT was 44.6±15.2mmHg. However, during therapy, $TcPO_2$ decreased to 6.0±7.1mmHg, representing a decrease of 84±19 % ($p<0.001$). After discontinuation of therapy, mean $TcPO_2$ value increased to 40.3±16.4mmHg. The mean time required to reach steady state after NPWT therapy was 25.8±6.4 minutes. After discontinuation of therapy the steady state was achieved in 15.8±4.0 minutes.

Conclusion: These results show that NPWT significantly reduces tissue oxygenation levels in diabetic feet.

[OP015] COSTEFFECTIVENESS OF NEGATIVE PRESSURE WOUND THERAPY AND THE QUALITY OF LIFE EXPERIENCED BY DIABETIC-FOOT-ULCER PATIENTS IN OUTPATIENT AND INPATIENT SETTINGS

Jan Stryja[1], Trinec, Czech Republic , Katerina Stryjova[1], Trinec, Czech Republic , Karin Nicielnikova[1], Trinec, Czech Republic

[1]*Hospital Podlesi; Cardiovascular Centre*

Wednesday, May 13, 2015

Free Paper Session: Negative Pressure Wound Therapy 1

Aim: The aim of the study is to assess effectiveness of outpatient negative pressure wound therapy (NPWT) based on evaluation of wound bed, to detect and quantify pre-expected reduction in total costs of therapy and to assess the impact on patients' life quality.

Method: In a prospective non-randomized study, we compared the clinical impact and cost-effectiveness of diabetics' leg-ulcer and foot-ulcer treatment. Included subjects consisted of inpatients (n=36, NPWT systems*) and outpatients (n=28, NPWT system**). NPWT was concluded when the wound bed was totally covered by granulation tissue, or when serious health problems occurred. We monitored the ulcer area, wound bed trait, number of NPWT dressing changes, the length of NPWT, intensity of pain (VAS scale), presence of complications, treatment costs, satisfaction rate, and standardized QoL score (WHO EQ-5D).

Results / Discussion: We have found comparable clinical efficacy of outpatient/inpatient NPWT: Statistically non-significant (NS) differences in ulcer area reduction rates and ulcer wound bed development (by Wollina granulation tissue score), NS risk of complications and NS differences in the number of amputations. NPWT-outpatient-group showed statistically much lower wound pain (VAS 3 versus 4, p 0.002) and better descriptive and quantitative parameters of quality of life (p 0.001). The total costs for outpatient wound treatment were statistically much lower (600€ versus 1300€, p 0.001), as well as average one-day-NPWT costs (30€ versus 120€, p 0.001).

Conclusion: We have proven that outpatient diabetic-foot-ulcer NPWT has the same clinical efficiency as inpatient NPWT, while outpatient NPWT is cheaper, less painful and better tolerated than inpatient NPWT.

*RENASYS GO
**PICO

[OP016] QUALITY OF LIFE, PAIN AND COST OF NPWT VS ALGINATE IN PATIENT TREATED FOR DEEP PERI-VASCULAR GROIN INFECTIONS – A RANDOMIZED STUDY

Christina Monsen[1], Malmö, Sweden , Kevin Mani[2], Uppsala, Sweden , Stefan Acosta[3], Malmö, Sweden , Christine Wann Hansson[4], Malmö, Sweden

[1]*Lund University; Vascular Center*
[2]*Institution of Surgical Sciences; Uppsala University Hospital*
[3]*Lunds University; Vascular Center*
[4]*Department of Care Science; Malmö University*

Wednesday, May 13, 2015

Free Paper Session: Negative Pressure Wound Therapy 1

Aim: To compare Negative Wound Pressure Therapy (NPWT*) with alginate wound dressing in terms of quality of life, pain, resource utilization and cost in patients with deep peri-vascular groin infections after vascular surgery

Method: Prospective randomized controlled trial, where ten patients were allocated to NPWT* and ten to alginate. EuroQol 5D (EQ 5D) and Brief Pain Inventory (BPI) were used for evaluation of quality of life and pain, respectively.

Results / Discussion: Wounds healed faster in the NPWT* group compared to the alginate group (median 57 vs 104 days; p=0.026). No difference was shown in QoL and pain between the groups at study start and the second assessment (BPI after 4 weeks and EQ 5D when the wound was healed). The NPWT* group had significant less dressing changes compared to the alginate group (p< 0.001). The frequency of wound dressing changes outside hospital was median 20 (IQR 6 – 29) in the NPWT group (n=9), compared to median 48 (IQR 42 – 77) in the alginate group (n=8) (p=0.004). The saved personnel time for wound care the first week in the NPWT* group in comparison with the alginate group was 4.5 hours per week per nurse. The total hospitalized care cost was 83-87% of the total cost in both groups.

Conclusion: NPWT* in patients with deep peri-vascular groin infection can be regarded as the dominant strategy due to improved clinical outcome with equal cost and quality of life measures.

*VAC® Therapy

[OP017] A STEPWISE APPROACH FOR MANAGING ENTEROATMOSPHERIC FISTULAE IN A FROZEN ABDOMEN

Olof Jannasch[1], Magdeburg, Germany , Christiane J. Bruns[1], Magdeburg, Germany , Joerg Tautenhahn[2], Magdeburg, Germany , Hans Lippert[3], Magdeburg, Germany , Pawel Mroczkowski [1], Magdeburg, Germany

[1]*University Hospital Magdeburg; General, Abdominal & Vascular Surgery*
[2]*Municipal Hospital; Vascular Surgery*
[3]*Universitätsklinikum Magdeburg; An-Institute in Operative Medicine*

Wednesday, May 13, 2015

Free Paper Session: Negative Pressure Wound Therapy 1

Aim: Formation of a frozen abdomen often marks the end for surgical treatment of an intestinal fistula. A variety of procedures exist to separate the fistula and assure healing of the surrounding wound. However, existing therapies often lead to longtime treatment or do not solve the problem at all. Aim of this study was analysis of a stepwise approach including the use of the fistula adapter (FA) in managing enteroatmospheric fistulae (EAF).

Method: This prospective study concerned all patients with open abdomen and EAF treated from April 2005 to August 2014. Patients with a frozen abdomen and inability of surgical revision were evaluated for management with the FA and negative pressure wound therapy. The version of the FA used was selected in relation to size, number and location of the intestinal fistulae.

Results / Discussion: Of 28 patients included in this study 21 were managed with the FA. 3 of the 21 patients died in hospital. One fistula closed spontaneously. One patient underwent surgical revision after 3 month. The remaining 16 patients were discharged with a conventional ostomy bag. In follow up 6 patients underwent surgical closure of the fistula, in one patient a low volume fistula closed spontaneously, 6 patients live with an ostomy and 3 died still having their fistula.

Conclusion: We present a stepwise approach in treating patients with a frozen abdomen and accompanying EAF. In most cases a reliable separation of the fistula was achieved with the FA. The system can be easily applied and supports early mobilization. Most patients could be discharged for outpatient treatment with a conventional ostomy bag.

[OP018] EFFECT OF NEGATIVE PRESSURE WOUND THERAPY WITH INSTILLATION ON BIOBURDEN IN CHRONICALLY INFECTED WOUNDS

Chun Yang[1], New York, United States , Selena Goss[1], New York, United States , Sean Alcantara[1], New York, United States , Qingping Yang[2], Gainesville, United States , Daniel Gibson[2], Gainesville, United States , Gregory Schultz[2], Gainesville, United States , John Lantis[1], New York, United States

[1]*Mount Sinai St. Luke's Hospital and Mount Sinai Roosevelt Hospital; Surgery*
[2]*University of Florida; Institute for Wound Research*

Wednesday, May 13, 2015

Free Paper Session: Negative Pressure Wound Therapy 1

Aim: Infection and subsequent delayed healing are common complications of chronic wounds, resulting in enormous burden to those affected. Treating infection and reducing microbial colonization aids in wound healing. The use of negative pressure wound therapy (NPWT) with topical irrigation solution has shown promise as an adjunct to sharp debridement for sterilization of wounds. The goal of this study is to evaluate the effectiveness of NWPT with instillation on bioburden of chronic wounds.

Method: A prospective, randomized trial was conducted. Following sharp debridement, twenty patients with chronic wounds were randomized to 1 week of either NWPT with 0.125% sodium hypochlorite solution instillation (n=10) or NWPT without instillation (n=10). Serial wound biopsy were performed pre-debridement, post-debridement, and following 1 week of study therapy to test for quantitative non-planktonic or biofilm-protected bacteria.

Results / Discussion: There was no difference in change in wound size between the two groups at 1 week. The NPWT with instillation group had a mean reduction in quantitative biofilm-protected bacteria of 48% while the NPWT without instillation group had a mean increase of 14% ($P<0.05$). The NPWT with instillation group also had decreased clinical markers of infection of odor and wound bed debris. Consistent with previous studies, we demonstrate that NPWT with instillation sodium hypochlorite solution is effective at reducing bioburden of chronically infected wounds.

Conclusion: NPWT with instillation provides both antimicrobial and NPWT benefits and is an effective tool for the preparation of infected wound beds prior to definitive closure