

Results vs Costs in the Use of Vac in Our Hospital Environment for Soft Tissue Injuries

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Abstract

Objectives: The aim of this Project is to compare the costs of VAC system used in our hospital with the commercial devices versus the final results.

Materials and Methods: A retrospective study of 11 patients treated with VAC system from June 2003 to June 2009. Age average 60.16 years-old, an average of 12.3 days of therapy, change of VAC system of 3.75 days, the prevalence of severe wounds were on lower extremities. We use the VAC device made of similar components than the commercial one, but with lower costs.

Results: 11 patients were treated with this device outcoming granulated tissues in all of them. Complication appeared in three patients: *Pseudomonas aeruginosa* invasion, profuse bleeding of the wound, continue negative pressure therapy intolerance, anxiety as a result of the lay-down period.

Conclusion: The Vacuum-assisted Closure System is useful as a treatment of severe wounds. It is possible to achieve similar results with lower costs.

Keywords: Results; Costs; Hospital Environment

Introduction

The objective of our work is to compare the therapeutic costs of VAC in our hospital environment and usual commercial costs. The results obtained in our case study.

The Vacuum-Assisted Closure or continuous vacuum system was first described by Morykwas and Argenta in 1997 demonstrating that the pressure Negative applied to wounds favors fibroblastic migration and epithelial proliferation, removes chronic edema of the third space, increases the rate of cell division and consequently the formation of granulation tissue. The VAC is a Therapeutic procedure used for the treatment of extensive soft tissue injuries with or without injury. The procedure consists in the use of a polyurethane absorbent material (sponge) of 400 to 600 mm inside the lesion connected with fenestrated probes placed in the thickness of the non-collapsible sponge that is connected to a suction equipment. The entire system is sealed with a plastic material or similar to 5 cm. at least the margin of the lesion on the skin to create a negative pressure environment. The suggested pressure in most of the published works is 125 mmHg. According to the different series, the spare parts are made every 48 to 72 hours [1-8].

Materials and Methods

In our environment to carry out a continuous aspiration system, we use solid petrolatum, non-collapsible suction tubing K225 or K227, self-adhesive kitchen film (\$ 2.50 per roll), sterile polyurethane sponge, sterile plastic reservoir and our hospital has in the rooms a central aspiration system with intake in each of the rooms.

The procedure of assembling the VAC is performed in a previous operating room, a mechanical surgical toilet of the wound to be treated, the sterile sponge is cut so that it covers the entire bloody surface of the wound, avoiding exceeding the margin of the wound to avoid macerating healthy skin. A channel is carved into the sponge for the placement of the fenestrated end of the non-collapsible tubing, sterile solid petrolatum is placed on the margins of the wound covering 2 cm. approximately healthy skin and petroleum jelly is also placed on the periphery of the face against the side of the sponge. Self-adhering film is placed to seal the system. The other end of the tubing is connected to the central aspiration system of the hospital.

The retrospective study conducted between June 2006 and May 2009, a total of 12 patients were treated with this method (8 men, 3 women), with an average age of 60.16 years (29 to 78 years) with prevalence of diabetic pathology (4 patients) 2 patients with bedsores, 2 patients with cellulite, 2 patients with exposed fracture and 1 patient with attrition injury in foot. Prevalence of lesions in lower limbs, only a lesion in the sacrum. The average interaction time was 12.3 days (range between 9 and 19 days) and a replacement of VAC every 3.75 days (between 3 and 5 days).

Results

11 patients were treated with this method of continuous aspiration. At the end of the therapy a granular bed was obtained in all cases with decreased edema. As a complication, the colonization of the wound by *Pseudomonas aeruginosa* was observed in three patients, a patient with profuse bleeding from the bed that raised an early withdrawal of the VAC, intolerance to continuous aspiration in a patient, which required rotating to intermittent aspiration with more intervals prolonged than stipulated in the bibliography. In our environment, being connected to the central aspiration of the hospital, patients cannot wander, causing in particular cases anxiety pictures.

Patient	Age (60.16)	Sex	Type of internment (12.3 days)	Pathology	Type Replacement (3.75 days)
D. P.	54	M	13	Atriccion M.I	4
R. C.		M	12	Exposed Fracture M.I	5
L. J.	76	M	09	Celulitis M.I.	3
V. A.	74	M	16	Pie DBT M.I.	5
S. L.	33	M	15	Celulitis M.I.	4
G. M.	65	M	10	Sacral Mask	5
V. M.	29	F	14	Escara M.I.	3
J. H.	68	M	12	Pie DBT M.I.	4
A. J.	72	F	17	Pie DBT M.I.	4
L. J.	56	F	19	Exposed Fracture M.I	5
A. O.	78	M	11	Pie DBT M.I.	3

Table 1

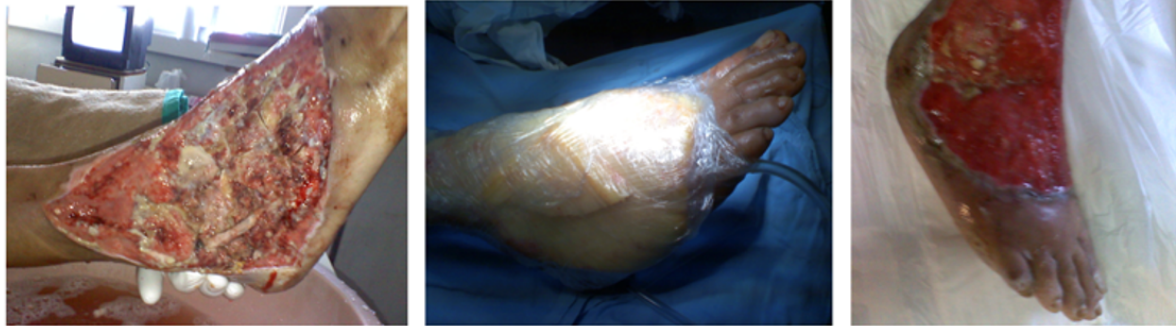


Figure 1

Discussion

In this work we want to compare the benefits of using the system of continuous aspiration in our hospital regarding the commercial system and this in terms of costs and results obtained.

Our system in all cases optimized micro perfusion and increased local blood flow. Decreased bacterial colonization. Increased oxygen pressure in injured tissues. He removed chronic edema and different fluids that together with the negative aspiration system favored the formation of granulation tissue.

As a therapeutic option for extensive soft tissue lesions that do not require internal environment management, it was beneficial given the characteristics of the population which is difficult to control and allowed us to track the lesion more strictly compared to the outpatient treatment performed With other treatment methods.

This work does not include in the cost evaluation the expense of hotel, nursing, auxiliary, medication and it arises from this that with reduced costs and with an average replacement time of the system of 3.75 days, the costs are relatively low compared to the commercial system, obtaining the same results according to the literature reviewed.

Conclusion

The continuous aspiration system that we use in our service resulted be beneficial since satisfactory results are obtained similar to those published in the different series and with reduced costs.

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