

Vacuum assisted Closure in wound management – Poor man's VAC®

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Abstract

Vacuum assisted closure has reformed the plastic surgery practice and wound management in the last decade and has become an established method of wound management. The equipment though not inexpensive has become an essential part of all major plastic surgery departments in the western world. In ideal world VAC Dressing equipment should be available at hand at all times and to every patient in need, but the shortage of equipment in developed countries, or even unavailability in developing world is a common phenomenon. Most plastic surgeons would agree that they have at times delayed or postponed surgeries at some point in their career because of delay in procurement of VAC equipment. We describe a new method of wound VAC dressing application without using the standard VAC equipment from material readily available to any surgeon and present our experience of 7 cases where negative suction dressing was applied without use of standard equipment.

INTRODUCTION

The vac dressing and the equipment standardised by the KCI has provided a great tool in the complex field of wound management. The technique has been well advertised by the company's marketing team and owing to the significant benefits and good clinical outcomes it has been well supported by various experts its versatility and efficacy is well documented in the medical literature.

Vacuum assisted closure has reformed the plastic surgery practice and wound management in the last decade and has become an established method of wound management. The equipment though expensive has become an essential part of all major plastic surgery departments in the western world.

In ideal world VAC Dressing equipment should be available at hand at all times and to every patient in need, but the shortage of equipment in developed countries, or even unavailability in developing world is a common phenomenon. Most plastic surgeons would agree that they have at times delayed or postponed surgeries at some point in their career because of delay in procurement of VAC equipment.

We describe a new method of wound VAC dressing application without using the standard VAC equipment, from material readily available to any surgeon.

OBJECTIVE

To evaluate alternate method of negative suction dressing application and its effectiveness.

METHODS

We applied negative suction sponge dressing to selected wounds which would have been difficult to manage by conventional dressings and where standard VAC equipment use was indicated.

MATERIALS NEEDED

1. Sponge foam (needs to be sterilised)
2. Romovac or similar 18 fr drain
3. Opsite or similar material
4. Gelonet / Bactigras / mepitel or similar dressing

Figure 1

Sponge Sterilization			
Sponge foam used is procured from hardware stores and autoclaved twice at			
Autoclave Settings	Temperature (F)	Pressure (PSI)	Time (min)
	250	20	30
The sponge foams were initially sterilised at these settings and sectioned and sent for microbiological examination and found to be sterile and the protocol has been established since then.			

METHOD OF DRESSING APPLICATION

The wound bed is debrided if dirty as in any standard

dressings and sponge foam is cut to size / slightly larger than the wound (sponge is laid on wound bed blood gives a good imprint and can be used as an aid) ,

Interface dressing is applied using gelonnet /bactigras / mepitel .

Sponge is then packed in the wound ,

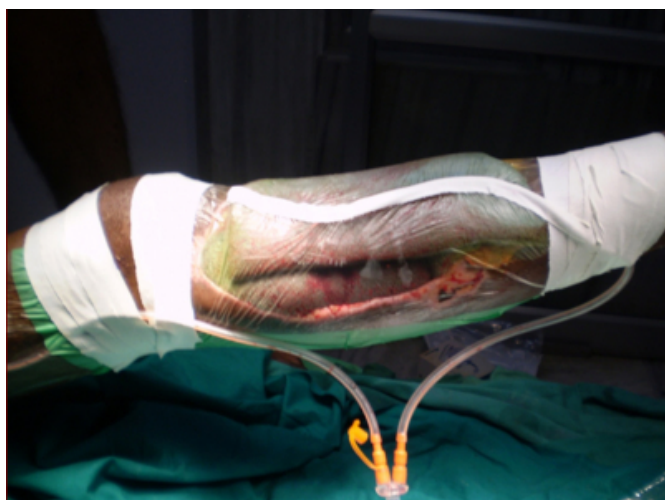
suction tube of Romovac is laid on the sponge and sponge is sealed with Opsite.(sometimes it is better to use the Trocar and take the suction tube out from the healthy wound after passing it through about two inches of healthy tissue in subcutaneous plane)

Air is sucked out using standard suction then tube is clamped

Continuous suction is maintained using auto inflating Romovac system and

Nurses are instructed to clamp the suction tube compress and reattach the auto expanding cylinder of the Romovac when the cylinder is fully expanded .

Figure 2



Seven patients with complex wounds were treated with alternate vacuum suction dressing in our multi speciality hospital (Raj Nursing Home) between Nov 2007 and May 2008

The dressing was applied 24 hours after surgical debridement of necrotic tissue.

The wound surroundings were inspected daily to check for any spreading cellulites without removing the opsite layer. Sponge changed at regular intervals to check progress of

healing .

Interface dressing with Gelonnet , Bactigras , or similar dressing was invariably used under the sponge to prevent sponge adhesion to wound.

Negative pressure was maintained using constant suction with romovac kit .

Figure 3

In our series the average duration of vac application was 11 days (min 8 max 18) and the vac sponge was changed on an average of 3.28 times , at an average duration of 3-44 days . The Cohort consisted of 2 female and 5 male patients . of the 7 patients 4 were diabetics and 3 had no other associated medical history . The end results of vac application were satisfactory in all patients and all wounds healed at a much faster rate than with standard dressings . 3 wounds were closed with secondary suturing , 3 with split skin graft and one required flap coverage .								
Details are listed in table 1 TABLE 1								
Pt. No.	Duration of vac dressing	Number of vac changes	Age	Sex	Comorbidity	Wound description	Wound size inches	Secondary method of wound closure
1	8 Days	2	70 Yrs	F	Diabetes	Groin Abscess	5.2"x3.5"	Secondary suture
2	13Days	4	25	M	Nil	Tibia.(nailing)Compo ment Syndrome,Ant compartment muscle necrosis , exposed tibia	7"x3.8"	Flap
3	9Days	2	30	M	Diabetes	Diabetic Foot	8"x4"	SSG
4	8Days	3	52	F	Invasive DCIS Rt. breast	Post mastectomy Flap necrosis	5"x2"	Secondary suture
5	18 days	5	45	M	Diabetes	Necrotising facitis	8"x3"	Split skin graft
6	11 days	4	56	M	diabetes	Diabetic foot acute infection	3"x1.1/2"	Secondary suture with suction drain
7	10 days	3	52	M	nil	Infected Post traumatic wound on postro lateal calf	4"x2"	Split skin graft

DISCUSSION

Local negative pressure dressing is an established method of wound management . Recent studies and publications have been limited to the highly sophisticated equipment marketed by the KCI . Unfortunately the cost of equipment is a great hurdle to its use in the developing world where the cost of treatment has to be borne by the patient and relatives and there is limited government funding or insurance cover .

We did have problems initially in planning phase but with few modifications in technique we were able to overcome the problem of leaks .

A – the drain was sandwiched in later cases between two sponge to avoid drain sitting directly under the opsite .

B – the area was cleaned and a tincture benzoin applied to surrounding areas before applying opsite . This enhances the stickiness of opsite.

C – the drain was tunneled through normal tissue rather than taking it out directly under opsite border.

The vac dressing has been used in a wide variety of cases

and there is a consensus between vac users that the technique is definitely effective and the method has been used in management of acute and chronic wounds , open fractures ¹ , infected wounds ²³¹⁰ , radiation ulcers ⁴ , sternotomy wounds ⁵⁸⁹ , degloving injury ⁶⁷

Abdominal wounds ¹¹ , skin graft ¹²¹³¹⁴¹⁵¹⁶¹⁷ , pressure sores ¹⁸ .

All these studies have been on the standard vac equipment, and some authors have expressed their resentment over the cost of equipment and the fact that such important tool should be available more

widely ¹⁹ .

We describe a simple and effective method of vac dressing which should benefit the larger population where the standard equipment is not available .

The method described herein is a relatively crude one and our aim was to check its efficacy and its pros and cons . The end results were gratifying . We in no way claim that the method described here is better or worse than the system provided by KCI the method obviously lacks standardisation or pressure regulation but it works pretty well !! And we recommend its use in situations where standard equipment is awaited or is simply not available .

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