Comparison between the use of Sorbion Sachet S and NPWT on pressure ulcers: A Case Study

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Introduction

A retrospective case study comparing the use of Sorbion Sachet S™ with NPWT on a patient with bilateral trochanteric pressure ulcers. The author was able to compare the healing time and the of the cost of treatment between the different treatment modalities.

Background of treatment modalities

Negative pressure wound therapy:[1] "… a number of systems available. Most comprise a base unit with pump and a gauze or foam wound dressing (filler). If foam is used, a non-adherent wound contact layer can be beneficial to reduce tissue ingrowth and pain on removal. Transparent film is used over the filler to create a seal… port is then connected to a canister, which is attached to the pump. Larger units are often used in hospitals and smaller portable units are suitable for use in both community and hospital settings."[1] "…device works through the application of an open cell foam or gauze dressing, which allows equal distribution of negative pressure across the entire wound bed. Recent published research has shown that both types of dressing interface are equally effective at delivering negative pressure, wound contraction and stimulation of blood flow at the wound edge. However, studies have documented in-growth of granulation tissue into the cells of the open cell polyurethane foam. This can cause patients to experience pain at dressing changes and a disturbance of the reepithelialisation process."

Sorbion Sachet S™:[2] The Hydration Response Technology of Sorbion Sachet S™ combines mechanically modified cellulose fibres with gelling agents. The close interaction of these two components assures an active regulation of the wound climate. This leads to the special product characteristics that contribute to the preparation of the wound bed for wound healing. Sorbion Sachet S™ is especially indicated as a primary dressing for moderately to highly exuding wounds. Sorbion Sachet S™ is a versatile fibre dressing with high wearing comfort for primary wound contact.

Case study

Patient and wound examination and history

A 39 year old African male patient who was involved in a MVA during 2002. As a result of injuries sustained in the accident he is quadriplegic. He was admitted for wound care 13/07/2015, from home, with multiple pressure ulcers. He was looked after and cared for by his mother and brother. Apart from the complications of his injury he is healthy with no other medical conditions or complaints.

The 2015 revised wound bed preparation guideline as proposed by Sibbald et.al[3,4] was used to evaluate the patient and obtain a comprehensive history. The DIME/TIME[5] model was used to evaluate the wounds and to identify the appropriate localised wound care. He was managed by an interdisciplinary team for the optimal treatment of his various comorbidities and complications.[6,7] The team consisted of the patient and his circle of care, a general practitioner, occupational therapist, physiotherapist, trauma counsellor, social worker, wound care practitioner and nursing staff. His treatment plan and progress was monitored and adjusted weekly by the team members.

The NPUAP classification system[8] was used to classify the pressure injuries. On evaluation the patient presented with bilateral trochanter unstageable pressure injuries and a Stage 2 pressure injury on his sacrum. For the purpose of this case study the treatment of the trochanteric pressure injuries will be discussed.

Pressure ulcers are considered as complex, chronic wounds that are hard to heal and they are often non healable.[9] The pressure ulcers in the study were classified as healable after careful evaluation and discussion. The factors that are associated with the SCI cannot be changed but there were room for improved management. The treatment plan included the assessment and adjustment of his equipment, refreshing his rehabilitation, assessment and improvement of his nutritional status, introducing a bladder and bowel routine etc. His pain was managed with muscle relaxants, regular physiotherapy and gentle massage. His circle of care received education about the exercises and the massaging technique. Continuous education and training to the patients care givers as well as the patient himself was considered a priority.

Table 1: Comparing properties and goals of NPWT with Sorbion Sachet S™

Common goals for NPWT are:[1]	Common goals for Sorbion Sachet S™ are:[2]
The wound needs to be well debrided.	The dressing assist with debridement and removes wound debris
Control of exudate: Manage exudate, providing a moist wound healing environment.	Control of exudate: Absorbs wound exudate, locks it in and provide moist wound healing environment.
Reduce bioburden: Sealed system and fewer dressing changes results in less chance of contamination.	Reduce bioburden: Absorbs and sequesters wound bacteria.
Decrease frequency of dressing changes.	Decrease frequency of dressing changes.
Promote growth of granulation tissue and contracture of wound edges, ultimately improving healing time.	Reduce oedema, modulation of proteases and proinflammatory cytokines thereby improving healing time.
Decrease hospital stay.	Decrease hospital stay.
Prevent deterioration of wound.	Promote wound healing.
Improve quality of life.	High wearing comfort.
Concurrent rehabilitation: Does not prevent physiotherapy or mobilisation.	Concurrent rehabilitation: As with NPWT with additional benefit of no tubing and unit that needs to be carried.
Minimize odour and contamination by providing a temporary barrier.	Reduces odour by securely locking in exudate as well as bacteria.
Reduces pain during dressing change in 80% of dressing removals when compared to gauze dressings.	No pain during dressing change. Non adherent layer.
Reduced frequency of dressing changes and faster wound closure may reduce overall treatment cost.	Reduced frequency of dressing changes and faster wound closure may reduce overall treatment cost.
Requires skilled practitioner to change dressings.	Patient or carer can be educated to change dressing.
Electricity essential	No electricity required.
Definite contra-indications and risks as outlined by FDA.	No contra-indications with low risk of skin irritation and sensitization.

Table 2: Factors that were identified that can influence wound healing

Factor	Influence on healability
Wound aetiology	• Prolonged exposure to shearing and pressure • Inadequate equipment • Incompetent care and assistance • Lack of knowledge and education
Spinal cord injury (SCI)[9-11] Complete quadriplegic	• Paralysis and sensory impairment • Severe spasms • Muscle atrophy • Altered circulation • Changes in collagen metabolism • Contractures of knees • Impaired mobility
Urine and faecal incontinent with an indwelling urethral catheter and nappies[8-10]	• Urine and faecal contamination of wounds • UTI as a result of indwelling catheter • Skin maceration • Increase risk of MRSL that increase the risk of pressure ulcers
Cultural considerations[4,12]	• High carbohydrate diet influencing nutritional status
Circle of care (mother and brother are primary care givers)[4]	• Inadequate training and education regarding the care of a patient with a SCI. • Patient is dependent for all aspects of personal grooming, like bathing, dressing and toileting. • This will include skin care and pressure relief.
Pain[8,13]	• Constant gnawing pain that worsens with spasms.
Localised wound care.[5,14]	• Chronic wounds that are present for more than 12 months. • Both ulcers were covered in thick, hard, black eschar. • Unstageable pressure ulcers – underlying damage unknown. • High bacterial burden.

Localised wound care treatment plan

Figure 1: Right Trochanter: 60mm X 50mm – 13/07/2015

Left Trochanter: 90mm X 60mm – 13/07/2015.

Table 3: First week daily dressing changes, changing to every 3-4 days thereafter.

Pressure ulcer right trochanter	
Pressure and shearing	• Strict hourly repositioning • Implementation of pressure redistribution support surfaces (Air mattress and new wheelchair cushion) • Complete pressure offloading from trochanters
Debridement	• Enzymatic and sharp debridement
Infection or inflammation control	• First week Prontosan® Solution as cleanser and for irrigation • Thereafter Prontosan® Gel with Sorbion Sachet S™ fixated with a non-woven polyester fabric dressing.
Moisture control and management of exudate	• First week daily dressing changes with wound contact layer and Iruxol® covered with a semi permeable film dressing to contain moisture and promote debridement • Thereafter Prontosan® Gel with Sorbion Sachet S™ fixated with a non-woven polyester fabric dressing. • Cavity and undermining was lightly plugged with a wound contact layer.
Edges and periwound area	• Cavilon™ spray as skin protection.
Pressure ulcer left trochanter	
Pressure and shearing	• Strict hourly repositioning • Implementation of pressure redistribution support surfaces (Air mattress and new wheelchair cushion) • Complete pressure offloading from trochanters
Debridement	• Enzymatic and sharp debridement
Infection or inflammation control	• First week Prontosan® Solution as cleanser and for irrigation • Second week Prontosan® Gel with Sorbion Sachet S™ fixated with a non-woven polyester fabric dressing. • Thereafter NPWT with foam interface at 120mmHg for 6 weeks
Moisture control and management of exudate	• First week daily dressing changes with wound contact layer and Iruxol® covered with a semi permeable film dressing to contain moisture and promote debridement • Second week Prontosan® Gel with Sorbion Sachet S™ fixated with a non-woven polyester fabric dressing. • Thereafter NPWT with foam interface at 120mmHg for 6 weeks. No contact layer was used due to copious exudate.
Edges and periwound area	• Cavilon™ spray as skin protection.

After autolytic and sharp debridement both ulcers were classified as Stage 4 pressure injuries. There was extensive tendon involvement including a significant amount of tendon loss due to necrosis. There was no bone involvement.

On 07/08/2015 the ulcer on the left trochanter was started on NPWT, it was smaller than the right ulcer and it was completely debrided approximantely 2 weeks prior to the ulcer on the right trochanter. While the ulcer on the left trochanter was treated with NPWT, treatment with Sorbion Sachet S™ on the right trochanter was continued. (See Figure 2).

Left ulcer was still on NPWT and Right ulcer was cleaned with Normal Saline and Sorbion Sachet S™ was used as primary dressing. It was fixated with a non-woven polyester fabric dressing. (See Figure 3)

The NPWT on the left trochanter was discontinued on 29/09/2015 and both ulcers were cleaned with normal saline and dressed with Sorbion Sachet S™, and fixated with a non-woven polyester fabric dressing for the continuation of treatment period.

Patient was discharged on 29/09/2015 and continued with wound care at home using Sorbion Sachet S™ dressings. (See Figure 4)

It is worth noting that the ulcer on the right trochanter that was treated with Sorbion Sachet S was almost twice the size (44,44%) as the wound that was treated with NPWT with a small foam interface.

Figure 2: Right Trochanter: 90mm x 60mm – 04/08/2015

Left Trochanter: 60mm x 55mm – 07/08/2015

Figure 3: Right Trochanter: 55mm x 40mm – 04/09/2015

Left Trochanter: 40mm x 35mm – 04/09/2015

Figure 4: Right Trochanter: 40mm x 30mm – 29/09/2015

Left Trochanter: 35mm x 25mm (including 5mm undermining) – 29/09/2015

Healing time

Wound on right hip decreased with 77.78% in 57 Days after using Sorbion Sachet S™ as secondary and primary dressing.

Wound on left hip decreased with 70.83% in 54 Days after using Sorbion Sachet S™ for 2 weeks and after that NPWT with a foam interface. (See figure 5)

Cost

Average cost of NPWT (Average was calculated between 4 suppliers in SA) with foam interface for wound of this size for 8 weeks: R25740.00.

Average cost of Sorbion Sachet S for wound of this size for 8 weeks: R6280.00. (See figure 6)

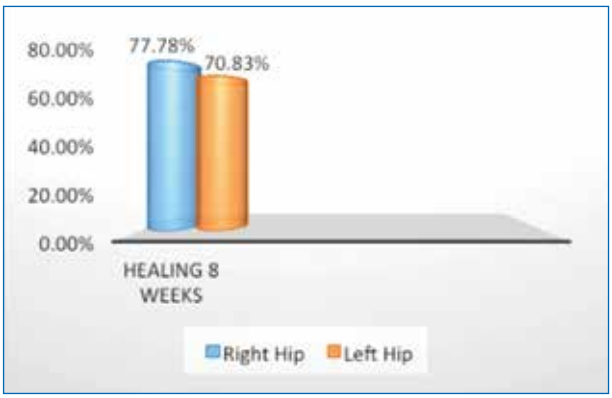

Figure 5: Comparison of healing 8 weeks

Figure 6: Comparison of healing 8 weeks

Conclusion

Pressure ulcers are challenging wounds for a myriad of reasons. They tend to be situated over hard to reach and dress areas. They tend to be malodorous and the moisture management of these wounds can be challenging. If the ulcers are healable, treatment can take months to years. Unfortunately pressure ulcers often become maintenance wounds. The financial impact of pressure ulcers is significant all over the world. Pressure ulcers have a debilitating effect on the patient's health, emotional wellbeing, finances and quality of life etc.[8,9,11] There are hundreds of specialised dressings to choose from when treating a pressure ulcer.

Hampton et.al states: "There is no such thing as an 'Ideal Dressing' that can be universally applied. Selection is dependent on the wound assessment, intended treatment outcome, patient preference from previous experience and many other factors (Hampton & Collins, 2004)."[14]

It is important to differentiate between wound management and wound healing. Wound healing is a physiological process that requires optimal health and nutrition from the patient. Wound management is the provision and maintaining of a warm, moist, non-toxic environment that will support natural wound healing.[14] Good wound management aims to treat the whole patient and not just the hole in the patient.

NPWT is indicated for use as an adjuvant for the treatment of pressure ulcers.[8] However, according to a Cochrane review in 2015, there is a lack of strong evidence supporting the use of NPWT for the treatment of pressure ulcers.[15] The healing time between the two ulcers was in favour of the Sorbion Sachet S™. The cost difference is substantial. Additional features of the Sorbion Sachet S™ dressing: it is comfortable to wear, it is a pain free dressing, it does not need a specialist to change the dressing, no electricity is required (A real problem for South Africa as well as other developing countries). From the results of this case study it is evident that the use of Sorbion Sachet S™ should be considered for the treatment of pressure ulcers. It further urges more research to determine the financial, as well as patient, value of Sorbion Sachet S™ for the treatment of pressure ulcers.

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