

## Management of Fournier's Gangrene with Vacuum Assisted Closure® Dressing

### Dear Editor,

Fournier's gangrene is a surgical emergency. Treatment consists of fluid resuscitation, intravenous broad spectrum antibiotics and immediate surgical consultation with a view for early wound debridement and drainage.

A common problem of Fournier's gangrene is the large defect that remains post-drainage. Many of these defects are treated with daily wound dressing and allowed to heal by secondary intention. This may result in prolonged hospitalisation for some patients and ultimately take many weeks to eventually close. Closure with a skin flap has also been performed for some patients, however this would require the patient to undergo multiple surgeries and also carries the risk of flap failure.

We report a case of a patient with Fournier's gangrene that was drained surgically with a residual large skin defect which was successfully managed with Vacuum Assisted Closure or VAC® (KCI, San Antonio, Texas) dressing.

### Case Presentation and Clinical Course

A 30-year-old diabetic Chinese male was referred by his General Practitioner for 2 days' duration of swelling and tenderness over his scrotum and left perianal region associated with pyrexia, not resolving with oral antibiotic treatment.

On examination, he was orientated but looked septic and was febrile. Abdominal examination was normal. There was a large area of induration and tenderness over the left perineum and scrotum with extension slightly anteriorly to include the lower part of the left abdominal wall. Significant laboratory investigations included a raised white cell count ( $14.38 \times 10^9/L$ ) with raised absolute neutrophil count ( $10.78 \times 10^9/L$ ). Serum C reactive protein was also raised at 279 mg/L. His electrolytes and urine microscopic examination was normal.

A diagnosis of Fournier's gangrene was made. The patient was started on intravenous antibiotics, and was brought to the operating theatre for debridement. Intraoperatively a large 15 cm x 10 cm ischio-rectal abscess was found, with extension into the scrotum and the base of the penis along the subfascial plane and also to the left iliac fossa region resulting in Fournier's gangrene. Incision and drainage was

performed and all necrotic material debrided. The resulting cavity was 12 cm x 4 cm and was unable to be closed primarily. A VAC dressing was used to cover the wound and suction pressure applied at 125 mmHg.

The patient was subsequently well and his temperature settled. His glycaemic control was satisfactory throughout his stay. Examination under anaesthesia and wound debridement was performed again in the operating theatre on the 5<sup>th</sup> and 8<sup>th</sup> post operative day and the VAC dressing was changed each time, with good granulating tissue noted at the wound bed (Fig. 1). Another change of VAC dressing was performed in the ward on the 12<sup>th</sup> day, noting that the skin defect had reduced in size to 10 cm x 2 cm.



Fig. 1. Perineal wound on the 8th post operative day.

Cultures of the wound grew *Methicillin-resistant Staphylococcus aureus*, *Escherichia Coli* and *Klebsiella* species. The antibiotic regime was altered accordingly and after 7 days was converted from intravenous to oral administration.

On the 21st day after his initial surgery, he underwent a final removal of VAC dressing and secondary closure of the perineal wound. The wound was subsequently clean and patient was discharged well.

## Discussion

Fournier's gangrene is treated, after extensive debridement, with regular wound dressings and left to heal by secondary intention. However, large defects will take a prolonged amount of time to eventually heal completely, with increased risk of secondary infection if dressing is not done regularly and diligently. The problem is compounded by the fact that the perineal area is difficult to keep clean as faecal matter and urine is likely to contaminate the cavity, thus compromising the healing process.

VAC therapy was first introduced in 1997 by Argenta and Morykwas.<sup>1</sup> Since then, there have been multiple reports of its effectiveness with regards to improving healing of open wounds, decreasing time to wound closure<sup>2</sup> and improving survival of skin grafts. In the colorectal setting, aside from Fournier's gangrene, it has been described for treatment of pilonidal disease, decubitus ulcers around the perineum and for closure of enterocutaneous fistulas.

As illustrated by the above case, VAC is a feasible and effective option for management of large complex perineal wounds. It prevents leakage of wound fluid and exudates, which makes for easy wound care. The airtight seal prevents faecal and urinary contamination of the wound which would accelerate the healing process. Also, VAC allows for efficient drainage of deep cavities and in some cases, may save the patient from a large wound that will otherwise have to be made to allow proper drainage.

Traditional wound dressing requires multiple dressing changes in a 24-hour period, which will be painful for the patient and burdensome for the medical staff. VAC is reapplied every 48 to 72 hours.<sup>3</sup> This routine reduces the total number of dressing changes, decreasing patient discomfort and reducing workload for the medical staff. VAC is also portable. This allows the patient to ambulate and even be discharged with the VAC in place, reducing risk of nosocomial infection and problems with prolonged bed rest that may occur with the traditional dressing method of treatment.

The perineum is a difficult area to apply dressing for a few reasons. Firstly, it has many crevices and moving parts, such as the legs and external genitalia, which make holding

any dressing in place difficult. Secondly, both urinary and faecal excrement pass through the perineal area, which may stain and leak through the dressings. An airtight seal for these reasons is difficult. However it can be achieved if certain techniques are used.

Firstly, the ideal position of application of VAC dressing to the perineum is a lithotomy position. Secondly, to apply the dressing after debridement of wounds, the surrounding area must be clean and dry. Thirdly, lining the edges of the wound with small pieces of transparent dressing such as Tegaderm™ (3M, St Paul, Minnesota) before placement of the adhesive dressing helps with the air seal and holds the foam in place such that the adhesive dressing is easier to apply.

Finally, after the suction device is placed in situ, it is useful to hold the sides of the wound down, to assist in creating a seal when applying suction. This helps to plug any small holes as the suction generated will seal small leaks in the dressing. If there is still a leakage, stomahesive paste may assist in plugging up the remnant leaks.

If required, urinary stream management can range from simple urosheath, per urethral catheterisation, to diversion with suprapubic catheterisation if the wound extends and involves the area around the urethral meatus or percutaneous nephrostomy in severe cases with involvement of the lower abdominal wall. Stool may be channelled away from the perineum using the Flexiseal® Faecal Management System (Convatec, Princeton, USA) device. However for this to be used the rectum should be emptied of solid stool and the patient placed on stool softeners. The other option for stool diversion is a temporary colostomy.

However, despite its multiple advantages, it should be noted that negative pressure wound therapy (NPWT) dressings such as VAC should not be used in all patients. NPWT is contraindicated in certain wound types such as malignancy, exposed nerves and vasculature, exposed organs and anastomoses. Also, patient factors such as those with high risk for bleeding, and those with improperly debrided wounds with existing infection should not be put on NPWT.<sup>4</sup> It is imperative to select the correct patients to avoid unnecessary complications from the device.

## Conclusion

VAC therapy assists in the recovery of such large open perineal wounds by reducing contamination, allowing mobility for the patient, and minimising the frequency of dressing changes. Its ability to drain deep cavities also allows a smaller skin incision to be made than traditionally required.

REFERENCES

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