

# Managing wound sinuses using Advadraw Spiral

Wound sinuses are notoriously difficult to dress due to their depth and narrow width, and present the practitioner with a challenge in terms of dressing selection. Advadraw Spiral is a rapid capillary action dressing that is supplied in a pre-cut ribbon shape. It has a double-sided wound contact layer that makes it convenient and easy to use in patients with sinuses. An evaluation of this dressing was carried out using a wide selection of wound types, and the results indicate that Advadraw Spiral handles exudate well, promotes healing, and is comfortable to wear.

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## KEY WORDS

Advadraw  
Advadraw Spiral  
Sinuses  
Capillary action dressings

A sinus in a wound bed is a track that extends from the surface to an underlying area or cavity (Butcher, 1999). Due to their depth and narrow width, wound sinuses can be difficult to dress and this can cause anxiety among practitioners when trying to choose a suitable dressing product.

Capillary action dressings have been used on infected, moderate to heavily exuding wounds, cavity wounds (Russell and Evans 1999; Deeth and Pain 2001), leg ulcers (Goldman et al 2003) and dry necrotic wounds (Lisle 2002). Their use is contraindicated in wounds that are fungating or likely to bleed heavily. However, they can be used to effectively manage wound sinuses (Russell and Evans, 1999; Deeth and Pain 2001).

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Capillary action dressings are multi-layered absorbent dressings covered with a low adherent wound contact layer (Joint Formulary Committee, 2006). Their ability to draw or wick exudate and therefore bacteria out of the wound track and retain it in the dressing make them particularly useful when managing this type of wound.

When dressing a sinus, because of their small size, it is usual practice to cut a capillary action dressing into disks or ribbons to individually fit the cavity. Care must be taken to ensure the dressing material follows the wound bed contours, and that the wound contact layer is placed against the wound bed. However, this practice has a number of risks:

- ▶▶ Cutting the dressing may result in dressing fibres contaminating the

wound bed, which may result in delayed healing

- ▶▶ Dressing adherence to the wound bed may result in discomfort or pain or tissue damage on removal
- ▶▶ Dressings are often cut to an irregular or inappropriate shape/size, which can cause discomfort to the patient and possible delayed healing
- ▶▶ Cross-contamination of the dressing may occur during the cutting process (when using scissors) and the sterility of the dressing may be reduced
- ▶▶ Sharps injury may occur when using a scalpel to cut a dressing.

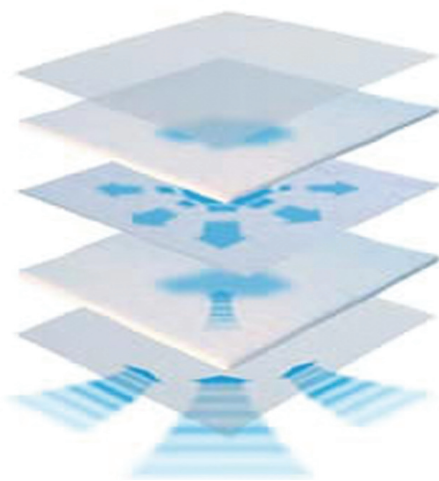
## Advadraw Spiral

Advadraw Spiral (Advancis Medical, Nottingham) is a rapid capillary action dressing that is supplied in a pre-cut ribbon shape (Figure 1). The unique spiral shape allows the dressing to be cut to the most appropriate length while still maintaining a uniform width. It is an absorbent, non-adherent primary wound contact layer that can wick exudate, which is rapidly absorbed into the dressing via capillary action (Advancis Medical, 2007). Each side of the dressing is backed with a perforated permeable wound contact layer.

Advadraw (Advancis Medical, Nottingham) is an absorbent, non-adherent primary wound contact layer which has the same rapid capillary action



Figure 1. Advadraw Spiral.



**Figure 2.** The Advadraw dressing.

as Advadraw Spiral (Figure 2), but is supplied as a flat dressing. Both dressings can be applied directly to the wound bed, either side down, because both sides are non-adherent. Advadraw Spiral can be packed into the wound bed and Advadraw applied over the top of the wound to increase the absorbency of the dressing and, therefore, the wear time. Advadraw and Advadraw Spiral can also be layered to give increased exudate capacity.

Both dressings need to be secured in place with a secondary dressing, i.e. a film, adhesive tape or a bandage. The dressings can be changed daily if exudate levels are high, though they can be left in place for up to a week, were appropriate. Advadraw Spiral maintains its integrity on removal therefore reducing the risk of shed fibres being left in the wound bed.

Both dressings are indicated for use in all acute and chronic wound types including sloughy wounds, post-operative or dehisced wounds, abrasions, and medium to heavily exuding wounds, and are now available on the drug tariff as well as through NHS logistics.

This article will now present nine case studies which evaluated the use of Advadraw Spiral in clinical practice.

### Method

An evaluation was conducted over a 6-month period across University Hospitals Coventry and Warwickshire NHS Trust, to compare the performance

of Advadraw Spiral with Vacutex, a capillary action dressing that was used within the trust at the time. Patients with small cavity wounds, particularly with sinuses, were chosen by the Tissue Viability Team (TVT) to participate in the study. All patients recruited (n= 9) were informed of the evaluation process, and gave verbal consent.

Wound assessments were conducted at the beginning of the evaluation and then periodically to assess:

- ▶▶ Wound aetiology
- ▶▶ Wound size, including the depth of any sinuses present
- ▶▶ The patient's satisfaction and comfort
- ▶▶ Exudate control
- ▶▶ Ease of application and removal of dressing
- ▶▶ Adverse effects of the dressing.

In each case, the initial wound assessment was carried out by the TVT. Subsequent assessments and dressing changes were usually completed by the nursing staff in the respective clinical area. Education on dressing application and removal was provided by a member of the TVT to all of the staff responsible for the wound care of the participants.

### Results

Of the 9 patients recruited into this small evaluation, wound aetiologies included:

- ▶▶ A dehisced, spinal, surgical wound
- ▶▶ A dehisced, cardiac, surgical wound
- ▶▶ Diabetic foot ulcers
- ▶▶ An infected amputation site
- ▶▶ An infected angioplasty site
- ▶▶ A traumatic, abdominal crush injury
- ▶▶ A pilonidal sinus.

The authors will now present each of these case studies.

#### Patient one

Mr. W was referred to the TVT to establish if his dehisced laminectomy wound was suitable for Vacuum Assisted Closure (VAC) therapy. The ward staff had previously used an alginate ribbon dressing to pack the wound, but it remained hard to heal.

Initial assessment revealed a wound of approximately 5x2cm with two small sinuses at each end, both of which were approximately 3cm in depth. The wound bed was covered in 30% slough, and was producing high levels of exudate. The TVT decided it would be difficult to apply VAC therapy to this wound due to its narrow width and the presence of the undermining sinuses. One piece of Advadraw Spiral was cut in half and used to pack each of the sinuses individually. The remaining spare dressing was packed into the shallow cavity and then a flat piece of Advadraw was applied over the top. This was held in place with a film dressing. The dressings were changed when they had become saturated with exudate.

The wound made good progress with Advadraw Spiral; the depth of the sinuses reduced and the wound became shallower in depth by 1cm after two weeks of treatment. The exudate was managed well, and the slough had completely debrided when the patient was discharged into the community, approximately three weeks later. At this point, the TVT provided enough dressings for one week as per local protocol for patient discharge. The patient stated the dressings were comfortable when in place and was happy with the progress of the wound.

#### Patient two

Mr. J underwent cardiac surgery, and approximately three weeks post-operatively, his sternal wound dehisced due to the presence of an underlying infection. He presented with two small sinuses at the base of the wound; both were approximately 1x1x2cm. On first assessment the wound had erythema spreading approximately 5cm from the wound edges (Figure 3). There was a moderate amount of serous exudate and some slough on the wound bed.

Advadraw Spiral was used to pack the sinuses. The rationale behind this choice was to control the exudate, draw any bacterial contamination from the wound bed and prevent the wound from closing over and developing into an abscess.



Figure 3. Sternal sinus with spreading erythema.



Figure 4. Post-debridement of neuropathic ulcers with Advadraw Spiral in place.



Figure 5. Amputation site on the left foot.



Figure 6. Neuropathic ulcers with sinus measuring 0.5cm.

At this point, the Advadraw Spiral was cut to length, packed loosely into the sinuses and held in place with an adhesive island dressing. The dressings were changed daily to allow the wound to be irrigated thoroughly with saline and its progress to be monitored. The use of Advadraw Spiral in these two small areas worked well. The exudate was effectively controlled, the infection, in conjunction with antibiotic therapy, was resolved and the depth of the sinuses reduced by 50% over the following two weeks. Once the wounds were shallower, the dressing product was changed to an alginate because the risk of the dressing material being left in the wound bed had reduced.

This patient did experience discomfort on application and removal of Advadraw Spiral during the initial dressing changes, particularly when the dressing rubbed against the edges of the wound. However, this was effectively controlled with pre-dressing analgesia, and treatment of the infection. Once this pain was effectively controlled, the patient was satisfied with the dressing regimen used.

**Patient three**

Mr. F was a middle-aged man with diabetes, who was referred to hospital with deteriorating neuropathic foot ulcers. He underwent surgical debridement of the wounds to the

plantar surface of his left foot (Figure 4) and amputation of his three remaining toes.

When he was first referred to the TWT the wounds to his plantar surface and amputation site were all heavily colonized with bacteria, sloughy and producing moderate amounts of exudate. The two wounds to the plantar surface were approximately 3x3cm each, both were shallow in depth but one of the wounds had a sinus, which was approximately 2cm deep. The amputation site was approximately 6x3x1cm deep.

Before recruitment into the study, the wounds were dressed with Vacutex. However, this dressing needed to be cut to fit the wound and so a decision was made to change to Advadraw Spiral to avoid this. Additionally, the previous dressing had been adhering to the wound bed, and it was hoped that the use of Advadraw Spiral would overcome this problem.

Mr. F commented that, compared to Vacutex, Advadraw felt much more comfortable when in place due to the pre-cut shape of the spiral, and the reduced adherence to the wound. It was also noted that dressing changes were quicker, and there was a reduced risk of cross infection or sharps injury because the dressing no longer needed cutting. After 2 weeks of treatment, Advadraw Spiral had controlled the exudate, reduced the depth of the sinus to 0.5cm and debrided the slough present (Figure 5 and 6).

Mr. F was discharged home with his wounds improving with the continued use of Advadraw. Advadraw Spiral was discontinued, because the sinuses were healing well and no longer needed packing.

**Patient four**

Mr. S was initially assessed in the outpatient department with a longstanding wound following a symes amputation approximately three years earlier. The surface area of the wound had been dressed by district





Figure 7. Symes amputation with sinus present, measuring 6cm deep.



Figure 8. Transmetatarsal amputation post-initial debridement.



Figure 9. Transmetatarsal amputation, post-VAC therapy, with a 5cm deep sinus identified.



Figure 10. Transmetatarsal amputation, with Advadraw Spiral in place.

nurses for a number of weeks with no improvement (Figure 7). However, on referral to the TVT, initial assessment revealed a deep sinus which extended approximately 6cm from the surface towards the centre of his stump. The level of exudate was very heavy and the patient had been experiencing recurring infections. This wound therefore required a dressing that could be pushed into the base of the sinus to draw the exudate and bacterial contamination out of the wound.

Advadraw Spiral was chosen and successfully controlled the exudate, was easy to apply and helped to reduce the depth of the sinus to approximately 4cm in 6 weeks. The patient also commented how comfortable the dressing was. In fact, Mr. S was so happy with the progress of the wound, that despite the dressings not being available on FP10 at that time, he decided to purchase the dressings himself directly from the supplier so that his treatment could be continued at home.

This patient did, however, go on to have a below knee amputation because the long-term infection could not be overcome and this was hugely affecting his quality of life.

#### Patient five

Mr. A, a patient with diabetes, was admitted with cellulitis of his foot. Due to the extent of the cellulitis he underwent a transmetatarsal amputation (Figure 8).

He subsequently underwent a further debridement of the wound three days later to remove further necrotic and sloughy tissue. He was then referred to the TVT to commence VAC therapy. The treatment was used for 7 days, but as it facilitated further debridement of the wound, a 5cm deep sinus was revealed (Figure 9). VAC Therapy was discontinued and Advadraw Spiral applied (Figure 10). The aim of this was to facilitate healing from the wound base up and to prevent abscess formation in the sinus. Advadraw Spiral successfully controlled the exudate and reduced colonisation (evident by the reduction in purulent, green exudate) and therefore

### Key Points

- ▶ Advadraw Spiral is a low adherent wound contact layer that can wick exudate. This is rapidly absorbed by capillary action.
- ▶ The pre-cut shape of Advadraw Spiral is a perfect choice for difficult to dress sinuses.
- ▶ Advadraw can be used on a range of different acute and chronic wound aetiologies.
- ▶ Advadraw Spiral controls exudate well, is low adherent and is more comfortable than its competitor due to the pre-cut shape of the dressing.
- ▶ Advadraw is a cost effective alternative to the other capillary action dressing available and previously used in the authors' NHS Trust.

promoted healing. The thin width of the spiral shape was ideal for the shape of the wound.

The patient was discharged home approximately three weeks later; once he had pressure-relieving foot wear made and fitted to protect the remaining part of his foot. At discharge, the wound bed was covered in granulation tissue and the sinus had reduced in length by 2cm. The wound went on to completely heal over the following 6 months.

#### Patient six

Mr. L was an elderly gentleman with diabetes who had his left hallux amputated after it became infected and ischaemic. The TVT initially assessed Mr. L 3 days post-operatively and discovered that the surgeon had debrided a deep cavity approximately 3x3x3cm deep down to the metatarsal head. The ward staff had previously been using an alginate dressing to control high exudate levels and provide a moist wound

healing environment. Unfortunately, this had resulted in maceration on the plantar surface of the foot and the skin surrounding the wound (Figure 11) because the alginate was not able to control the amount of exudate being produced. Advadraw Spiral was applied into the full depth and shape of this cavity wound (Figure 12). Advadraw was then placed over the top and secured in place with an absorbent pad and tubular retention bandage.

Advadraw Spiral successfully controlled the exudate, and reduced the maceration of the surrounding skin. The deep cavity had reduced in length to 2cm, and the wound bed consisted of 50% granulation tissue and 50% superficial slough when the patient was discharged from hospital after 10 days.

#### Patient seven

Mrs H was admitted to the cardiothoracic unit for management of an infected cavity wound to her thigh that had developed following an angioplasty. The ward staff had previously been applying VAC therapy, but when there was little improvement in her wound, she was referred to the TVT.

On first assessment, the wound appeared to be very small, measuring 4x5cm on the surface but when the depth was accurately measured it was found to have a cavity that tracked distally down her thigh by 13cm at the deepest point. VAC therapy was discontinued as it had been very difficult to apply without causing discomfort because of the width of the foam compared to the diameter of the wound opening. This was thought to be the reason why the wound had not been improving.

Three Advadraw Spiral dressings were used to pack the wound, which was then covered with two pieces of flat Advadraw and secured with adhesive tape. This dressing regimen was comfortable for the patient because the Advadraw Spiral was thin enough to be inserted easily into her wound. It also appeared to help initiate healing because the exudate and bacteria were successfully drawn from the wound base.



Figure 11. Hallux amputation with surrounding skin macerated.

The wound had reduced in depth by 3cm when the patient was discharged home three weeks later:

The TVT did note that for this patient a longer length spiral would have been useful to overcome concerns about losing the dressings in such a deep wound where the wound base could not be seen.

#### Patient eight

Mr. D was an emergency admission with a crush injury to his abdomen, following an accident at work. He underwent bowel surgery and a stoma formation; however, his wound dehisced due to infection. On first assessment the wound measured 20x20x2cm deep. However, there were two sinuses present at the distal edge of the wound. The larger sinus measured 6cm deep and was intermittently producing faecal fluid from part of the defunctioned bowel. The presence of the fistula, the opening of which could not be seen, meant that the VAC therapy had to be discontinued.

The exudate level in this wound was very difficult to control particularly when it also produced faecal fluid. Advadraw Spiral was used to lightly pack the sinuses and Advadraw was then layered over the remaining wound



Figure 12. Hallux amputation with Advadraw Spiral in place.

area to increase absorbency, and this controlled the exudate relatively well. Dressings were changed daily so the wound could be irrigated with saline and reassessed. The patient did experience some problems initially with exudate leakage, particularly when he got out of bed to sit in the chair. However, these were overcome by applying more layers of Advadraw at the base of the wound.

When Mr. D was discharged home several weeks later he was still using the dressing regimen. The fistula had healed; the surface area of his wound had reduced to 15x7cm and was now flat. The sinus cavity that had led to the fistula was approximately 4cm in depth.



Due to the frequency of dressing changes and issues related to availability of Advadraw Spiral at the time of this evaluation, the ward stock ran out on two occasions and Vacutex was used as an alternative. This provided an opportunity for the patient to give his opinion of the two dressings. Mr. D commented that Advadraw Spiral was less painful to pack into the wound than Vacutex, had not adhered to the wound bed as much and was more flexible and so more comfortable to use when sitting upright.

In fact, Mr. D was so happy with the progress of the wound and the dressing regimen, that despite the dressings not being available on FP10 at that time, he decided to purchase the dressings himself directly from the company so that the treatment could be continued at home. This difficult to manage wound did heal after approximately nine months of treatment.

#### Patient nine

Mr. T was an outpatient who had been referred for a non-healing pilonidal sinus. This wound had previously been surgically debrided and had been healing well, but had become static with dimensions of 3x2x1 cm. A wound assessment showed that it had become macerated and was becoming repeatedly infected because of the position of the wound. The TVT decided to use Advadraw Spiral in an attempt to better control the exudate and therefore the maceration. The patient was taught to perform his own dressing changes and chose to do these every day after a daily shower. The wound quickly started healing again and went on to completely heal within 6 weeks of starting treatment, allowing this young man to get back to his previously active life.

#### Discussion

The findings of this small evaluation demonstrate the efficacy of Advadraw Spiral across a wide spectrum of wounds encountered in clinical practice. The dressing was particularly effective in the management of thin, tracking sinuses, where it was found to be better than the alternative capillary action dressing available (Vacutex) because of its pre-cut shape and non-adherent properties.

Advadraw Spiral also proved to be an effective alternative to VAC therapy and some of the hydrofibre dressings that are also often used for these difficult to heal wounds.

The use of Advadraw Spiral reduced the risk of leaving fibres in the wound bed, which can occur when cutting dressings to fit, and which can act as a foreign body and possibly delay healing. By reducing the need to cut the dressing, the sterility of the dressing process was maintained, reducing the risk of cross contamination and sharps injuries. This also led to a reduction in the cost of purchasing sterile single use equipment and nursing time required at dressing change.

In all patients included in the evaluation, Advadraw and Advadraw Spiral controlled exudate well, therefore resolving maceration and helping to facilitate wound healing.

In addition to these clinical benefits, the patients' opinion was also sort during this evaluation and all but one of them found Advadraw Spiral comfortable to wear. The one patient that complained of discomfort had a very narrow wound opening and the pain was being caused when the dressing material rubbed against the edge of his wound. However the authors believe that this would probably have also occurred with different dressing materials.

The efficacy of Advadraw and Advadraw Spiral, in combination with predicted cost savings for the Trust led to their inclusion in the authors' local formulary. By including Advadraw Spiral and Advadraw, the authors predict a cost saving for the trust based on a simple cost comparison between the price of Vacutex (10cm x 10cm; £16.12 x 10 dressings) and Advadraw (10cm x 10cm; £9.85 x 10 dressings) (NHS Logistics, 2006). As a unique dressing, the cost of Advadraw Spiral (£9.72 x 10 dressings) can only be compared to Vacutex (10cm x 10cm; £16.12 x 10 dressings) (NHS Logistics, 2006), since the authors would have previously cut a Vacutex dressing (10cm x 10cm) into a

spiral shape to pack into these wounds. Advadraw and Advadraw Spiral are now both available on FP10 and so can be used in both primary and secondary care sectors.

#### Conclusion

Sinuses can be difficult to heal and Advadraw Spiral gives the wound care practitioner an effective alternative to the commonly used capillary action and alginate dressings.

Advadraw Spiral controls exudate well, helps to heal sinuses and is comfortable because of its pliability and low adherent properties. As a result of this evaluation, Advadraw Flat and Advadraw Spiral were included on the authors' wound care product formulary and have since been used in other wounds such as grade three and four pressure ulcers, and continue to be widely used in the management of dehisced surgical wounds, pilonidal sinuses and diabetic foot ulcers. **WUK**

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