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Retrospective case series: Wounds treated with the 3M™ Snap™ Therapy System

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In these cases, Snap Therapy was used with other wound care products. As with any case studies, the results and outcomes should not be interpreted as a guarantee or warranty of similar results. Individual results may vary depending on the patient's circumstances and condition.

For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's applicable Instructions for Use (IFU) prior to use.

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Wounds treated with the 3M™ Snap™ Therapy System

Negative pressure wound therapy (NPWT), also referred to as vacuum-assisted closure, was first introduced into clinical practice in the early 1990s (Argenta and Morykwas, 1997) and was initially only available for inpatient wound treatment. NPWT is an adjunctive therapy that applies sub-atmospheric pressure through a foam or gauze dressing to create an environment that promotes wound healing by drawing wound edges together, removing exudate and infectious material and reducing oedema (Morykwas et al, 2006; Orgill and Bayer, 2013).

The therapy has been used in the treatment of a variety of acute and chronic wounds, such as venous leg ulcers and diabetic foot ulcers. These wound types are prone to recurrence — especially in older patients with age-impaired healing and multiple comorbidities (e.g. peripheral venous disease, diabetes, peripheral neuropathy; Wicke et al, 2009). Generally, 55% of healed VLUs reoccur within the first 12 months of closure (Finlayson et al, 2018) and approximately 80% of diabetes-related lower extremity amputations are preceded by a foot ulcer (Hingorani et al, 2016).

Traditionally, NPWT devices have been powered electrically (i.e. using plug-in electrical units). This meant that the units required a bulky electrically powered pump that was difficult to procure and use for both clinicians and patients (Fong and Marston, 2012). As such, there are some wounds that may benefit from NPWT, particularly smaller-sized wounds, but it is impractical to use traditional NPWT for these patients, especially if the are receiving care at home (Box 1).

Box 1. Limitations of traditional powered NPWT for home care

- Healthcare professionals must be adequately trained
- Equipment is bulky and can pose a trip hazard in the home setting
- Transference of costly units to uncertain home settings required.

A variety of portable NPWT systems have since been developed for use across the continuum of care. This option combines the simplicity of advanced wound dressings with the proven efficacy of negative pressure wound therapy to provide patients with greater mobility and discretion.

WHAT IS THE 3M™ SNAP™ THERAPY SYSTEM?

The 3M™ Snap™ Therapy System is a mechanically powered, single-use, disposable negative pressure wound therapy (dNPWT) system that uses constant force springs, rather than electrical power, to generate an even and continuous level of negative pressure (-125mmHg) at the wound site. The Snap Therapy System draws exudate and infectious material away from the wound into the cartridge (60ml or 150ml options); a proprietary technology gels the exudate for improved containment and easy monitoring through the viewing window (Figure 1).

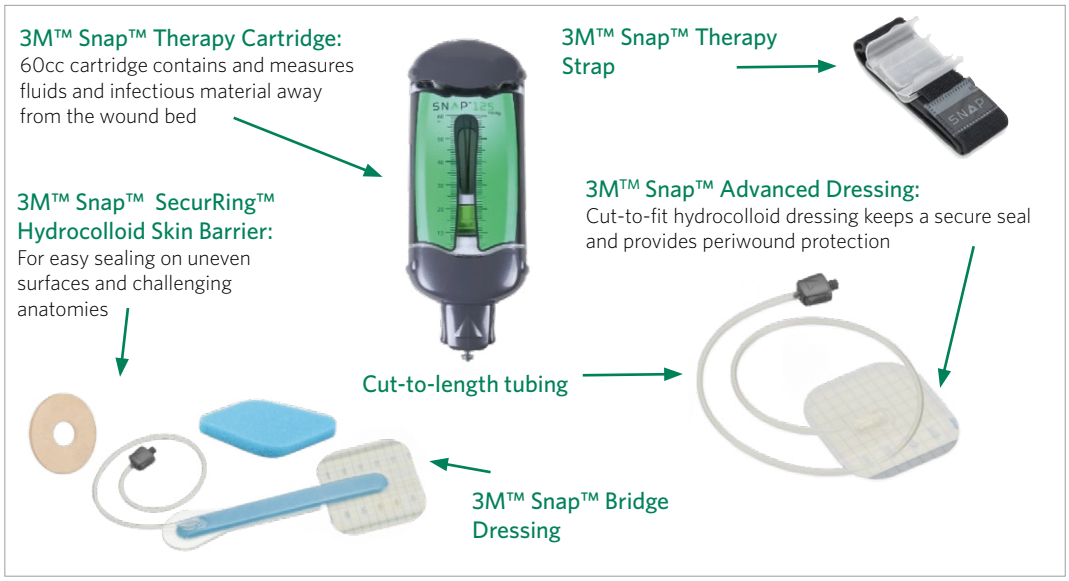

Figure 1. The 3M™ Snap™ Therapy System

The Snap Therapy System can be adapted to clinician and patient needs and has customisable components that are designed to help manage a wide range of wounds in a variety of difficult-to-treat areas. The system is available off-the-shelf and in various dressing options, such as the 3M™ Snap™ Bridge Dressing. The Snap™ Cartridge is available in three models, offering a choice of negative pressure settings between -75, -100 and -125mmHg for individual clinical scenarios.

The Snap Therapy System is indicated for removal of small amounts of exudate from chronic, acute, traumatic, subacute and dehisced wounds, ulcers (such as diabetic, venous, or pressure), surgically closed incisions, flaps and grafts.

EVIDENCE SUPPORTING THE SNAP THERAPY SYSTEM

Two published randomised controlled trials have demonstrated that the Snap Therapy System has similar wound healing outcomes to traditionally powered NPWT (Armstrong et al, 2012; Marston et al, 2015).

In a prospective observational and retrospective match-controlled study on patients with lower extremity venous or diabetic ulcers, Lerman et al (2010) demonstrated that patients using the Snap Therapy System with skin substitutes or skin grafts healed in a significantly shorter average time with a 50% absolute reduction in healing time versus modern dressings protocols that included a bilayered bioengineered skin substitute, a gel containing becaplermin and skin grafting. This study suggests that the Snap Therapy System may be a useful addition to the techniques available to clinicians working in wound care.

Box 2. Key patient benefits of the Snap Therapy System (adapted from Wounds International, 2018)

- Mechanically powered and portable for patient mobility
- No settings or adjustments for patient to learn
- Silent design minimises sleep interruptions
- Delivers clinically proven -125mmHg continuous negative pressure
- Pulls exudate away from wound and stores in cartridge
- Customisable to meet a variety of wound and patient needs
- Discreet and can be worn under clothing.

For patients with an acute or chronic wound, the Snap Therapy System is flexible, customisable and aims to maintain and preserve patient quality of life due to its discreet, lightweight and quiet design (Armstrong et al, 2012). It is suitable for active patients, older patients and patients and/or their carers who want to actively engage in shared care. Box 2 summarises the key patient benefits of the Snap Therapy System.

It is recommended that Snap Therapy System Dressings are changed at least twice a week, although this depends on the judgement of the clinician. Dressing Kits feature a proprietary, thin hydrocolloid dressing that may provide periwound protection and easy removal, while assisting with maintaining a seal and reducing periwound maceration (Marston et al, 2015) and can be applied in under 10 minutes (Armstrong et al, 2012).

Based on a model that analysed the costs and effectiveness of the treatment of diabetic lower-extremity wounds, Hutton and Sheehan (2011) reported that the Snap Therapy System saved over USD$9,000 per wound treated by avoiding longer treatment times and costs for complications and healing more wounds compared to modern wound dressings.

CONCLUSION

The Snap Therapy System is appropriate for use on a variety of wounds (chronic, acute, traumatic, sub-acute and dehisced wounds, ulcers, surgically closed incisions, flaps and grafts). Although disposable, the Snap Therapy System employs a familiar NPWT mechanism of action to support healing, but also has the potential to reduce dressing changes, time to closure and costs (Lerman et al, 2010; Hutton and Sheehan, 2011), and enable patients to maintain patient quality of life and mobility (Armstrong et al, 2012).

A series of case studies illustrates the range of uses for the Snap Therapy System and are representative of a clinician's everyday use of this device. Cases studies were submitted as part of an international competition to share best practice using the Snap Therapy System.

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1st prize

CASE 1: Creative bridging technique with the 3M™ Snap™ Therapy System in the treatment of an atypical toe ulcer

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PATIENT PRESENTATION AND HISTORY

A 55-year-old Chinese male presented to the hospital with a painful right second toe of 1 day duration. He had a significant past medical history of untreated gout that was diagnosed approximately 35 years ago but regular urate-lowering therapy was not prescribed. He would periodically experience acute gout flares every 2–3 months, complicated by a long-standing gouty tophus over the right second toe for the past 7–8 years. Other comorbidities included mild hyperlipidaemia. There was no history of smoking or drinking.

On presentation, the patient complained of acute pain over his right second toe, associated with redness, warmth, and swelling. A thick whitish material was also seen spontaneously oozing from the swollen toe. There was no preceding trauma or injury to the toe. He had no fever and vital signs were normal. On examination, the patient's right second toe was diffusely erythematous and warm, with tenderness on palpation over the interphalangeal and metatarsophalangeal joint. Range of motion of the joints was full. In addition, a 2cm (length) x 2cm (width) tophaceous ulcer with whitish chalky discharge was observed over the dorsolateral aspect of the toe. Both the dorsalis pedis and posterior tibial pulses were palpable and normal.

Initial investigations revealed raised inflammatory markers (WBC 21.7 x 10^9/L, CRP 71.7 mg/L, ESR 45 mm/h) associated with hyperuricemia (9.9 mg/dL). A radiograph over the toes showed gross soft tissue swelling over the right second toe and very small juxta-articular cortical erosions with sclerotic margins at the base and head of the right second proximal phalanx and head of the right second toe metatarsal.

MANAGEMENT AND OUTCOMES

A diagnosis of right second toe acute gout flare with gouty tophi complicated by super-imposed cellulitis was made. Initial treatment consisted of analgesia (paracetamol and non-steroidal anti-inflammatory drugs), colchicine, and intravenous antibiotics (amoxicillin-clavulanate). Subsequently, the patient underwent a surgical excision of the infected gouty tophi and wound debridement. The extensor tendon was found to be infected intra-operatively while the surrounding bones appeared healthy. A 2cm sinus track extending proximally from the dorsal second proximal interphalangeal joint towards the second metatarsophalangeal joint was noted. Intraoperative wound cultures yielded *Streptococcus agalactiae* (sensitive to penicillin, ampicillin; resistant to clindamycin). The postsurgical wound measured 1.6cm (length) x 1.8cm (width) x 2.0cm (depth) and was packed and dressed with a 3M™ Silvercel™ Non-Adherent Dressing (3M). The wound was inspected and found to be clean with no further gouty discharge on postoperative day (POD) 2.

The 3M™ Snap™ Therapy System (-125mmHg, 60ml cartridge) was selected in view of the presence of a sinus tract and small size of the post-surgical wound. However, the anatomical location of the toe wound, such as for this patient, can complicate the utilisation of negative pressure wound therapy (NPWT) as the suction tubing cannot be applied directly above the wound. Hence, the authors developed a creative bridging method such that the suction tubing was placed proximally (dorsal area of the forefoot) and away from the toe, allowing the sub-atmospheric pressure to flow from the ulcer to the top of the foot via the bridging foam.

Figure 1a–g illustrates the bridging technique used. To protect the periwound skin from the bridging foam, a piece of hydrocolloid film was placed on the skin from the ulcer site dorsally and proximally to top of the forefoot area. Next, a hydrocolloid paste was placed approximately 0.5cm away from the perimeter of the wound and bridging area to ensure adequate sealing on the curved surfaces of the toes and interdigital areas. A strip of foam was then cut to fit the wound and form an extension from the ulcer to top of the forefoot area. Finally, the suction tubing was placed over the exposed section of the foam bridge on the dorsum of the foot. More hydrocolloid film may be applied to the surrounding area for a better seal. Once secured, the tubing was connected to the cartridge and activated to initiate the Snap Therapy System.

The Snap Therapy System was applied for the patient on POD 2; the application and maintenance of the Snap Therapy System dressing was uneventful. At the next wound inspection on POD 5, the wound was clean and inflammatory markers down trended. The patient was discharged to continue outpatient therapy, with oral antibiotic therapy for a duration of 1 week. The Snap Therapy System was continued

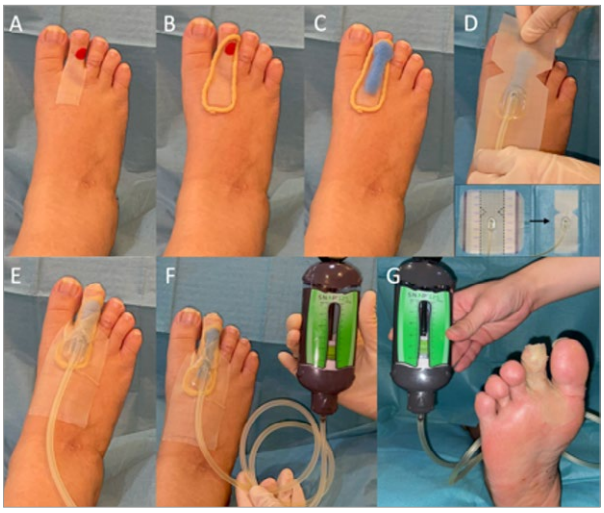

Figure 1. (a–g) Demonstration of the bridging technique

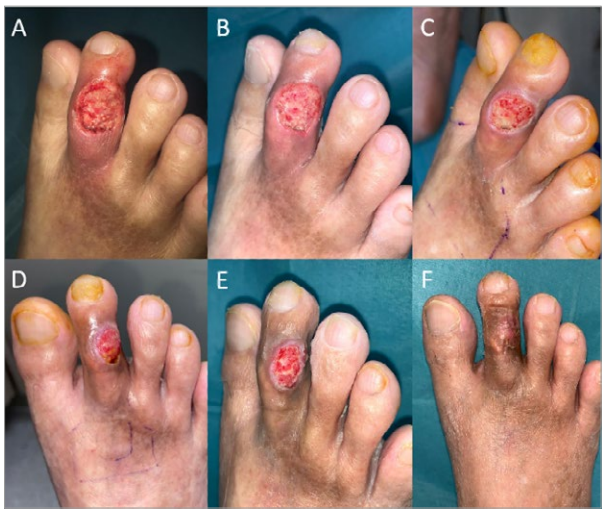

Figure 2. Progression of right second toe wound by secondary intention, achieving full granulation and epithelialisation in 8 weeks following the operation. a) Postoperative day (POD) 2; b) POD 5; c) POD 10; d) POD 24; e) POD 34; f) POD 61

Table 1. Reduction in wound size and eventual healing by 8 weeks following the operation

Week	Wound size, length x width (cm x cm)	Wound depth (cm)
0	1.6 x 1.8	2.0
1	1.3 x 1.5	1.2
2	1.3 x 1.4	1.0
3	1.0 x 1.3	0.4
4	0.9 x 1.3	0.3
5	0.9 x 1.3	0.1
6	0.7 x 0.8	0.1
8	Healed	Healed

for 5 more weeks; the patient was seen twice a week at a podiatry clinic. Wound treatment was later stepped down to a topical wound dressing, with weekly podiatry review. After 8 weeks post-surgery, the wound had fully healed, and the patient was discharged (Figure 2a–f; Table 1).

LIMITATIONS

Firstly, as this is a case study of one patient, the results may not be generalisable, hence additional studies in a larger patient cohort may be necessary. Secondly, the Snap Therapy System would not be ideal for larger wounds (bigger than 13cm [length] x 13cm [width], >180ml of exudate level per week). Moreover, due to the many curved surfaces of the feet, the use of hydrocolloid dressings for the bridging technique may result in microleaks as it easily forms creases. This can be overcome by applying a layer of hydrocolloid paste surrounding the foam to limit air leaks.

CONCLUSION

It remains a challenge to employ NPWT for smaller wounds on curved surfaces on the feet or toes. Firstly, the suction tubing of NPWT cannot be applied directly above such wounds due to the small surface area. Secondly, the inappropriate placement of the suction tubing may also hinder the mobility of toe joints, which may lead to more discomfort and potentially skin pressure lesions. Furthermore, the foot is highly mobile, and its multiple curved surfaces increase the risk of NPWT leakage which reduces its efficacy. Hence, the authors described a creative bridging technique during application of the Snap Therapy System to address the shortcomings of usual NPWT on such wounds.

The Snap Therapy System was found to be effective in facilitating wound healing and eventual toe salvage of an atypical toe ulcer. The creation of the bridging foam, with the suction tubing being placed proximally and away from the toe, allowed the sub atmospheric pressure to flow from the ulcer to the dorsal area of the forefoot, thereby decreasing the likelihood of hindering toe joint mobility and risk of skin pressure lesions. This bridging technique was found to be effective in facilitating full granulation and epithelialisation of the patient's right second toe wound, resulting in eventual toe salvage. The patient was also able to carry out activities of daily living with the Snap Therapy System, and no adverse events, further surgery, or re-admissions were reported.

Disclosure: The authors disclose no financial or other conflicts of interest.

2nd prize

CASE 2: Successful management of complex fistulating idiopathic granulomatous mastitis (IGM) with the 3M™ Snap™ Therapy System following debridement

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PATIENT PRESENTATION AND HISTORY

A 27-year-old female was admitted with a 5-day history of left breast swelling with discharge. She was a non-smoker, had no history of breastfeeding, and had no other medical condition. On examination, she had a 5cm (length) x 5cm (width) area of fluctuant swelling at the left breast with surrounding induration. There was an area of complex fistulation measuring approximately 1cm (length) x 1cm (width) causing discharge (Figure 1a).

A breast ultrasound identified a large irregular heterogenous hypoechoic area in the upper half of the breast with several tracts extending radially. There were two smaller cystic foci identified separately at the left breast. She was counselled for incision and drainage of left breast abscess in view of the complex abscess anatomy and fistulation.

Intraoperative finding was of a 9cm (length) x 7cm (width) multiloculated abscess cavity with separate extension, requiring undermining of the skin flap to connect to the index cavity and to allow for adequate drainage and flushing. The cavity had an average depth of about 2cm with some areas undermined close to the pectoralis fascia, which was concordant with the ultrasound findings.

The resultant wound measured approximately 4cm (length) x 3cm (width) with further undermining in some areas (Figure 1b). She was discharged on the first post-operative day, with instructions to return to the clinic for daily flushing and wound review. Return effluent from the flushing of the wound bed was clear; the wound bed was noted as clean by the second post-operative day (POD). Histology obtained from intraoperative debridement confirmed idiopathic granulomatous mastitis (IGM) with no evidence of acid-fast bacilli, or fungal organisms.

The 3M™ Snap™ Therapy System was proposed early during recovery in view of the complex anatomy of the abscess cavity and the tendency of IGM to form fistulous tracts when left to recover conservatively. The Snap Therapy System also provided ease of application and maintenance of the wound therapy for the patient, who would otherwise need to return daily for wound review and dressing changes for the first few weeks at least; possibly three times a week thereafter. It is recommended for the Snap Therapy System dressing to be changed twice a week. The simplicity of the Snap Therapy System also made it easier for the patient to accept.

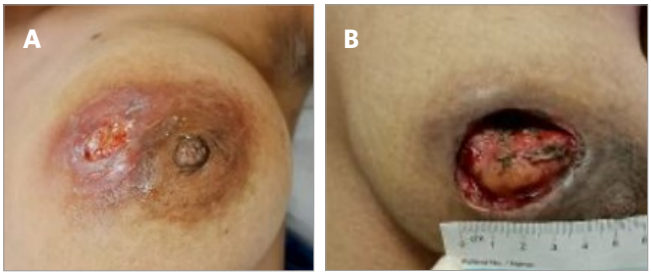

Figure 1. a) Pre-operative b) Post-operative image of left breast abscess incision and drainage. Final wound measures 4cm in transverse diameter with an underlying cavity

MANAGEMENT AND OUTCOMES

The Snap Therapy System was planned to be used for 2 weeks. The first application was managed in clinic (Figure 2a). Measurement of the various undermined areas were determined to cut out a disc of foam. The wound edge including the nipple areola complex (NAC) was outlined with a strip paste. The hydrocolloid stick pad was then applied to the breast covering the NAC without need for additional barrier dressing application. The application was performed in under 5 minutes by a single breast care nurse with supervision and minimal assistance from the attending physician.

A 60ml canister was used with pre-set negative pressure of -125mmHg. The patient tolerated treatment well, with no complaints of pain during application and subsequent removal. There were no unplanned change of the Snap canisters or leakage that required reinforcement.

The patient used a total of four Snap canisters, with application starting on POD 2 and changes taking place every 72 hours. This was done on an outpatient basis and concluded on POD 16 (Figure 2b). The wound was seen to be granulating well with minimal residual cavity upon removal of the last application. However, there was an interval development of pinpoint discharging sinus and another focal induration. These were conservatively managed with oral antibiotics and simple wound dressings (Figure 3a and 3b). She was given appropriate dressing advice with a non-stick dressing and returned for weekly review.

By the end of the first month, both the sinus and induration had resolved. She did not require further drainage procedures or admission for intravenous therapy. She remained well and the wound was significantly improved by week 10 of follow-up. There was no evidence of recurrence of IGM.

LIMITATIONS

There are limitations to the consideration of using the Snap Therapy System for such infected wounds. The wound bed should be well vascularised and relatively shallow and clean following debridement. The wound should also ideally be smaller than 10cm (length) x 10cm (width) and exudate levels should not exceed 80ml over a 3-day period (Wee et al, 2019). Given proper patient selection, the experience with the Snap Therapy System was generally positive with the process being hassle free and well tolerated. There was also little hindrance to the patient's mobility, shoulder and arm movement due to the lightweight nature of the system, making it ideal for patient profile and wounds of such nature. Lastly, upon completion of the therapy, there was no significant deformity to the natural breast shape or alteration of the appearance, position and sensation of the NAC to suggest complication from the Snap Therapy System.

CONCLUSION

Our case demonstrated a successful management of a complex fistulating IGM with extensive abscess formation. The time to resolution for both infection and fistulation was under 1 month. This represents one of the shortest reported timings to resolution for such severe spectrum of the condition (Lai et al, 2005; Bouton et al, 2015; Freeman et al, 2017; Davis et al, 2019). At 3 months, the patient had shown significant epithelialisation (>90%) of the wound with no evidence of recurrence.

To date, there are no cost effectiveness analysis study done on wound healing by negative pressure therapy versus secondary intention following wound debridement for IGM (Wee et al, 2019). We aim to provide a simple cost comparison between patients on the Snap Therapy System versus healing by secondary intention with conventional dressing change using a wound dressing composed of hydrofiber (sodium carboxymethylcellulose) impregnated with ionic silver at our institution. The cost quoted for a 2-week (4 canister changes) therapy amounted to USD 672 (Singapore Dollars, SGD 912). The alternative regimen of conventional dressing change would require patients to return to clinic at least 3 times per week for regular dressing changes. Given the size of the wound, it would easily require a 10x10cm sheet at each dressing change.

A conservative estimate of the cost of wound review appointments and wound products incurred would easily amount to an average of SGD 160 per week. This would represent likely cost savings for patients who use the Snap Therapy System if the wound was estimated to take more than 6 weeks to heal by secondary intention process due to its size and extent. This does not consider the number of patients' productive hours accrued from the shortened recovery. The perceived high cost for starting patient on the Snap Therapy System is likely to be offset by the significant reduction in recovery time, reduced frequency of wound dressing change at outpatient clinic, faster return to work, avoidance of additional medical therapy and its associated side effects, although further cost effectiveness analysis study would be required to prove this.

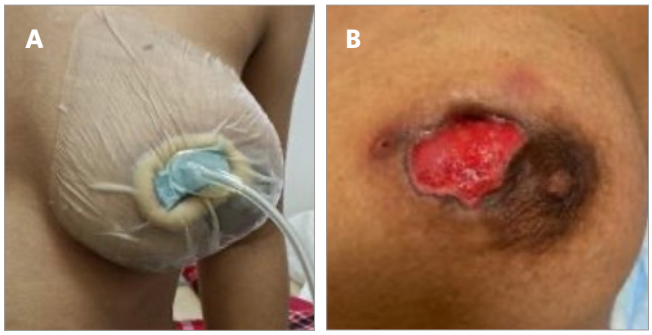

Figure 2. a) Application of the Snap Therapy System on POD 2 b) POD 16 after application of the Snap Therapy System

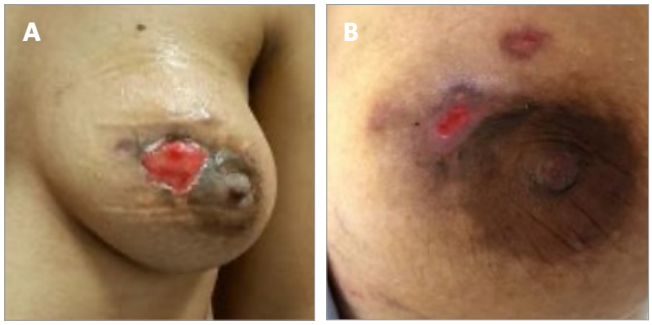

Figure 3. a) Resolution of the fistulation and infection by the end of the first month b) Significant wound improvement with contracted scarring by week 10

The Snap Therapy System is a lightweight innovative system that proves to be safe for breast wounds even around the NAC and promising as a cost-effective solution at helping to improve outcomes in the management of complex fistulating wounds of IGM post debridement.

DISCLOSURE: No conflict of interest to declare. Patient anonymity has been maintained. The case study submitted to this competition has not been published or submitted elsewhere.

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CASE 3: The 3M™ Snap™ Therapy System in the healing of a scalp wound

3rd prize

Authors: **Esther Thng,** Clinical Nurse Specialist, WOCN, Sozo Wound & Stoma Care, Novena Medical Centre, Singapore

PATIENT PRESENTATION AND HISTORY

A 30-year-old male patient was referred to the clinic for wound management following saucerization of a scalp abscess 1 month previously. There was slow progression in wound healing despite twice weekly dressing changes in the surgeon's clinic since the operation. The patient was also receiving chemotherapy treatment for recurrent cancer of the colon. Chemotherapy was discontinued due to the development of the scalp abscess and subsequent surgery. There was, therefore, an urgent need for wound healing to be expedited to resume his chemotherapy treatment. On examination, the wound was located at the occiput and measured 1.6cm (length) x 5.7cm (width) x 1.4cm (depth). The wound bed was clean with some fibrinous and granulation tissue visible (Figure 1). There were low exudate levels with haemoserous fluid noted upon removal of previous dressing; the wound edge was irregular.

Considerations for the 3M™ Snap™ Therapy System were the size of the wound, the exudate level and the lifestyle of the patient. In a case series from Singapore, Wee et al (2019) concluded that the Snap Therapy System is an effective tool in treating small sized wounds and may serve as an adjunctive treatment in wound management. Patients in this case series also reported high satisfaction with the device in terms of convenience and less impact on daily activities (Wee et al, 2019).

The size of the wound was able to fit into the standard dressing kit (10cm [length] x 10cm [width]). Exudate levels were low and could be contained within the cartridge, which has a capacity of 60ml. As the patient was young and led an active lifestyle, he preferred a device that would be portable and discreet. As the Snap Therapy System is mechanically powered, the patient did not have to worry about being in a situation where the battery may run out and need to be charged. Most importantly, there is evidence that negative pressure wound therapy (NPWT) manages the wound environment to promote healing (Armstrong et al, 2012), which was crucial in this case as the patient needed to continue his chemotherapy treatment.

MANAGEMENT AND OUTCOMES

The Snap Therapy System was initiated and was planned to be used for 2 weeks. The wound was cleansed thoroughly with an antiseptic solution, a hydrocolloid layer was placed around the wound edge for periwound protection, followed by a strip paste to help secure the seal (Figure 2). The foam was cut to size, placed in the wound bed and covered using the hydrocolloid dressing kit. The tubing was cut to a length that was comfortable for the patient and did not restrict movement. It was then connected to the cartridge and the device was activated by pressing the activation key. Pressure was set at -125mmHg; there was no leakage detected. The device was secured on the patient's arm with the strap provided and hidden from view by his clothes.

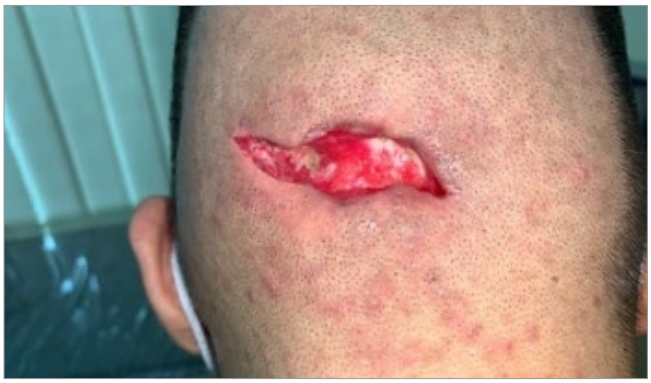

Figure 1. Baseline

The Snap Therapy System was applied for a duration of 9 days. Dressing changes were carried out twice a week and there was a total of four Snap Therapy System dressing applications. During this period, the wound bed remained clean (Figure 3), there was increased granulation tissue and a reduction in wound depth was noted. Contraction of wound edges was also evident, resulting in a closer approximation of the wound edges. There was a significant reduction in wound size (60%) during the last application (Figure 4). The wound bed was prepared sufficiently for secondary closure after 3 weeks. During the follow-up visit one week later, the sutures remained

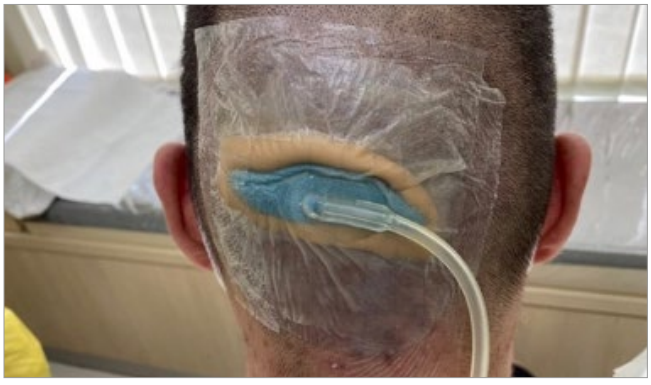

Figure 2. Application of the Snap Therapy System

intact, and no gapping of the wound was noted (Figure 5). Sutures were removed and the patient was discharged from follow-up.

CONCLUSION

The 30-year-old male in this case study was treated post-operatively with standard of care and, after 3 weeks, there was slow progression towards healing. Since commencement of the Snap Therapy System, the wound bed was kept clean with an increase in granulation tissue, reduction in wound size and significant wound contraction. In less than 2 weeks, the wound bed was well prepared and ready for closure through secondary intention. Time was an important consideration in this case as the patient has recurrent colon cancer and chemotherapy was put on hold when he developed the abscess.

The Snap Therapy System managed the wound environment to promote wound healing, enabling the patient to continue with chemotherapy treatment. In addition, the mechanically powered system, which is portable and light-weight, appears to have less impact on the patient's quality of life as compared to the electronically powered devices (Armstrong et al, 2012). The patient in this case study was able to continue with daily activities and quality of life was not compromised, thereby improving compliance and overall outcomes.

DISCLOSURE: The author has no conflict of interest to report.

Armstrong DG, Marston WA, Reyzelman AM, Kirsner RS (2012) Comparative effectiveness of mechanically and electrically powered negative pressure wound therapy devices: a multicenter randomized controlled trial. *Wound Repair Regen* 20(3): 332-41

Wee IJY, Mak M, O'Donnell G et al (2019) The smart negative pressure (SNaP) wound care system: A case series from Singapore. *Int Wound J* 16(4): 891–96

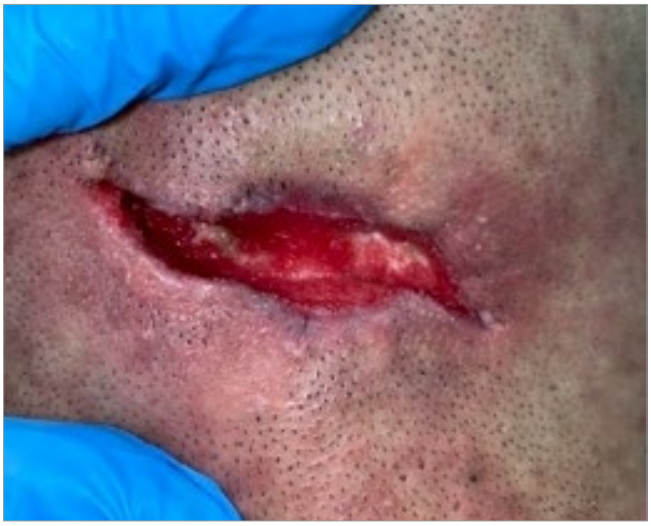

Figure 3. 1 week of treatment

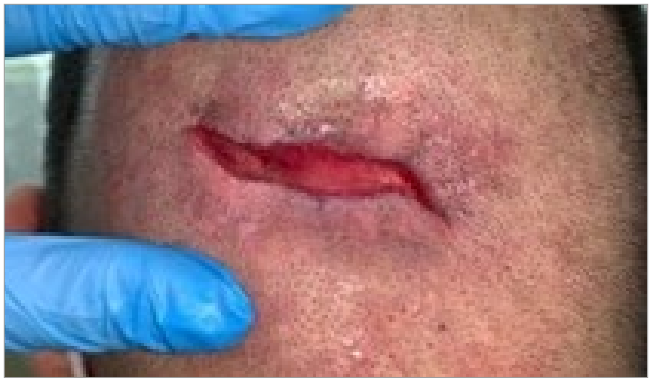

Figure 4. End of treatment

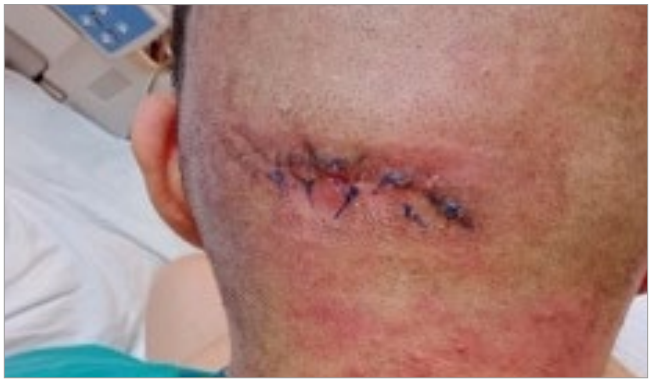

Figure 5. Follow-up (7 days post-secondary suture)

CASE 4: Use of the 3M™ Snap™ Therapy System on a large lower back abscess

Authors: **Dr Lim Yon Kuei Bernard,** Specialist Consultant Surgeon, General & Colorectal Surgery, Mount Elizabeth Novena Hospital, Singapore

PATIENT PRESENTATION AND HISTORY

A 37-year-old Chinese male was admitted and presented with pain, erythema and swelling on the lower back and was treated with antibiotics by a dermatologist for 2 weeks. The patient's condition worsened, and he was referred to the surgical unit for surgical debridement. He was previously well with no medical history.

A 9cm necrotic wound was identified on the lower back at first consultation with slough and pus, deep down to the fascia layer (Figure 1). He was not septic and did not have a fever. His spouse was carrying out daily dressing changes, but the wound was deteriorating. He underwent wide saucerisation of large abscess (Figure 2) and the 3M™ Snap™ Therapy System was started on the first post-operative day after applying a wound dressing (Figure 3).

Post-surgery, he had a large open wound (approximately 9cm [width] x 2cm [depth]). This was a highly exudative wound, in a young, active man, who was unable to clean and dress the wound himself due to its location. The family/caregiver was unable to cope with frequent dressing changes at home due to the high levels of exudate. The Snap Therapy System would enable him to cope better with the exudative wound and continue working from home, and minimise the need for daily dressing changes.

MANAGEMENT AND OUTCOMES

After surgery was complete, various wound care options were discussed. The patient was keen to proceed with mechanical negative pressure wound therapy (NPWT). He attended the clinic for follow-ups where the Snap Therapy System dressing was changed every 3 days, and he had initial antibiotic therapy for 2 weeks based on culture and sensitivity results. Wound healing was documented and measured at each visit and the Snap Therapy System dressing was applied by an experienced specialised wound care nurse. Figure 4 shows the wound 1-month post-operative. The patient changed to conventional daily dressings for a week (week 4–5 post-operative); however, he quickly switched back to the Snap Therapy System due to the highly exudative wound, surrounding skin excoriation due to exudate leakage and because he could not cope with daily dressing changes.

Time savings were gained through elimination of otherwise time-consuming daily visits to the medical clinic for wound dressing changes. After 3 months, the wound was clean,

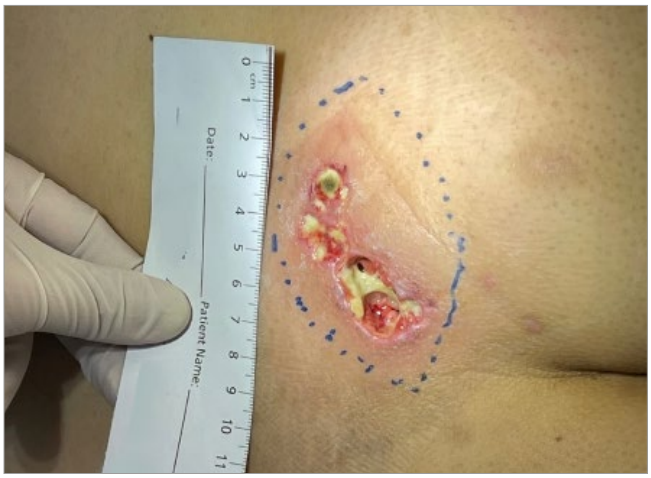

Figure 1. Pre-operative

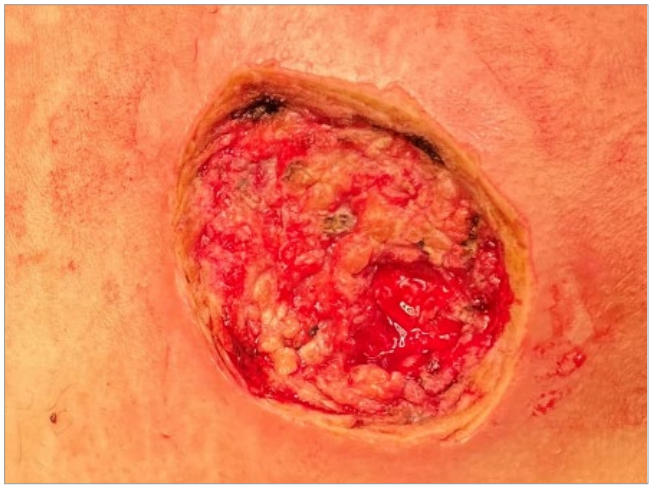

Figure 2. Baseline

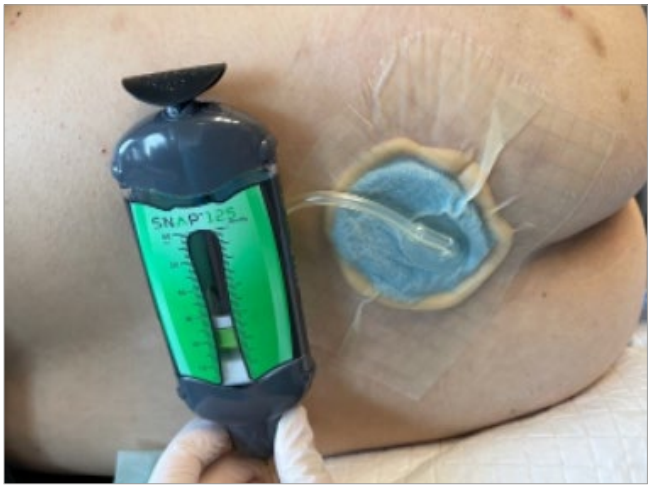

Figure 3. Application of the Snap Therapy System

granulated and the patient was able to continue treatment with a simple wound dressing (Figure 5).

The Snap Therapy System was safe to use and well tolerated by the patient and no side effects were reported. He benefited from using NPWT, which was individualised to his specific needs and busy lifestyle, despite the wound being highly exudative and in a difficult anatomical location.

CONCLUSION

The Snap Therapy System has the potential to facilitate healing in large open wounds, but care needs to be tailored to the individual needs of each patient. For this patient, it was the preferred treatment option with good clinical outcomes and high patient satisfaction due to its ease of use, affordable price, small and portable design, and because it did not interfere with his lifestyle.

DISCLOSURE: The author has no conflict of interest to report.

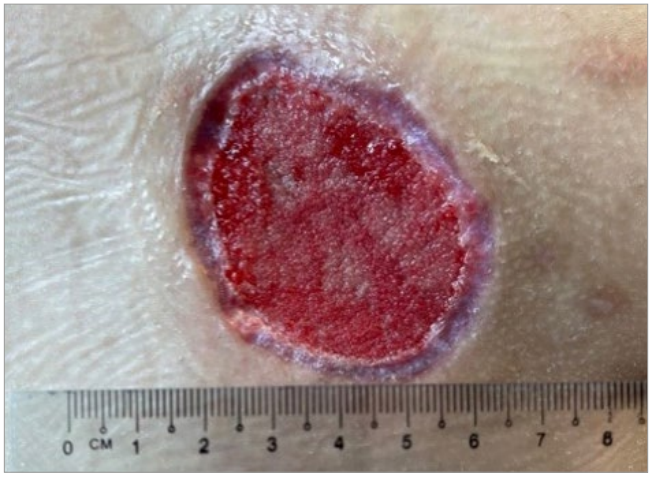

Figure 4. 1-month post-operative

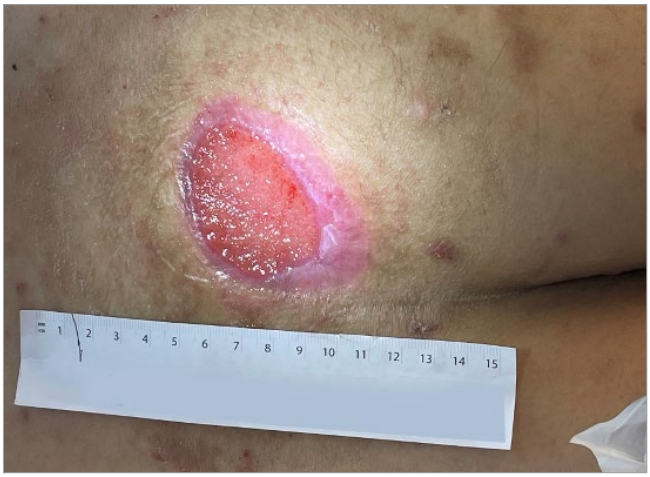

Figure 5. 3-months post-operative

CASE 5: Wound closure with the 3M™ Snap™ Therapy System and concurrent chemotherapy and radiotherapy

Authors: **Paula O'Malley,** Independent Wound Care Specialist, Dublin, Ireland; **Sarah Picardo,** Consultant Medical Oncologist, Mater Private Network, Dublin, Ireland

PATIENT PRESENTATION AND HISTORY

A 57-year-old female presented with a 6-month history of cough and shortness of breath. She had previously been treated by her GP with antibiotics and steroids for a suspected respiratory tract infection. An X-ray showed consolidation on her left lower lobe. CT guided biopsy showed a mucinous adenocarcinoma and *staphylococcus epidermidis* (likely skin contaminant). The decision was made to perform video-assisted thoracoscopic surgery (VATS). Following the VATS procedure, the patient was diagnosed with a T3N0 adenocarcinoma, and positive parenchymal and peribronchial margins.

MANAGEMENT AND OUTCOMES

The patient was referred to a tissue viability nurse as the surgical wound was not healing as expected. The wound measured 1cm (length) x 3cm (width) x 2cm (depth); granulation tissue was visible with low seropurulent exudate. A wound swab was taken to rule out colonisation and showed no growth. The medical team were keen to start combined radiotherapy and chemotherapy.

Plans were made with the radiation oncologist, medical oncologist and tissue viability nurse to proceed with oncology treatment and negative pressure wound therapy (NPWT) in tandem. The 3M™ Snap™ Therapy System was applied and changed twice weekly. Radiotherapy was undertaken of 60Gz over 30 fractions to allow the skin to recover between fractions. The wound was approximately 7cm from the treated area. Chemotherapy also commenced of cisplatin and etoposide 50mg/m^2 for two cycles of 28 days. Within 1 week of applying the Snap Therapy System (day 39 post-surgery), the wound had reduced in size to 1cm (length) x 2.7cm (width) x 1cm (depth). The Snap Therapy System was used for 12 days, by which time the wound was superficial. The wound had epithelialised after a further 10 days. Figure 1 shows the wound prior to application of the Snap Therapy System; Figure 2 after 1 week of treatment; Figure 3 after treatment had been discontinued at follow-up (day 67 post-operative).

CONCLUSION

VATS wounds usually heal rapidly by primary intention; however, this patient needed several dressing changes and regular review by the primary care team. Due to the non-healing wound, the patient's second stage treatment of

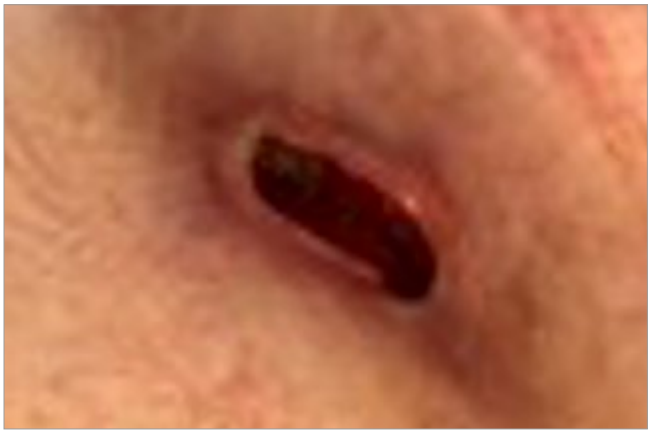

Figure 1. Before application of the Snap Therapy System (day 22 post-operative)

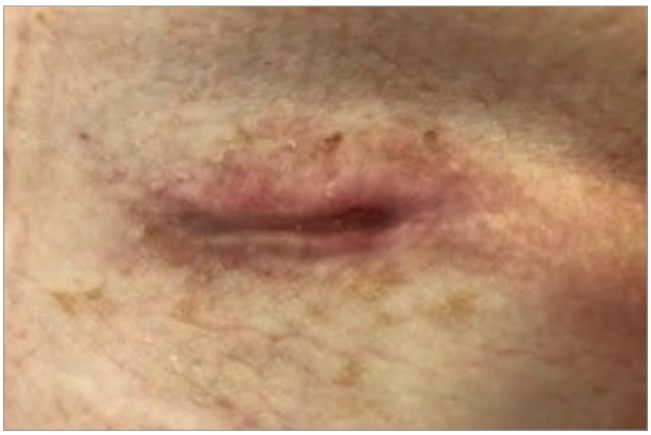

Figure 2. 1 week of treatment (day 49 post-operative)

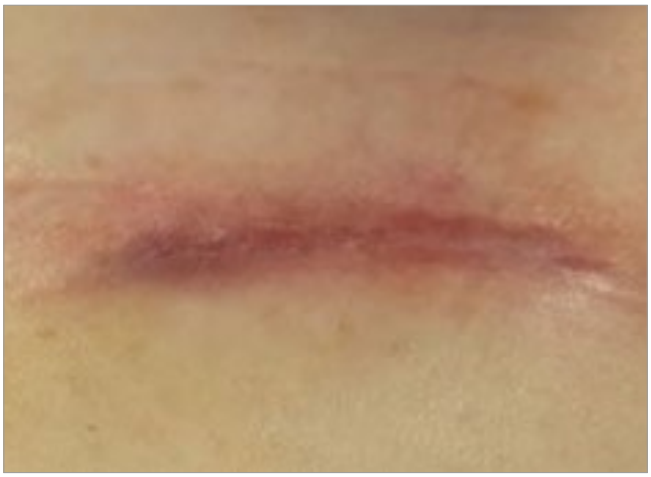

Figure 3. After the Snap Therapy System was discontinued (day 67 post-operative)

radiotherapy and chemotherapy was delayed. This led to increased healthcare costs and affected the patient's quality of life. The patient had reported being anxious about the wound but was relieved to see the wound was healing after using the Snap Therapy System.

No deterioration of the wound occurred despite oncology treatment. The Snap Therapy System facilitated healing in unfavourable conditions. The system was ideal as it was small, discrete and easily kept out of the field of radiation.

DISCLOSURE: The author has no conflict of interest to report.

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