Drawtex: a unique dressing that can be tailor-made to fit wounds

Linda Russell, Amanda Evans

Abstract

Drawtex is a new and innovative dressing using dispersion technology which works on capillary action. This promotes moist wound healing and provides the optimum environment at the wound interface. This dressing has the ability to absorb exudate 30 times it own weight. The unique capillary action draws the exudate away from the wound bed and into the core of the dressing from where it disperses into a second layer of Drawtex. The practitioner tailors the Drawtex to conform to the wound bed. Drawtex's non-adherence reduces the frequency of dressing change after the first week. This is not the only benefit as it is also very cost-effective at half the price of other modern dressing products.

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One of the most fascinating features of the human body is its ability to repair damaged tissue. A complex set of events occurs upon injury to the skin. These appear relatively simple but are, in fact, exceptionally complicated and give rise to physical and chemical reactions and cellular episodes. Wound healing can be defined as the physiological process by which the body replaces and restores function to damaged tissue (Flanagan, 1997). Despite the large amount of research that has been undertaken in this field, there are still areas which are not properly understood.

The optimum environment for the natural activation of the wound healing process is warm, moist and non-toxic (Winter, 1975; Thomas, 1990). Drying out the wound will cause the healing processes to cease (Miller and Collier, 1996). When wounds are left exposed to the air or dressed with traditional gauze dressing (which leads to wound drying) the healing rate is decreased by 40% compared to a moist wound where epidermal resurfacing takes place rapidly (Eaglestein, 1985).

There are distinct advantages to moist wound healing for the patient (Field and Kerstein, 1994). There is less pain due to the wound being immersed in the natural body fluids and there are fewer infections as dry eschar may harbour microorganisms (Field and Kerstein, 1994). There is also reduced trauma when dressings are changed as the dressing will not adhere to a moist wound, and a decreased chance of microorganism transmission when changing dressings as there is less airborne dispersal of dried fragments of wound tissue. Autolytic debridement occurs more effectively in a moist environment and the majority of dressings require water for the hydrolysis of proteins (Davis et al, 1993).

The ideal dressing should ensure that the wound remains: moist with exudate but not macerated; free of clinical infection and excessive slough; free of toxic chemicals, particles or fibres released by the dressing; at optimum temperature and pH for healing; and undisturbed by frequent dressing changes (Thomas, 1990).

DRAWTEX

Drawtex is a hydrocellular, non-woven 3-layer, non-adherent dressing, which consists of 100% polyester outer layer and 80% polyester inner layer with 20% cotton fibres. The non-woven outer layers transport, lift and hold exudate by capillary action. The woven inner layer prevents 'strike-through' by allowing the exudate to move across the fabric rather than straight through (dispersion technology).

The inner and outer layer combine to draw the exudate away from the wound surface. This action lessens the risk of infection by removing harmful bacteria and prevents maceration of the wound. The Drawtex hydrocellular dressing is non-interactive and suitable for the majority of wounds (e.g. acute, trauma, surgical, chronic, burns, leg ulcers, pressure sores).

Although the Drawtex hydrocellular dressing is highly absorbent, if required it is possible to increase its absorption by applying a second layer over the first layer for wounds producing extreme volumes of exudate (*Figure 1*).

Drawtex has to be changed on a daily basis initially to assess the amount of exudate that is being taken from the wound and to observe for a reduction in oedema around the wound. Drawtex needs to be cut to the shape of the wound; in cavity wounds small squares/strips can be built up in layers and a layer of

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Drawtex placed on the outside of the wound to enable good absorption of exudate. If the wound is long the dressing may need to be laid in strips. Once the exudate has settled down Drawtex may be changed less frequently, possibly every 2 or even 3 days.

Drawtex has the ability to absorb 30 times its own weight, thus reducing a great deal of wound leakage. It enables the natural healing process to take place at a faster rate because it provides a constant temperature to the wound; there is no excess exudate at the wound interface providing the optimum environment.

It is possible to apply a second layer of Drawtex over the first layer and the unique capillary action of Drawtex allows the fluid from the wound interface layer to pass through onto the outer layer. This ensures that maceration does not occur at the wound interface. The product does not allow any foci for infection as it does not allow fibres to shred into the wound. It is sterile and sealed into a pack.

This dressing cannot be applied on the wrong side as there is no wrong or right side to the actual dressing. The whole of the dressing can be utilized because you tailor-make it and cut it to the size of the wound — any excess pieces can actually be used over the top if required.

Another unique function of Drawtex is that it can be used as a surgical drain in a sinus or a postoperative wound. As long as the wound produces exudate, it will continue to drip from the end of the Drawtex until it has all been removed. This requires an additional drainage bag and needs to be monitored closely.

HOW DRAWTEX WORKS

The specific mode of action of Drawtex, 'dispersion technology', allows the wound exudate to circulate around the fibres of the inner layer of the fabric. These fibres connect creating a capillary action which allows the exudate to travel across the fibres in the middle layer and transudate across the middle dressing, thus being dispersed away from the wound interface. The outer layer of the dressing is highly absorbent and the dispersal and transudation reduce strike through. This allows the Drawtex to draw away infection and harmful bacteria that may be in the wound.

The benefits of Drawtex

Drawtex assists in the removal of exudate and dead tissue from the wound, thus promoting quicker healing. It is a revolutionary new material that can disperse exudate and dead tissue and has the ability to assist against gravity pull, i.e. the drain formation. It promotes a warm, moist wound healing environment and also reduces maceration at the wound interface. It promotes quicker healing of wounds and less pain for the patient as the number of dressings used overall to treat the patient is reduced. Drawtex also allows gaseous exchange at the wound site which also promotes wound healing. Wound trauma caused by dressing removal is reduced and the patient's quality of life is enhanced as the recovery time is decreased.

This dressing is unique in that it is non-interactive and consists of rayon fibres, which will not break down and will continue to give a high performance throughout the time it is in contact with the wound interface. There is a reduced risk of adverse reaction to the product because it has no medication within its fibres.

Drawtex is available in a range of sizes: 5 cm x 5 cm, 5 cm x 10 cm, 10 cm x 10 cm, 8 cm x 20 cm and 15 cm x 20 cm. There is also

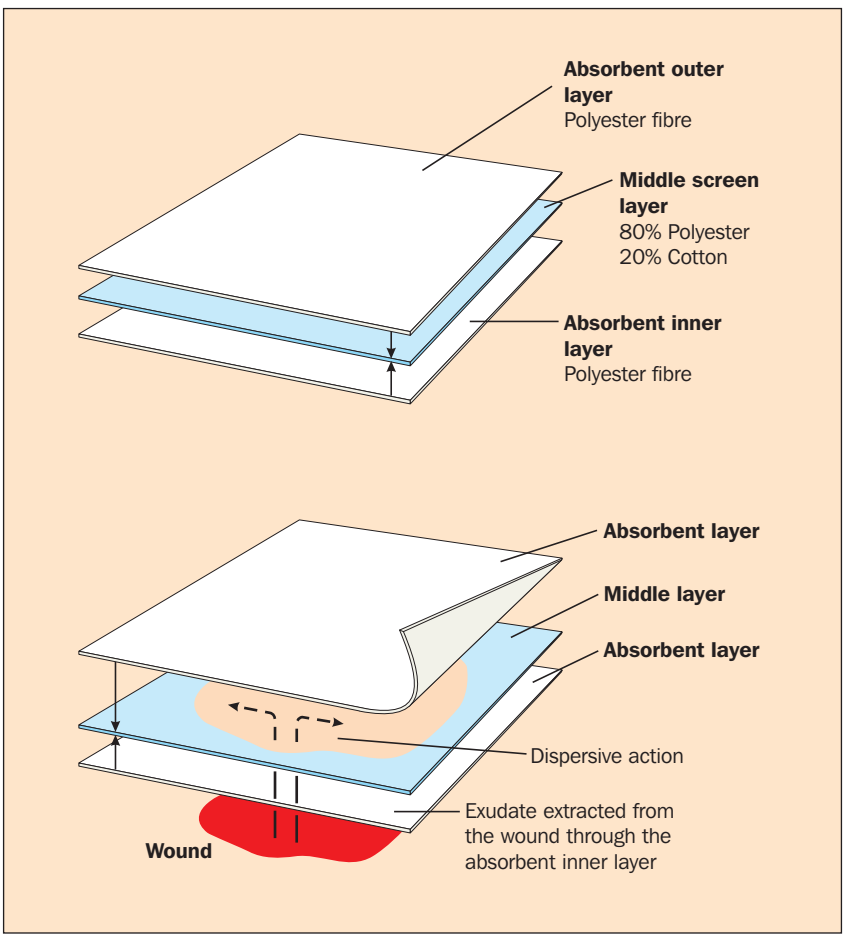

Figure 1. The structure of Drawtex.

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a 10 cm wide, 1-metre roll (which is ideal for leg ulcers), and a 20 cm x 1-metre roll. It comes in a sterile packet and the dressings are individually packed and sterilized by gama radiation.

CASE STUDY 1: USING DRAWTEX ON A SURGICAL PATIENT

The patient

This case study is of a 69-year-old lady who had been admitted for a left hemicolectomy. Initially the patient did well post-theatre, but she deteriorated because of a leak at the anastomosis site causing faecal peritonitis. She returned to theatre for a laparotomy 7 days after the initial operation. Following this she was very ill and spent a total of 3 weeks ventilated and inotropic dependent in intensive care. Consequently, she developed a chest infection requiring antibiotic therapy and intense physiotherapy. She was then discharged from intensive care to the surgicial ward. The patient's abdominal wound had been left open and unsutured by the surgeons and was initially being dressed with Intrasite gel by nursing staff.

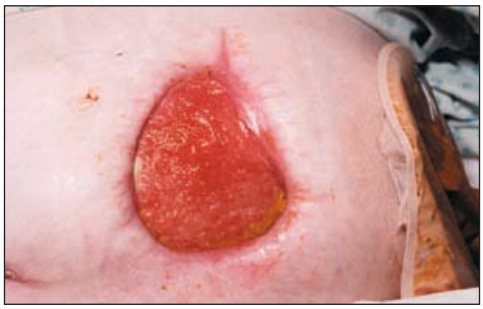

Figure 2. Wound before commencing new dressing.

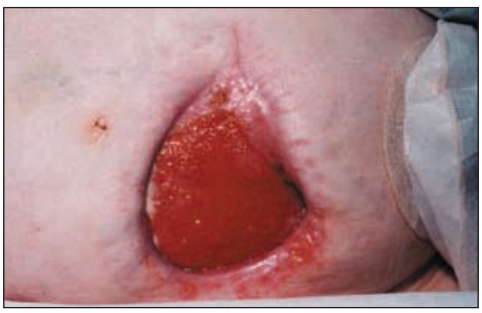

Figure 3. Photograph of wound after 7 days demonstrating decrease in wound size.

Table 1. Abdominal wound measurements

Week	Wound size	Wound description
1	8 x 9 cm	Clean granulating tissue with small area of slough and contaminated with faeces (*Figure 2*)
2	8 x 7 cm	Less sloughy, granulating well despite faeces present in the wound (*Figure 3*)

The tissue viability nurse was asked to review the patient some 5 weeks after the operation due to a failure of wound progression and the added problem of multi-resistant *Staphlyococcus aureus* in the wound. Bactroban cream had been used in the wound daily for 7 days and the re-swab results came back negative.

The wound itself was a large, sloughy, open cavity with faeces tracking from the nearby stoma site into the wound bed. Initially, the tissue viability nurse prescribed Aquacel dressings with Allevyn secondary dressing. The Aquacel dressings were continued for 2 weeks and the wound started to decrease in size. The patient agreed to trial the Drawtex dressings and written consent was gained to use her as a case study and for photographs to be taken.

The aim of using this new dressing was to draw out the exudate from the wound and lock it into the dressing. The Drawtex was changed daily with a layer of Bactroban on direct contact with the wound. Two layers of Drawtex dressings were used, one the same size as the wound and the second dressing slightly larger. A photograph was taken of the wound before commencing the new dressing (*Figure 2*). The lady returned to theatre the following day for dilation of the stoma in an attempt to resolve the fistula. However, this was unsuccessful and the fistula continued to leak faeces into the wound. The Bactroban was discontinued after 5 days and only the Drawtex dressings were continued. After 7 days the wound was reviewed and photographed (*Figure 3*).

Objectives of the treatment

- Absorption of the wound exudate
- Dispersion of faecal leakage into the dressing, away from the wound
- Healing of the wound.

Clinical results

After the first week of daily dressings the wound had decreased in size and was less sloughy. There was evidence of healthy granulation tissue but the fistula continued to leak a considerable amount of faeces into the wound. The first layer of Drawtex appeared to be dispersing the exudate into the dressing.

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However, there was a problem of leakage of faeces onto the outer skin causing some excoriation. This was mainly due to the patient mobilizing and sitting out in the chair.

A larger, secondary piece of Drawtex was cut and applied to cover the lower end of the wound. Daily Drawtex dressings were continued for a further 7 days. The Drawtex coped well; two layers of Drawtex were required to cope with the exudate and faeces and this was locked into the layers of the Drawtex allowing wound healing to take place without maceration of the wound.

Results demonstrated that the wound had contracted in size by 2 cm in width while using this dressing (*Table 1*). The patient's morale had improved substantially and she became more independent, walking around the ward. Five days after the patient was reviewed by the tissue viability team she was discharged home under the care of the community services, some 12 days after commencing the Drawtex dressing.

CASE STUDY 2: USING DRAWTEX ON AN ELDERLY PATIENT

The patient

This case study is of a 92-year-old lady who had been admitted following a fall at home which resulted in various lacerations to her elbow and leg. Previous medical history included a chest infection, oedema and dementia.

Following her fall the patient had her left middle toe amputated and consequently suffered mobility problems requiring the help of two nurses to transfer from bed to chair. This led to a skin tear and bruising on her right lower leg sustained while mobilizing from chair to bed.

Initally, Jelonet dressings were used on the haematoma that had formed on the leg. However, the leg failed to progress, and the tissue viability team was asked to assess this lady 2 weeks after the initial trauma. Consent to trial the Drawtex dressing on the leg was gained from the patient, her nephew and the consultant physician.

The leg was photographed before commenceing the Drawtex dressing (*Figure 4*). Initally the leg was dressed with one piece of Drawtex cut to the size of the haematoma. A thin layer of Granugel was first applied to the skin which was very fragile, to prevent any adhesion. The Drawtex was applied daily. It was noted after the first day that the exudate had

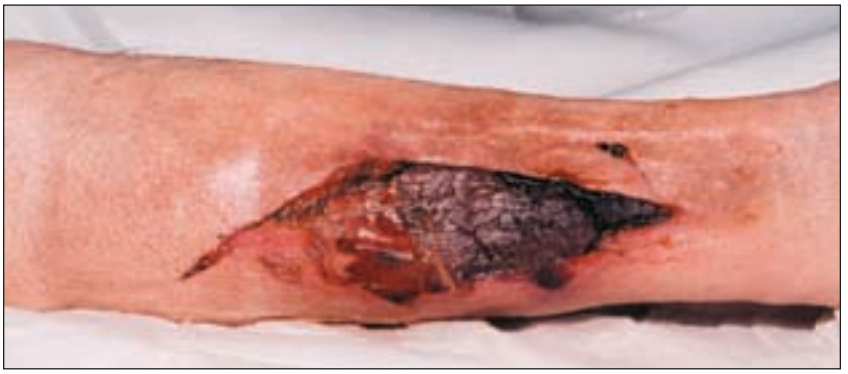

Figure 4. The initial wound before dressing with Drawtex.

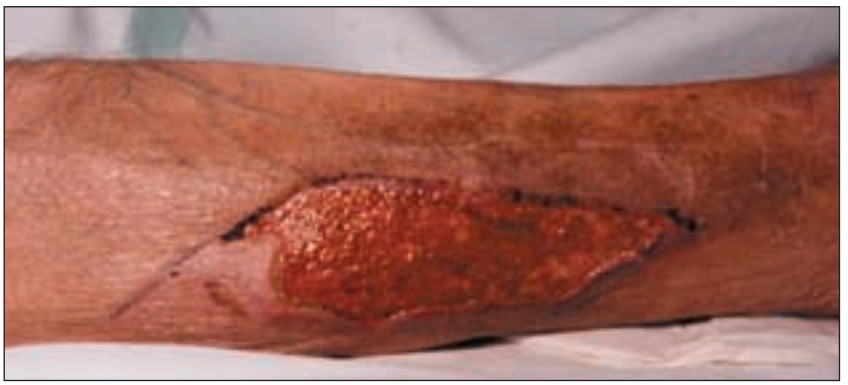

Figure 5. The wound's progress 4 weeks after dressing with Drawtex.

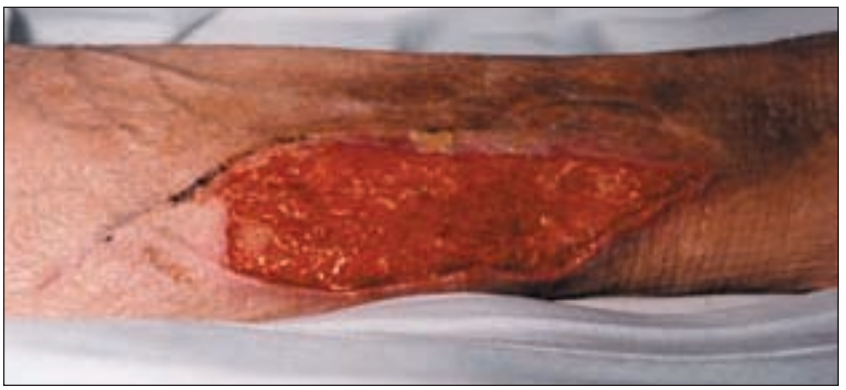

Figure 6. The wound's progress 5 weeks after dressing with Drawtex.

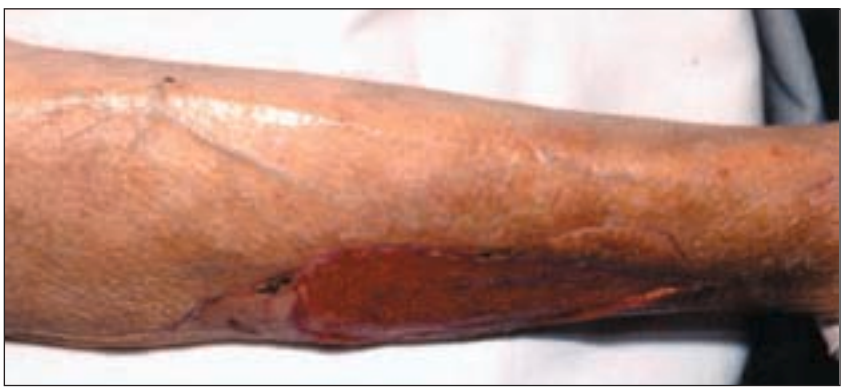

Figure 7. The wound's progress 6 weeks after dressing with Drawtex.

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Table 2. Details of the wound size of right lower leg

Week	Wound size	Wound description
1	14 x 11 cm	Full-thickness haematoma (*Figure 4*)
2	12 x 5 cm	Signs of debridement taking place
3	12 x 5 cm	Granulation tissue present in wound
4	12 x 4.5 cm	Clean, pink, small area of slough present (*Figure 5*)
5	11 x 4 cm	Pink, healthy, granulation tissue (*Figure 6*)
6	10 x 4 cm	Clean, granulating tissue. Dressing changed to Granuflex (*Figure 7*)

leaked slightly around the edges of the dressing. Therefore, a second layer of Drawtex, slightly larger in size than the first layer, was added and this appeared to solve the leakage problem. After 4 weeks the leg was photographed again (*Figure 5*).

The dressing, using only one piece of Drawtex and no Granugel, was continued for a further 7 days, being dressed every 48 hours. The leg was photographed again on the fifth week (*Figure 6*). By the sixth week the leg had healed sufficiently to change to a hydrocolloid (*Figure 7; Table 2*).

The Drawtex dressings were continued for a further 7 days and were redressed every 4 days.

Objectives of treatment

- To disperse the haematoma
- To absorb the exudate from the wound
- To progress the wound into the further stages of healing.

Clinical outcomes

On assessment after the first 7 days the haematoma had dispersed, with the exudate being successfully maintained in the Drawtex dressing. Clean, healthy granulation tissue had been left under the haematoma. The process of wound healing could now begin to take place.

The frequency of dressing changing was reviewed and it was decided to extend it to every 48 hours. The wound had started to contract in size. After a further 7 days the wound had continued to improve with clean granulation tissue evident. After 13 days of using the Drawtex the wound was shown to have contracted in size by 2 cm in length and 6 cm in width. Drawtex dressings were continued for a further 7 days and redressed every 4 days.

After a further 7 days, the wound bed had contracted in size by a further 0.5 cm in width. Outer granulation tissue had formed and the wound bed appeared clean. The single layer of Drawtex had coped well with the exudate, locking it into the dressing. However, there was a problem of the dressing sticking to the wound bed and requiring heavy soaking to remove it. This can be overcome by placing a plastic film over the wound bed (i.e. Tegaderm or Opsite) in order to raise the wound temperature and moisture content. Increasing the frequency of dressing changes to 48-hourly also helped with this problem.

DISCUSSION

These case studies suggest that Drawtex dressing has a beneficial role and appears to promote quicker wound healing in conjunction with good nutrition. However, these case studies only provide ancedotal evidence. Clinical trials are required to demonstrate the efficacy of this product and are being undertaken is South Africa and the UK.

CONCLUSION

This article has presented a new dressing that deals with wounds in a unique way and promotes wound healing by providing the optimum environment at the wound interface. The case studies show how Drawtex appears to have promoted cost-effective wound healing in two complex wounds.

Drawtex can be obtained from Medical Agency Services, Fleming House, Fleming Close, Fareham, Hants PO15 5SB. BJN

KEY POINTS

- Drawtex dressing has been designed specifically for management of highly exuding wounds.
- Drawtex has a unique action using polyester fibres that draw and distribute the exudate across the entire surface of the middle layer.
- The rapid absorption and dispersion action allows Drawtex to be used as a drain.

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