A NEW DRESSING FOR THE PREVENTION AND TREATMENT OF HEEL ULCERATIONS

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INTRODUCTION

Pressure sores, especially those on the posterior heel are a troublesome occurrence in the hospital and nursing home population. The non-ambulatory patient is especially a challenge. The main problem is keeping the shear and pressure forces from the heels. Once the breakdown process has begun, it is very difficult to prevent the progression to full thickness ulcer. Even worse, is being presented with an already established ulceration and having to overcome the pressure, shear and immobility of the patient to obtain healing. This can be a slow and difficult process. Many dressings and devices have been tried to remedy this problem. At our institution we have been using with success, a glycerine impregnated gel, Elasto-Gel, to prevent breakdown, and to protect and promote healing of areas already ulcerated.

In addition to ulcer care, Elasto-Gel has many other uses. Among these is use as cast padding to protect areas of bony prominence under casts in vascularly impaired individuals, diabetics and rheumatoids whose skin is very fragile. The Elasto-Gel protects these areas from insult while moisturizing the skin and preventing friction. In this paper we will discuss the product, its composition and applications as we have been using it at our hospital.

DRESSING DESCRIPTION

Elasto-Gel dressings are composed of a mixture of glycerine and water entraped in a polymer-mixture. The gel is approximately 1/8" thick and marketed in various dimensions ranging from 4"x4" to 8"x16" pads. The dressings are individually packaged and are sterile. They come with a clear cellophane wrap on one side and a stretch cloth on the other. When applying Elasto-Gel the cellophane is removed and the gel is placed directly on the skin; the stretch cloth is kept on as a backing and will allow the gel to conform to the wound area. The gel will absorb up to 2.5 to 3.0 times its own weight but at the same time will not dry the area completely. The glycerine allows the self adherent dressing to be removed in one piece without damaging new, fragile tissue.

Elasto-Gel is very soft and protects the skin from both the pressure and the friction. It can be lifted from the skin by its backing without disintegrating or leaving any of its components in the wound. This allows the doctor or nurse to examine the area quickly and easily. When the dressing becomes wet, it loses its adherent property and should be removed and a new piece applied. After becoming familiar with the product the doctor will know when the dressing needs to be completely replaced.

This product exhibits bacteriostatic and fungistatic properties and therefore reduces the possibility of infection. Elasto-Gel is registered with FDA as both an occlusive dressing and a cast pad. Because of the thickness of the gel and its moisturizing property it is excellent for under casts and for heel decubiti. When used under casts we recommend removing the cloth backing which will allow the cast to mold into the gel and adhere better. It is used over pressure areas and can be cut with a scissors to any shape needed.

The company has recently released new therapy products made with Elasto-Gel as the internal component and a four-way stretch material covering it. One product is a heel protector for prevention and treatment of pressure sores. The product is autoclavable and can replace conventional imitation sheep-skin heel covers that are usually ineffective.

PATHOLOGY OF PRESSURE SORES

Many factors predispose a patient to the formation of pressure ulcers: paralyses, paresis, malnutrition, anemia, advanced age infection, PVD, obesity, diabetes mellitus, multiple injuries etc. However, the major causes of these ulcers are pressure and shearing. Immobility and decreased sensation are both contributors in the formation of pressure sores. The patient may feel discomfort but lacks the ability to move about freely and relieve continuous pressure on prominent areas. Also patients with conditions which decrease sensation are at risk, they do not respond to the body's protective mechanism of pain, thus do not shift positions to relieve pressure on areas at risk. Prolonged periods of minimal pressure are just as injurious as short periods of intense pressure. When pressure exceeds the normal capillary blood pressure of 32mm Hg, capillary perfusion is affected, thus blood supply to an area is reduced or stopped. This produces tissue anoxia and prevents normal removal of cellular waste. An active inflammatory process starts, and if the waste products are not removed, cell damage and cell necrosis can occur. Pressure ulcers can develop in one to six hours depending on the amount of pressure, skin condition, vascular status and overall health of the patient. There is no such thing as a small pressure ulcer, the damage occurs in a conical fashion. The destruction of deeper tissue is always more extensive than appears on the surface. We use our own classification for heel decubiti which consist of four stages.

STAGE I

The skin is red, but unbroken. There are no other lesions but the heel is painful.

STAGE II

There is a break in the epidermis, either a superficial ulcer or a blister, skin is red or eccymotic. The break does not extend through the dermis, the perimeter is intact.

STAGE III

The perimeter of the ulcer is erythematous. The ulcer has a black eschar which is lifted at the edges; there is drainage from the ulcer and a fluctuance under the eschar. Upon debridement of the eschar there is peripheral granulation tissue with a small central area of necrotic fat.

STAGE IV

Appears like Stage III or can be seen without the eschar if previously debrided, however, this ulceration is through the subcutaneous tissue and deep facia. The dermis is undermined, the fat is largely necrotic and the calcaneous is usually exposed. Stages III and IV may or may not be infected.

Heel decubiti presents a special problem because there is very little tissue between skin and bone except a relatively thin layer of avascular fat. Once debridement has begun it is a short step to having the calcaneus exposed. With heel decubiti, we feel that unless gross infection is present with surrounding cellulitis it is better to protect the area, clean it superficially, debride judiciously, and allow the body to heal while removing the pressure and shearing forces which caused the damage.

DISCUSSION

The authors have been using Elasto-Gel dressing for over two years now with very good results. We use it primarily on bedridden patients with heel problems. As everyone knows heel decubiti in nursing homes and hospitals are very common and hard to treat. To properly treat heel ulcers the physician needs to see them every day and should not expect the nursing personnel to be responsible for the prognosis.

This dressing is very effective in dramatically reducing the pain of heel pressure because of its gel consistency. It was used under heels that have a Stage I ulcer prior to actual breakdown of the skin, and in every such case the area became less painful and never ulcerated. For this specific indication, the Elasto-Gel pad can be used for up to six weeks without actually having to replace it. It should be removed every day or every other day, and the heels examined. We hold it in place with non-sterile gauze wrap, to protect against the edges lifting. Nurses can remove it for bathing the patient and re-apply to a thoroughly dried area when finished, provided the dressing is not saturated with wound exudate.

We are often consulted for heel decubitus ulcerations and find when examining the patient the heels have a superficial blister (Stage II) which is eccymotic but is not clinically infected. Prior to our introduction to Elasto-Gel we would debride the area and begin betadine wet to dry dressings. This dries the tissue and creates more pressure by allowing the heels to be placed on a hard surface, namely the betadine dressing. Even with the conventional heel protectors; rolled towels, sheepskin cups, a pillow under the calves, the area always ends up with a large necrotic center and hyperkeratotic border because the methods are not reliable. With Elasto-Gel dressing, we now do not debride this type of lesion. We have found that over a period of a few days the area becomes less eccymotic and free of exudate while the damaged skin remains pliable. Approximately a week later in most cases, we can debride the eschar and find fragile new epidermis or dermis beneath it.

Elasto-Gel keeps the surrounding skin moisturized so hyperkeratosis does not occur and at the same time draws fluid from the ulcer, therefore, there is not maceration under the dressing. We continued using the Elasto-Gel and found the lesion to slowly heal, or at least not worsen if other factors, such as poor nutrition etc., prevent healing.

Unfortunately, we are sometimes consulted on a patient that already has a Stage III ulceration. If the ulcer is still not largely necrotic through the fat, and has an intact dermal border, we begin our treatment with a conservative debridement, removing hyperkeratotic tissue and superficial necrosis and follow with a povidine iodine scrub and dressing.

Once the area is free of necrotic tissue, we begin the Elasto-Gel dressing and have good results. If cultures taken were positive and the area was clearly infected, we delay the use of Elasto-Gel until the infection is cleared.

We do not use Elasto-Gel dressings on Stage IV ulcerations. We find radical debridement and wet to dry providine-iodine, Dakin's solution or dilute acetic acid will decrease the chance of infection. These ulcers are usually seen in vascularly impaired patients and rarely heal.

The other uses of the gel pad are under casts and over burns. We have used it only rarely under casts, probably because most of the patients that we cast have no underlying medical problems. Specifically, we've used the gel on diabetics with fragile skin and for rheumatoid patients following trauma or surgery. In both cases the pad was applied over a bony prominence. After removing a cast, if we have noticed pressure areas which are tender, we will use Elasto-Gel to decrease the chance of skin breakdown and for patient comfort.

The authors have introduced a new dressing for pressure ulcers and have used it with great success. The product is recommended for hospital and nursing home patients with heel decubiti that are not infected, but will become chronic if not treated. It can be used to prevent heel ulceration as well as breakdown under a cast over bony prominences. Elasto-Gel has replaced conventional heel protectors in our institution. If correctly used, it can bring dramatic relief of the pain of these conditions, while relieving the pressure and shearing forces, thereby, stopping the progression of these ulcers.

Elasto-Gel is a trademark of Southwest Technologies, Inc.