

## Special Article

[ Simplified Wound Care/Management - Excerpts from 7th National Wound Care Workshop 2021 ]

### Pressure Ulcers Simple Way of Management

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Pressure ulcer is a localized injury to the skin and/or underlying tissue usually over a bony prominence as a result of pressure, or pressure in combination with shear and/or friction. Prevention in high-risk patients is the key step in the management of pressure ulcer. The management strategy encompasses different treatment modalities, pressure off-loading, wound management by debridement, cleansing, dressing, wound surrounding skin care and wound closure. The treatment strategy differs according to the stage of ulcer. Surgical debridement is the gold standard method of debriding pressure ulcers.

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**Key words :** Offloading, Friction, Shear, Surgical debridement, Wound closure.

According to National Pressure Ulcer Advisory Panel (NPUAP) and European Pressure Ulcer Advisory Panel (EPUAP), pressure ulcer is defined as localized injury to the skin and/or underlying tissue usually over a bony prominence as a result of pressure, or pressure in combination with shear and/or friction<sup>1</sup>. These ulcers are of different types and can occur in several parts of the body. These ulcers are common in bedridden patients, patients with demyelinating disease, human immunodeficiency virus (HIV), syphilis, leprosy, diabetic ulcer on fore foot or heel and head of metatarsal, after prosthesis, ageing skin, poor nutrition and iatrogenic conditions<sup>2</sup>.

#### Management of Pressure Ulcer<sup>3</sup> :

- Prevention in high-risk patients is the key step in the management of pressure ulcer. Treatment of pressure ulcers is necessary for patient comfort and to decrease the risk of systemic infection. Greater force over a short period or less force over a larger period

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#### Editor's Comment :

- The management strategy for pressure ulcers encompasses different treatment modalities, pressure off-loading, debridement, cleansing, dressing, and wound closure.
- Surgical debridement is the gold standard method of debriding pressure ulcers.
- Growth factors are not recommended in presence of infection or slough.
- Rotation flap, partial calcanectomy and for minor ulcers only dressing is used for wound closure.

disrupt blood supply to the capillary network resulting into ischemia of the skin. The management strategy encompasses different treatment modalities, pressure off-loading, wound management by debridement, cleansing, dressing, wound surrounding skin care and wound closure. The treatment strategy differs according to the stage of ulcer (Table 1).

#### Offloading :

Measures to be taken while offloading include use of foam, water, gel, air mattresses or mattress overlays, air fluidized mattress or ripple bed, reposition every 2 h, cushioning of bony prominences and care of heels. Ripple bed is preferred over water bed since the rippling action helps circulation under the skin and adjacent skin tissues. It is helpful in patients who cannot reposition themselves independently. Chair cushions and pillows, foam wedges can also be used to reduce pressure. Ring cushion is not used much since it causes pressure points. Customized foot wear for foot ulcers are available to offer relieve from pressure ulcers (Table 2).

#### Types of Wound Debridement :

Surgical debridement is the gold standard method of debriding pressure ulcers. Debridement needs to be repeated since biofilm regrows in 48-72 hours. It is

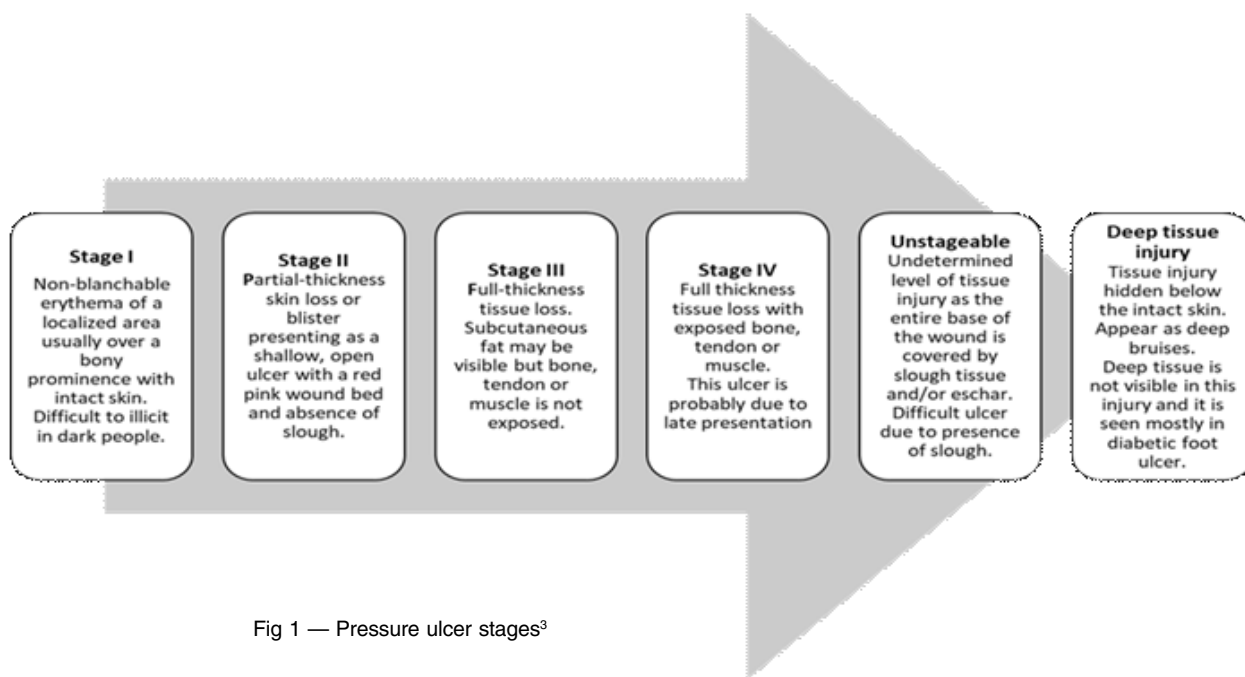


Fig 1 — Pressure ulcer stages<sup>3</sup>

Table 1 — The mainstays of pressure ulcer treatment
<ul style="list-style-type: none"> <li>• Offloading the pressure source</li> <li>• Debridement of devitalized tissue, a very important step</li> <li>• Control of remaining infection with antibiotics</li> <li>• Medical and nutritional support with patient optimization, although it is an empirical treatment</li> <li>• Before initiating antibiotic therapy check for microbial infection, since it is polymicrobial and need more than one antibiotic</li> <li>• Correct anemia and malnutrition</li> <li>• Never send superficial swab since there is biofilm formation</li> <li>• Appropriate dressing selection is critical</li> <li>• Frequent monitoring of progression of wound</li> </ul>

Table 2 — Advantages of offloading
<ul style="list-style-type: none"> <li>• Reduces shear force and pressure</li> <li>• Prevents damage to surrounding tissue</li> <li>• Allows free drainage of exudates</li> <li>• Improves ischemia and healing.</li> </ul>

required to be done frequently so surgical method is not feasible; hence, other debridement methods are available including mechanical, ultrasonic, enzymatic, autolytic and water-jet. Bio-debridement is recently explored method wherein larva of a green butterfly is used that eats slough and cleans wound. However, this method is not accepted and less compliant<sup>2</sup>.

**Ideal Dressings for Pressure Ulcers :**

Dressings are applied for wounds to remove excess exudates and toxic components. It helps maintain a high humidity at wound/dressing interface. Silicone heel cap is also used for dressing and DuoDERM dressing is required only if ulceration occurs. Honey

is also effective for dressing and helps in granulation but should be used carefully due to possibility of contamination with *Staphylococcus* and *Streptococcus*. Growth factors should not be used in presence of infection or slough (Table 3).

A panelist mentioned about a customized portable mini-VAC system used by him for chronic wounds such as charcot foot, non-healing venous ulcer, trauma wound. After debridement, one episode of VAC system is used to reduce exudation. Further, sponge is placed on the wound and connected to drain and cover with wireband to create a negative pressure. Subsequently, platelet rich fibrin treatment is given, dressing is done for four days and granulation occurs; however, if granulation is not satisfactory then platelet rich plasma is injected followed by skin graft and then customized VAC is applied to go into neovascularization phase. This modified treatment approach helps recovery of wound within 12-15 days in a very economical way. The moderator also suggested to use close wound drainage device under negative pressure (Fig 2). Electrotherapy, ultrasound, VAC, topical oxygen therapy, ozone therapy, hyperbaric oxygen therapy,

Table 3 — Advanced dressing materials for wound care	
Advanced dressing materials	Newer interactive dressings used for healthy granulation
<ul style="list-style-type: none"> <li>• High level of exudate                             <ul style="list-style-type: none"> <li>■ Cutimetsorbact, Serapex, Alginate</li> </ul> </li> <li>• Medium to low level of exudate                             <ul style="list-style-type: none"> <li>■ Foam dressing, Collagen, Seasorb</li> </ul> </li> <li>• Anti-microbial dressing                             <ul style="list-style-type: none"> <li>■ Nanocrystalline silver containing dressing</li> </ul> </li> <li>• Hydrogel</li> <li>• Hydrocolloid</li> <li>• Healing factor                             <ul style="list-style-type: none"> <li>■ Platelet growth factor</li> <li>■ Epidermal growth factor</li> </ul> </li> <li>• Bio-engineered skin                             <ul style="list-style-type: none"> <li>■ Apligraf</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Growth factors</li> <li>• Hydrocolloid dressing</li> <li>• NPWT</li> <li>• NPWT with veraflow (Infection)</li> <li>• Artificial dermis</li> <li>• Cadexomer Iodine</li> <li>• Amniotic membrane/ Placental membrane</li> <li>• Hyaluronic acid dressing</li> </ul>

and laser therapy are different adjuvant therapies available for management of pressure ulcers<sup>4-6</sup> (Fig 3). Methods for wound closure include rotation flap, partial calcanectomy, for minor ulcers only dressing is adequate.

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Fig 2 — NPWT with customized portable mini-VAC system

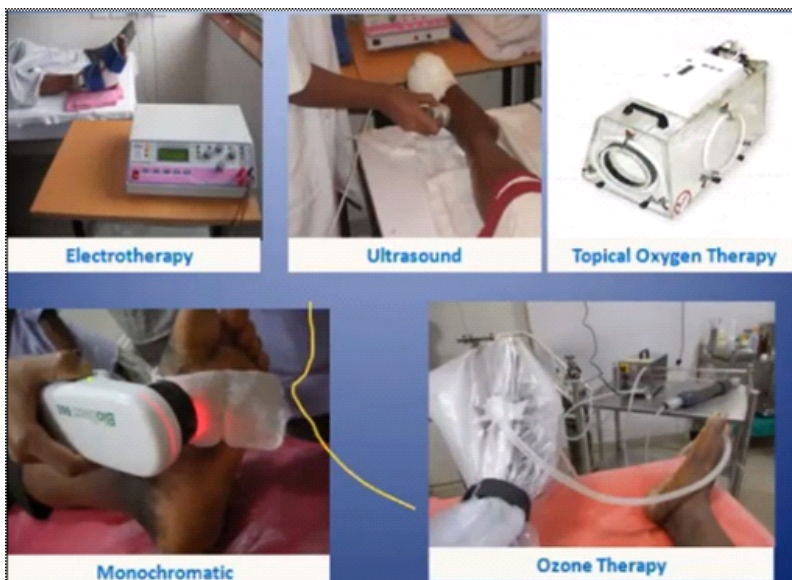


Fig 3 — Adjunctive therapy used in diabetic foot pressure ulcer for wound healing