Wound Assessment & Documentation

MANAGEMENT OF DIABETIC FOOT ULCER

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EPIDEMIOLOGY OF DIABETIC FOOT ULCERS

- Approximately 40-60% of all (non) traumatic amputations on the lower limb are performed on patients with diabetes.
- 85% of diabetes-related lower extremity amputations are preceded by a foot ulcer.
- Four out of five ulcers in diabetic subjects are precipitated by external trauma.
- The prevalence of foot ulcer is four to ten percent of the diabetic population.

Early detection & appropriate prompt treatment of foot ulcer – prevent risks of any foot amputations.

Contributing Factors - Diabetic Foot Ulcer

- Peripheral Neuropathy
  - Sensory
  - Autonomic
  - Motor
- Peripheral Vascular Insufficiency (Ischaemia)
- Infections

Progression of Neuropathic Foot to Ulceration (Bryant 2000)

Walking with a heavy gait without relief to the same areas of the foot

- Callus forms
- Bony deformities exist or develop, adding to the pressure
- Continued pressure results in deeper tissue damage
- Local swelling and necrosis develop
- Ulceration develops

Healing will depend on:
- Relief of pressure + Wound hygiene + vascularity

Role Of A Diabetic Foot Care Nurse

- FOOT ASSESSMENT
- CORN / CALLOUS & WOUND DEBRIDEMENT
- NAIL CARE / TREATMENT
- FOOT CARE EDUCATION
- FOOT WEAR EDUCATION
- WOUND MANAGEMENT
Two Basic Principles Of Good Wound Care

- Identify and control as best as possible the underlying causes.
- Provide an environment for moist interactive wound healing.

Topic Outlines:

- Classification of wounds
- Wound assessment
- Moist healing environment
- Wound dressings

Wound Classification

History taking
- Observation
- Measurement
- Documentation
Wound Assessment & Documentation

**Wound Size**
- "Extreme Lengths"
- "Depth"

**Wound Measurements**
- Surface Area
  - "Wound Tracings"
  - "Grid Photography"

**Wound Bed**
- Necrotic tissue
- Supporting structure
- Granulation tissue
- Epithelium
- Exudate

**Exudate**
- Volume
  - Dry
  - Moist
  - Wet
  - Heavily exudative
- Color & Consistency
  - Serous - thin, clear
  - Serosanguineous - thin, pale red
  - Sanguineous - bloody, bright red
  - Purulent - thick & yellow
- Odor

**Wound edges**
- Undermine
- Condition of Margins

**Periwound Skin**
- Maceration
- Inflammation
Wound Assessment & Documentation

Classical Signs of Infection
- Erythema
- Edema
- Pain
- Heat
- Loss of Function

Additional Indicators of Wound Infection
- Delayed healing
- Discoloration
- Friable granulation tissue
- Elevated white blood cell count
- Abnormal wound drainage
- Odor

Cleansing
- Solutions used must not be detrimental to the healing process

Debridement
- Surgical
- Chemical
- Enzymatic
- Mechanical
- Autolytic

AUTOLYTIC DEBRIDEMENT

Principle of Moist Wound Healing
- Increase healing rates.
- Minimizes the formation of Necrotic tissues.
- Promotes autolytic debridement.
- Provides a non traumatic environment for new tissue.
- Reduced pain.
- Improved Cosmetically.
Wound Classification

- Black necrotic
- Yellow and sloughy
- Red clean granulating
- Pink clean

Treatment Review

- Debride, Rerhydrate
- Deslough
- Protect wound
- Moisture retention

Dressing Needs

- Protection
  - Wound Hydration
  - Moisture Retentive
  - Exudate Management
  - Treat infection

- Moist Wound Healing Provides:
  A Natural Healing Environment “Skin Cells Need Moisture to survive”.

Factors Affecting Choice Of Dressing

- Size of wound
- Amount of exudates
- Infection
- Stage of wound healing
- Patient factors
- Availability of product
- Cost of dressing & accessories

Wound Dressings

Healing is unlikely to be achieved despite appropriate wound dressings, if the causative and contributing factors are not reduced or eliminated.

Selection of Dressings

- Hydrogels
- Hydrocolloid
- Foams
- Silver
- Alginate
- Hydrofiber
- Film
- Enzymatic
- Impregnated dressings
- Collagen
- Total Contact Casting

HYDROGELS

- Cross linked polymers containing a large proportion of water or saline.
- Designed to hydrate wounds.
Hydrogels

Indications:
- For debridement and promotion of granulation tissue.
- Debriding action is due to rehydration of the wound that allows normal autolysis to occur.
- Can be used in dry, mild exudating & sloughy wounds, e.g., necrotic tissues, deep/shallow sinuses, granulating & epithelialising tissues.

Hydrogel - Autolytic Debridement

Hydrocolloid

Indications:
- Adhesive, pliable, absorbents, waterproof wafers.
- Contain hydrophilic colloidal particles in an hydrophobic polymer.
- Hydrophilic particles interact with wound exudates to foam a moist fluid.
- Although all hydrocolloids provide a moist environment, each of the products vary in pliability, absorbency & adhesions quality.

Polysaccharide Foam

Indications:
- Soft, open cell polyurethane foam.
- Available as:
  - Non-adherent & adherent dressing.
- Provides protection.
- Conforms to uneven body surfaces.

Paste

Supplements to wound dressing
- Prevent collapse of undermined wounds

Indications
- Cavity wound: Provides extra support and contact between wound bed & dressing.
**Polyurethane Foam**

**Indications**
- Mild to moderate exudating wounds & infected wounds.
- Can be used as a secondary dressings to provide additional absorption.

**SILVER DRESSING**

- Effective antimicrobial agent against a broad range of aerobic, anaerobic, gram pos, gram neg bacteria, yeast & fungi.
- Can be effective for 7 days.
- Reduce risk of colonisation.
- Maintain a moist wound environment.

**Indications**
- MRSA/VRE & Pseudomonas infected wounds.
- Pressure Ulcer, Venous ulcer, Diabetic ulcer, leg ulcer, Acute wounds, surgical wound.

**ALGINATES**

- Made from seaweed, interact with wound exudate to form a gel.
- Haemostatic properties.
- Available as alginate sheets packing, ribbon/ropes.

**Indications**
- Useful in moderate to heavily exudating wounds.
- Clean wound.
- Sloughy wound.
- Infected wound eg: post operative breakdown.
- Donor site.
- Venous ulcer.
- Pressure sores.

**HYDROFIBER DRESSING**

- Soft, non-woven pad or ribbon dressing composed of hydrocolloid fibers (sodium carboxymethyl cellulose).
- Conformable & highly absorbent dressing absorb wound fluid & creates a soft gel.
- Aids in the removal of unnecessary material from the wound (autolytic debridement).
- Acts as the control of minor bleeding.
- Available also silver impregnated hydrofiber.

**Hydrofiber**

**Indications**
- Leg ulcers, pressure ulcers (stage II – IV).
- Diabetic ulcers.
- Surgical wounds.
- Traumatic wounds.
- Oncology wounds.
- Infected wounds.
- Sloughy wounds.
**POLYURETHANE FILM**
- Adhesive thin transparent water proof film.
- Comes in variety of size.
- Create a “second skin.”
- Protect against friction.

**Indication**
- Used over suture, arterial & venous catheter sites
- Useful for secondary dressing over polyurethane foam, alginates & hydro gels.

**ENZYMATIC DEBRIDERS**
- Contain proteolytic enzymes that attack Eschar, fibrinuous exudates and denatured cells.

**Indications**
- Necrotic Eschar & sloughy wounds.

**Practical Issues**
- Cost needs to be considered.
- Daily dressing required
- Needs secondary dressing

**IMPREGNATED DRESSINGS**
- Cotton on rayon cloths impregnated with substances such as paraffin, petrolatum, woolwax, alcohol and lanolin.
- Also available with antibiotic and antiseptic agents added.

**Indication**
- Clean, granulating wounds. Minor burns, trauma, Laceration/abrasion wound.

**COLLAGEN DRESSING**
- Protein with fibrillar/Porous structure
- Provide matrix for tissues & vascular growth
- High capillary activity to absorb fluid & exudate.
- Helps in wound debridement by attracting monocytes.

**Indications**
- Surgical wounds
- Clean ulcers/wounds
- Burns & skin donor sites

**Practical Issues**
- Do not use on infected wounds

**Treat Infection**
- *Local antibiotics?*
- *Systemic Antibiotics?*

**LEG OEDEMA**
- Compression
- Bandage?
**WOUND MANAGEMENT**

‘Healing is a matter of time, but also a matter of opportunity’

(Hippocrates)

**CONCLUSION**

- Accurate wound assessment, combination of dressing technique and advanced modern wound dressing can greatly improve the clinical outcome on diabetic foot ulcer management

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**PADDINGS & STRAPPINGS**

- Use of various foam/fleecy material
  - To relieve pressure around an ulcer
  - To reduce friction
  - As a temporary orthosis
- Various conformation and material
  - "eg: 1-5 metatarsal pad with a "U"
  - heel pad with cavity
  - Plantar Pad

Temporary measure
- Adhesive or removable

**Wound Care**

- Review
- Monitor regularly
- If the wound / ulcer is not healing, check the dressing selection

**Wound Care**

- " ............... good wound care is patient centred, holistic, interdisciplinary and evidence based."

(D.H. Keast et all 1998)
**WAGNER CLASSIFICATION OF DIABETIC FOOT ULCERS**

- **Wagner 0**: Preulcerative, presence of bony deformity
- **Wagner 1**: Superficial ulcer without subcutaneous tissue involvement
- **Wagner 2**: Penetration through subcutaneous tissue involvement
- **Wagner 3**: Osteitis, abscess, or osteomyelitis
- **Wagner 4**: Gangrene of a digit
- **Wagner 5**: Gangrene of the foot requiring disarticulation

**Conventional Dressings - Drawbacks**
- Adherence to wound
- Limited absorption
- Rapid ‘strikethrough’
- Frequent changes
- Painful removal
- Impaired healing

**Wound Management**

1. Wound Condition?
3. Debride, Resolve, Absorb
4. Amount/viscosity?
5. Location?
6. Dressing Choice