Wound Debridement—Principles and Techniques

Sharpening Your Knowledge and Skills

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The primary goal of wound care is to provide optimal conditions for the natural healing processes of the wound to proceed
What is Debridement?

- A critical component of in wound bed preparation
- The process of removing non-viable, contaminated tissue and foreign material from the wound bed until surrounding healthy tissue is exposed
  - Frequent debridement is associated with favourable wound healing outcome
  - The quicker a clean wound bed is achieved, the faster wound closure can be expected

Significance of Necrotic Tissue

Necrotic tissue is a physical barrier to:
- Formation of granulation tissue
- Wound contraction
- Re-epithelialization

Necrotic tissue in a wound acts as a medium for bacterial growth and thus increases the risk of infection and sepsis.

Necrotic tissue can lead to excessive and ongoing inflammatory response results in wound healing being arrested at the inflammatory phase.
Normal Wound Healing Response

- Coagulation
- Inflammation
- Proliferation
- Maturation

Components:
- Neutrophils
- Macrophages
- Lymphocytes
- Platelets
- Fibrin
- Proteoglycans
- Fibroblasts
- Collagen
- Angiogenesis
- Scar maturation
- Collagen remodeling
Normal Wound Healing Response

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- Platelets
- COAGULATION
- Fibrin

Time progression:
- Minutes
- Days
- Weeks
- Months
Why Debridement?

To remove the physical barrier to epidermal resurfacing, contraction, or granulation

To reduce bacteria burden by removing necrotic tissue

To convert a chronic wound to an acute wound by stimulating the healing cascade

To facilitate earlier coverage of the wound with appropriate dressings
Methods of Debridement

Surgical/Sharp- using scalpel and scissors

Mechanical- a) Hydrosurgery
           b) Ultrasonic wound debridement

Biological- maggot therapy

Enzymatic- streptokinase or collagenases

Autolytic- hydrocolloids and hydrogels
Types of Wounds

Pressure Ulcers
Arterial Insufficiency
Diabetic Ulcers
Venous Insufficiency
Surgical Wounds
Assessment

Location
Stage and Size
Peri-wound
Undermining
Tunneling
Exudate
Color of wound bed / Granulation tissue
Necrotic tissue
Surgical Debridement

Performed in the operating theatre

Involving extensive and aggressive removal of tissue until a healthy bleeding wound bed is achieved

Removal of large volumes of tissue at one time

Converting necrotic wound to an acute wound

Local/regional/general anaesthesia
Forefoot Gangrene

Forefoot Amputation After Revascularization

Fully taken skin graft

4 Weeks 8 Weeks 14 Weeks
Conservative Sharp Wound Debridement (CSWD)

This technique involves debulking the slough and necrotic tissue of wound using a sterile scalpel, scissors or both

Minimal bleeding

Some slough and necrotic tissue can be left.

Debridement can be repeatedly at every dressing change

Rapid result

But needs skills and experience
**Conservative Sharp Wound Debridement**

Used in combination with enzymatic, mechanical, and/or autolytic debridement to speed the removal of non-viable necrotic debris/tissue

May be painful

Topical anaesthesia (Amla cream / lignocaine gel)/ analgesia (eg pethidine injection) may be required

Undertaken in conjunction with other therapies such as autolysis/maggot therapy to enhance healing rates
Mechanism of Wound Closure
(by secondary intention)

Examples: Diabetic foot wounds, pressure sores and venous ulcers
Instruments and Supplies Needed for CWSD

- N/saline and Chlorhexidine
- Gauzes
- Sterile gloves/ sterile drape
- Haemostatic products - Silver nitrate/ alginate
- #15 and #10 scalpels
- Scissors
- Forceps
- Ronguer
- Curette
- Camera
Instruments
Preparation for Debridement

What are the goals? To heal or not to heal

Know the patient’s medical history, vascular status and medications

Wound assessment

Obtain consent from patient/family (expectations, risks and benefits)

Patient and You should be in a comfortable position with adequate lighting

Ensure an aseptic field

Know your limitations!!
Techniques

Hold eschar or necrotic tissue with a pair of tissue forceps

Using a scissors of scalpel to cut underneath but staying parallel to the plane of the wound

Make sure the tip of cutting instruments are well visualized

Remove the tissue in layers – less likely to result in bleeding
How much to Debride?

Depends on the amount of non viable tissue

How much the patient can tolerate

Try to limit CSWD time not more than 20mins per session

Debridement can be performed repeatedly if required

(eg during each dressing change)
Be Cautious in Patients with

- Ischaemic wounds - vascular assessment is required
- No wound improvements over several weeks
- Cellulitis, gross purulence/infection, abscess formation
- Exposed bone or tendon in the wound
- Extensively undermined areas present in the wound
- Malignant wounds
- Clotting disorders/ on anticoagulant therapy
Full thickness dry necrotic cap

Excessive slough
3 weeks later
Silver nitrate /Alginate
Hydrosurgical Debridement

uses pressurised water or saline as a cutting/cleaning tool

The pressure is controlled via a handpiece
Versajet Hydrosurgery System

Redesigned system
- easier, faster set-up
- enhanced control

Intuitive connection
- key lock mechanism
- quicker set-up
- consistent performance
- faster procedural onset

Illuminated locking ring
- lock/unlock symbols guide connection
- green light indicates positive engagement
- confirmed ready-for-use

Multi-function footswitch
- surgical command of power up/down and jet on/off
- improves control and procedural efficiency

Larger LED window
- 150% larger window
- clear view of power setting from up to 15 ft

Gravity prime
- quicker prime
- reduces set-up time
- faster procedural onset
Versajet Hydrosurgery System

Tangential movement with a high-speed saline jet

Excise

Evacuates
Versajet Hydrosurgery Debridement System

A high velocity stream of sterile saline jets across the operating window and into an evacuation collector.

Because of the Venturi effect, a localised vacuum is created across the operating window.

As the power is increased, tissue ablation increases, as does the ability to remove harder, tougher tissue types.
Ultrasonic Wound Debridement
Ultrasonic Wound Debridement

The handpiece contains piezoelectric crystals that convert the electrical signal to mechanical vibrations.

Saline is required to serve as a contact media for the ultrasound waves to travel from the probe into the tissues via direct contact.
Ultrasonic Wound Debridement

Resulting tissue disruption and fragmentation in the wound bed.

Outpatient procedure

Application of topical anaesthetic cream/gel may be required
Ultrasonic Wound Debridement

Pre

Post
Ultrasonic Wound Debridement
Thank you!

Together, we can make a difference!