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BASIC GUIDELINES OF WOUND CARE

***[1]Dr. Rajeev Kumar, [2]Dr. Shashi Prabha and [3]Dr. Ajay Kumar Gupta**

[1]Assistant Professor, Dept. of Shalya Tantra, Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan Haridwar Uttarakhand.

[2]P.G. Scholar Dept. of Shalya Tantra, Rishikul Campus, UAU Uttarakhand.

[3]Professor, Dept. of Shalya Tantra Rishikul Campus, UAU Uttarakhand.

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***Corresponding Author**
Dr. Rajeev Kumar
Assistant Professor, Dept. of Shalya Tantra, Patanjali Bhartiya Ayurvigyan Evam Anusandhan Sansthan Haridwar Uttarakhand.

ABSTRACT

Wound is a discontinuity or break in the surface epithelium. Wound healing is a complex integrated sequence of cellular, physiological, and biochemical events initiated by the stimulus of injury to tissue. Simply wound is divided into acute and chronic wound on the basis of duration. After evaluation of an open wound one should do accordingly like TT immunization, debridement, closure of the wound, treatment of malnutrition etc. wound dressing is an art and it is an essential need for proper wound healing. A good and healthy environment heals wound rapidly.

KEYWORDS: Wound, malnutrition, wound dressing.

INTRODUCTION

Wound is simply a disruption of any tissue – soft tissue or bone or internal organ. A common treatment provided by rural health care providers is wound care. The basic treatment is the same for both acute and chronic type of wound.

Evaluating an open wound

First question: Is it Life-Threatening? For example, a chest wound- where the underlying lung could be injured, an abdominal wound that could involve the contents of the abdominal cavity.

Second question: Is it a fresh (acute) or longstanding (chronic) wound?

An acute wound is one that is less than a few days old, whereas a chronic wound is one that has been present more than a week.

Acute wounds

Start by obtaining a thorough history- both pertaining to the patient and the events surrounding the injury.

1. Tetanus immunization status.

2. Bleeding at time of injury: When evaluating a patient that comes to you with an acute wound, the first step is to control blood loss and evaluate the need for other emergency procedures.

3. Medical illnesses: Malnutrition, diabetes, HIV are a few common medical illnesses that can make a patient more prone to infection and warrant closer follow-up care. Encourage patients with diabetes to keep their blood sugar well controlled.

4. Addiction history: The use of tobacco products dramatically slows the healing process. Strongly encourage your patients to quit smoking immediately.

5. Timing of injury: when did the injury occur?

If less than 6 hours between injury and evaluation, the wound can usually be sutured closed. If more than 6 hours have passed, the wound should not be closed due to high infection risk. EXCEPTION: due to cosmetic concerns and because the face has an excellent blood supply, face wounds may be closed even 24 hours after injury.

6. Examining the wound Each wound should be evaluate as follow as :

a. Need for debridement

Foreign material for example grass, dirt, wood, clothing, must be removed from all wounds as they are sources for infection.

Obviously dead tissue: Loose fat, skin purple in color, or tissue embedded with dirt should be sharply debrided.

b. Cleansing the wound

All wounds should be thoroughly cleansed to allow full examination and subsequent closure. Irrigate the wound with several hundred cc of sterile saline.

Evaluate for any underlying injury : Vascular injury, Nerve injury, Tendon injury, Fracture or joint dislocation.

Chronic wounds

Chronic wounds are wounds that for some reason just will not heal. They may be present for weeks or months or even years.

Common underlying causes and their treatment are:

1. Neglected wound/ poor basic care

Many wounds do not heal simply because they are inadequately cared for. All necrotic tissue must be removed, surrounding infection treated appropriately with antibiotics, and good basic wound care instituted.

2. Foreign material in the wound

Foreign material (wood, glass, pebbles, metal) may cause a reaction in the tissues that prevents wound healing. Ask the patient about the events that caused the wound and this may point you in the direction of looking for foreign bodies. An x-ray may be helpful, but many materials are not seen on x-ray. The foreign material must be removed before the chronic wound will heal.

3. Infection

An infected wound will not heal. If the skin around the wound is red/warm/swollen/tender start the patient on antibiotics. If these signs of infection are not present, antibiotic treatment is usually not warranted.

4. Chronic osteomyelitis

Consider infection of the underlying bone. particularly if there is a history of trauma or an open fracture. Chronic osteomyelitis is a real problem in the developing world. Because the infection in the bone prevents both the soft tissue and the injured bone from healing, it is a major cause of morbidity for patients who have sustained an open fracture. The patient usually requires 6 weeks of antibiotics and the bone must be debrided for healing to occur.

5. Tobacco use

Many people are unaware on tobacco's ill effects on wound healing. Nicotine decreases blood flow by clamping down on smaller blood vessels. Oxygen delivering capacity is also diminished due to carbon monoxide. This is particularly damaging to traumatized tissue and relatively hypoxic tissues such as bone. Encourage your patient to stop the use of all tobacco products.

6. Cancer

A longstanding wound (present for months or years) that looks shiny and will not heal may be a cancer. Usually these wounds look a bit different than the usual open wound- edges are raised and more irregular, surrounding skin may be thicker. Be aware that chronic wounds in a burn scar can turn into a virulent skin cancer- when in doubt, take a small biopsy of the tissue and have it evaluated by a pathologist. The cancer must be completely excised for healing to occur.

7. Malnutrition

Malnutrition is a particularly difficult problem in rural areas. Adequate protein and calories are needed to promote wound healing. Vitamin C, A, iron, and zinc are also important nutrients for wound healing. If available, nutritional supplements for depleted patients are necessary.

8. Diabetes

Patients with diabetes can be notoriously slow healers. Keeping good blood glucose control will promote healing.

9. Medications

Look over your patient's medication list. Steroids and NSAID's can interfere with healing. Vitamin A 25,000IU/day orally or 200,000 IU/8 hours topically for 1-2 weeks may counter the effects of steroids.

10. Radiation Therapy (XRT)

A wound in a previously irradiated field may take a very long time to heal. A short course (1-2 weeks) of oral Vitamin E supplementation (100-400 IU/day) may be useful.

11. Poor circulation

For wounds on the lower extremities, feel for the pulses around the ankle and foot. If no palpable pulses are present, the patient has insufficient blood flow to the extremity and the wound may not heal.

Dressing techniques

The following dressing techniques are easy to do and require no sophisticated equipment. Clean technique is usually sufficient. Pain medication may be required as dressing changes can be painful. Gently cleanse the wound at the time of dressing change.

A. Wet-to-dry

Indication: to clean a dirty or infected wound.

Technique: Moisten a piece of gauze with solution and squeeze out the excess fluid. The gauze should be damp, not soaking wet. You do not need many layers of wet gauze. Place a dry dressing overtop. The dressing is allowed to dry out and when it is removed it pulls off the debris. It's ok to moisten the dressing if it is too stuck.

How often: Ideally, 3-4 times per day. More often on a wound in need of debridement, less often on a cleaner wound. When the wound is clean, change to a wet-to-wet dressing or an antibiotic ointment.

B. Wet-to-wet

Indication: to keep a clean wound clean and prevent build-up of exudates.

Technique: Moisten a piece of gauze with solution and just barely squeeze out the excess fluid so it's not soaking wet. Open the gauze and place it overtop of the wound to cover it. Place a dry dressing overtop. The gauze should not be allowed to dry or stick to the wound.

How often: Ideally, 2-3 times a day. If the dressing gets too dry, poor saline over the gauze to keep it moist.

C. Antibiotic ointment

Indication: Antibiotic ointment is used to keep a clean wound clean and promote healing.

Technique: apply ointment to the wound- not a thick layer, just a thin layer is enough. Cover with dry gauze.

How often: 1-2 times per day.

D. When to do which dressing

- Remember, the goal is to promote healing. We know that a moist environment facilitates healing.
- For a clean wound, it is best to use a wet-to-wet or ointment based dressing
- For a wound in need of debridement the wet-to-dry technique should be done until the wound is clean and then change to a different dressing regimen.

- For a wound covered with necrotic tissue, dressings cannot take the place of mechanical debridement. When present, necrotic tissue must be sharply debrided (although there are some preparations than work to dissolve necrotic tissue, they are very expensive and not readily available in rural settings) and then the wound treated with appropriate dressings.

Sharp Debridement of wound

When a wound is covered with black, dead tissue or thick gray/green debris, dressings alone may be inadequate. Surgical removal- sharp debridement– is necessary to remove the dead tissue to allow healing.

Technique as follow as

Sedation or general anesthesia may be required. However, usually the dead tissue has no sensation, so debridement may be done at the bedside or in the outpatient setting.

Bleeding tissue is healthy, so cut away the dead stuff until you get to a bleeding base.
The patient may only tolerate this for a short period of time. Additionally, you don't want to cut off tissue that may be viable. So, you may have to do this a little at a time, and repeat this procedure as needed until all of the necrotic tissue has been removed.

Wound closure options

Plastic surgeons have organized wound closure options into a reconstructive ladder. The beginning ones are the simplest and require least amount of expertise. If the first steps don't work, proceed up the ladder to more complicated techniques. Unfortunately, they often require expertise that is beyond the basics of this guide to explain.

1. Secondary closure: leave the wound open and do local wound care. The wound heals on its own.

2. Primary wound closure: Suture the wound closed.

3. Delayed primary closure: A good option for a wound that is too swollen to suture together at the time of injury or for a wound that you worry may become infected. Initially the wound is thoroughly cleaned and covered with saline moistened gauze. The dressing is left in place for 24-48 hours and then the dressing is removed. Usually within this timeframe, the swelling has subsided and you can tell whether there is infection. If the wound is clean and the skin can be brought together without it being too tight, the wound is sutured closed. It

is often useful to put a drain in the wound This drain will prevent fluid from collecting under your repair. Remove the drain in 24-48 hours. Orthopedic surgeons commonly use this technique.

4. Skin Graft: Harvest the top layers of skin from a distant sight (usually the thigh) to cover a wound. Split thickness skin grafts (STSG) takes just a portion of the dermis; full thickness skin grafts (FTSG) takes full thickness skin. Usually in a traumatic wound a STSG works better, since it is thinner and "takes" more easily. Neither type of skin graft will take over exposed tendon or bone if its thin layer of connective tissue covering is not present. The suture ends are left long to tie the dressing into place.

5. Local Flap: tissue (skin or muscle) near the wound is moved over to provide coverage for the wound. The donor site is usually closed primarily, but sometimes requires STSG or secondary closure.

6. Distant Flap: if there is no local tissue available to cover a wound, tissue can be taken from a distant sight. Example- burying a hand with a wound into the groin and detaching it later, or taking tissue from the abdomen and completely removing it from the body and moving it to the leg to cover an open fracture (this is a free flap- the vessels to the tissue must be reconnected to vessels in the leg).

The method chosen for wound closure often is determined by the characteristics of the wound. A wound greater than 6 hours old should usually not be sutured closed, unless it is on the face. Just treat it with dressings. A wound with exposed tendons, bone, or other vital structure will need closure- primary closure is best. Sometimes delayed primary closure can be tried. If this is not possible due to the nature of the injury a skin graft or some type of flap will be required to prevent loss of the important structures. If you cannot provide tissue coverage for the wound, the best thing is to thoroughly clean the wound, cover with a sterile dressing and try to get the patient to the appropriate provider in a timely fashion.

SUMMARY

Wounds are common problems for people throughout the world. A wound is simple when only skin is involved. It is complex when it involves underlying nerves, vessels, and tendons. Without proper treatment, significant disability can result. A good understanding of basic

wound care principles will help your patients to heal as quickly as possible with the best outcome.

Thus wound care is the key for proper wound healing.