Wound management principals and their application in clinical environment

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 Case#1. Wound management principals and their application in clinical environment

**Holistic assessment of the patient (medical history and examination of the patient):**

Mr. Will is diagnosed with Rectal Ca Years ago and is 77 years old. Presently he has got issues with oral intakes and he has got pain due to his arterial ulcer and diabetic foot ulcer. His past history shows that he has a Coronary Artery Bypass Graft surgery two years ago and Gastro-esophageal reflux disease chronic obstructive pulmonary disease, postural hypotension and type 2 diabetes. He lives alone in a retirement village and his wife died a year ago. He has got issues with taking food so has been taking soft drinks. He is not being able to control bowel so is using a pad. He can only walk in a short distance and has been taking medication like Ventolin 4 puffs t.d.s, Telmisartan 40 mg at a bad time, b.d, daily two mg of warfarin , Frusemide 20 mg b.d ,Hydromorphone, 2 mg (b.d) and PRNs : Endone 10mg (tds),

He was in the hospital and admitted in a word for wound, pain management and shortness of breath. He had also got a head stroke before coming to the hospital and due to that, he had a big bruise on the top of his face. The doctor did a city scan which showed no appreciable disease but the doctor suggested not to take warfarin until a week due to the massive bruise.

He has got multiple issues like he has got foot ulcer behind his left toe and those damaged tissues need to be removed. He has another major arterial ulcer on his right leg lower side and that is quite infected. The doctor took a sample and send it for pathology. The results were not good and showed major infection. That is not it but on his sacrum bone one pressure ulcer is found and that is causing him unbearable pain when he lays in his spine position and this ulcer is in stage 3. Mr. Jackson has also got rectum cancer and his ulcer has affected 70% of his slow tissues and granulation tissue by 30%.

In a hospital, on his third day he spilt a cup of hot coffee on his hand burned his left arm severely. The burn is sustained in a second degree.

**Type of wounds and their causes**

* **Diabetic foot ulcer:**

A diabetic foot ulcer is defined as a wound that fully thickens and mostly present at a distant level from the ankle of the patient. It leads to amputation when the

Osteomyelitis is involved. It includes pathologies that are mainly diabetic peripheral neuropathy

and arterial disease. Charcot neuropathy is also considered as a special category of DFD. It can also occur due to lack of foot mobility and an ulcer that has previously happened (hamb, S., Vangaveti, V. N., & Malabu, U. H., 2016)

* **Arterial ulcer:**

An arterial ulcer is also called ischemic ulcer and is caused by poor delivery of blood a condition called poor perfusion to the lower extremities. The skin and tissues became deprived of nutrients and oxygen and those tissues got killed wound developed wound there. In addition to that when minor cuts are unable to heal due to poor supply of blood then the change into an ulcer. The etiology of arterial ulcers is the restriction of blood flow due to peripheral vascular disease. Diabetes mellitus is also the cause of arterial ulcer and high blood pressure can also be the reason. Renal failure is another cause. The possible treatment of arteries ulcer is to increase the blood level to the wounded area and to keep the area dry to control the infection (Kim, Wattanakit, & Gornik, 2012)

* **Pressure Ulcer:**

 A pressure ulcer is also called bedsores or pressure sore. It is an injury to the skin and the tissues underlying to it and it is occurred due to continue pressure on the skin. This can happen to anybody but people those are confined to a wheelchair or spend more of their time will get affected more. It can occur in any part of the body that is kept under pressure for long. Most commonly occur in the hip region, elbow, spine and other boney parts of the body. Pressure ulcer took time to grow. It can be cured by changing sitting habits and by quitting smoking because of smoking cause pressure in blood veins (McInnes et al., 2015)

* **Burn:**

Tissues that got damaged due to heat, sun exposure or other radiation due to electrical or chemical; contacts are called burns. Burns could be minor or major depends on the severity of the damage. In the first degree burns only the outer skin got affected and it may cause pain and redness. A second-degree burn affects the second layer of the skin and the epidermis as well. It can cause scarring. A third-degree burn is the severe one and t5he burned area may be black or brown and sometimes white as well. It can damage nerves and causes numbness. Every stage has different sorts of treatments.

**Investigations required for the wound:**

Well, some of the wounds of Mr. Jackson were visible and the sample sent for a pathological test that showed great infection. The bruise was examined through CT scan and it was just on the outer skin no internal complication. Rectum cancer was diagnosed in the hospital as a result of pain. Most of his disease is due to his immobility and diabetes.

**Wound management principles:**

 Wound management principles include defining aetiology that is the cause and condition of the disease. Secondly, the control factors need to be focused for healing then appropriate dressing is done and then maintenance plans are decided (McInnes et al., 2015)

**Evaluation of wound:**

Normal healthy tissue is pink in color and when a wound shows pink that is the symptom of healing. Unhealthy tissues have a dark color and they often bleed and also have infections. Excessive granulation is linked with microbial infections. Chronic wounds are also covered with fibrous shiny tissues In the first presentation, the size of the wound is measured and the outline of the wound is traced by using transparent sheets. All the wounds of Mr.Jakson are round in the shape and they are easy to measure through transparent sheet. An irregular wound is measured through grid tracings (“Pressure ulcers (pressure sores),” 2017)

The condition of the surrounding skin also show the healing stages of the wound. In the case of Mr.Jakson foot ulcer it is fully damaged and turned yellow that shows immense infection. The cellulitis related to the wounds needs to be treated with separate antibiotics. The may need steroid treatment (pressure sores),” 2017)

**Expected healing process of wounds:**

The healing process for severe wounds like that of Mr. Jackson needs to go through four stages for healing. Those are inflammation, where the wounds change color and ooze out some fluid. That need to be dressed properly and proper antibiotic needs to be given. Second is proliferation then angiogenesis, slowed by epidermal restoration and finally contraction of wound and restoration.

The complex process of wound healing occurs in overlapping phases: inflammation, proliferation, angiogenesis, epidermal restoration, and wound contraction and remodeling. Rectum cancer can be healed through chemotherapy or radiotherapy. The burn on his hand is a send degree burn and it needs dressing and medication. The pressure ulcer can be healed through changing sitting positions are by controlling diabetes (Gould et al., 2015).

**Wound management plan:**

For pressure ulcer positioning devices are needed for the healing process and they do not need any wet or dry dressings but dressing that are impregnated with steroid can be needed sometimes. Nutrient could be the primary factor to be considered for the healing of each wound. Protein depletion will delay the healing process of the wound (Gruen, 2010).

The management for arterial ulcer includes debridement and pain control by occlusive dressings. It should be further checked for the control of potential infection. The risk factor with the treatment is that it may be limb and vascular procedures are applied by radiologists. Generically the wounds are kept clean by silver-impregnated dressings for the care of the ulcer (Boike, Maier, & Logan, 2010).There are no such prevention programs but diabetes need to be controlled and smoking needs to be stopped. The burn needs to be cleaned and dressed with sterilized bandages.

* **Health education for the patient regarding the wound:**

The patient having a diabetic foot ulcer, arterial ulcer needs a support system for a moment while pressure ulcer needs to change their sitting position frequently. Protein intake is necessary for healing of the wounds.

**Pain management relating to the wound including:**

 The patient is already using Ventolin 4 puffs t.d.s, Telmisartan 40 mg at a bad time, b.d, daily two mg of warfarin, Frusemide 20 mg b.d, Hydromorphone, 2 mg (b.d) and PRNs: Endone 10mg (tds). And for burns and bruise, he can take antibiotic or pain medication.

**Case#. Wound management principals and their application in clinical environment**

**Medical history and examination of the patient and the wounds:**

Mrs. Miriam Gold is 85 years old and she has got cervical cancer and pneumonia and she is also having an issue with fluid overload due to dialysis. Her past history shows that he had GORD, COPD and CABGS. Currently, she is drowsy. She lives with husband and her family is not in favor of further treatments. She is incontinent and using paid. She cannot move either and is in, Rest in Bed (RIB) condition. She has got malignant wound on her left groin and has developed a sinus due to oozing of pus. It has a strong odor. The area has become red due to the pressure of cervical cancer. Mrs. Gold’s history shoes that she had recto vaginal fistula due to radiotherapy. She has also got venous ulcer that is not improving.

* **Malignant wound:**

The malignant wound is called with a second name called tumor necrosis and it is a fungating or cancerous wound and is caused by the infiltration of primary or metastatic tumors. Infiltrations occur due to an invasion of primary lesion via the bloodstream or lymphatic streams (Lazarus et al., 1994)

* **Venous ulcer:**

Is also well known as stasis ulcer, is the result of lower extremity ulceration. It is possibly caused by inflammation due to leukocyte activation platelet aggregation or endothelial damage ( Collins, & Sera, 2010).

**Wound management principles:**

Compression therapy is needed for managing the wounds of Venous Ulcer. Standard of care is needed along with pneumatic therapy which will control its reoccurrence. Compression care is done 30 minutes for 3-4 times a day (LAUREN COLLINS, & SAMINA SERA, 2010)

Interdisciplinary team management is needed for the management of malignant wounds. As it is nearly impossible to treat the wound due to its strong odor. Teamwork is needed for cleaning, and dressings (Lazarus et al., 1994). The odor of the wound is controlled by the insertion of necrotic materials. The tumor may go very deep due to the development of sinus or the formation of a fistula. The wound is generally pink, black-brown or violet-blue in colors and presents as a non-tender nodule (Lazarus et al., 1994). The wounds for venous ulcer make the entire leg swollen and skins becomes firm and turns into a reddish brown.

**The expectation of the healing process of wounds:**

The venous cancer wounds need to be kept infection free and oedema needs to be elevated. It is a reoccurring type of wound and surface contamination is needed to make it more acute and then it is put in further healing stages. Arterial disease in the patient will interfere in the healing process of the wound. While malignant wounds occur at the last stages of life and the pathology needs to be controlled unless healing will not be expected.

**Wound management plan:**

An adequate nutrient is needed to maintain skin integrity and healing power of the wound. Sheet hydrogel and many other dressing options are available for the treatment of this wound. Yeast infection could be the risk factor in this disease as cancer patient got affected by yeast frequently (Lazarus et al., 1994).

The primary risk conditions for the development of venous ulcer are old age, leg injuries, obesity and deep venous thrombosis. Calamine or zinc impregnated gauze is used for dressing (LAUREN COLLINS, & SAMINA SERA, 2010)

**Health education for the patient regarding the wounds:**

Vacuum-assisted closure is used for mechanical support for a venous cancer patient. The patient with malignant wounds needs to take care of the odor and family members need to be cooperative as in the case of Mrs. Gold they are not showing any cooperation.

**Pain management relating to the wound:**

In the case of venous ulcer, the patient needs to take Pentoxifylline as mono therapy and Aspirin once per day. There are lots of surgical management as well (Lazarus et al., 1994).

Chemotherapy, radiotherapy and hormonal blockage are needed for the treatment of malignant wounds. Patients need to be supported emotionally while going through this process.

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