Chapter 14
Surgical Wound Care

Wound Classifications

- Classified According to
  - Cause
    - Incision or puncture
  - Severity of injury
  - Amount of contamination
    - Figure 14-1
  - Size

Wound Healing

- Phases
  - Homeostasis
    - Termination of bleeding
    - Begins when injury occurs
  - Inflammatory phase
    - Initial increase in flow of blood elements and water out of the blood vessels into vascular space
    - Causes cardinal signs and symptoms of inflammation
Wound Healing (Cont.)

- Phases
  - Reconstruction phase
    - Collagen formation
    - Appears as irregular, raised, purplish, immature scar
    - Dehiscence most frequently occurs during this phase
  - Maturation phase

- Maturation phase
  - Fibroblasts exit the wound
  - Wound gains strength, healed wounds rarely return to strength tissue had prior to surgery
  - Keloids may form

Wound Healing (Cont.)

- Process
  - Primary intention
    - Wound is made surgically with little tissue loss
    - Skin edges are close together
    - Minimal scarring results
    - It begins during the inflammatory phase of healing
Wound Healing (Cont.)

● Process
  ➢ Secondary intention
    • Healing occurs when skin edges are not close together or when pus has formed
    • If wound has purulent exudates, the surgeon provides a means for its release via drainage system or by packing the wound
    • The necrotized tissue decomposes and escapes
    • The cavity begins to fill with granulation tissue
    • The amount of granulation tissue required depends on the size of the wound; scarring is greater in a larger wound

Wound Healing (Cont.)

● Process
  ➢ Tertiary intention
    • Occurs with delayed suturing of a wound in which two layers of granulation tissue are sutured together
    • Occurs when a contaminated wound is left open and sutured closed after the infection is controlled or a primary wound becomes infected, is opened, allowed to granulate, and then sutured

Wound Healing (Cont.)

● Affecting factors
  ➢ Nutritional needs
  ➢ Fluids
  ➢ Rest and activity
Question 1

Wound healing is affected by all except:
1. nutritional needs.
2. activity.
3. rest.
4. medication.

Surgical Wound

- Selection of the site for the surgical wound is based on
  - Tissue or organ involved
  - Nature of injury or disease process
  - Process of inflammation or infection
  - Strength of the site
  - If a drainage system is required, the position of the drain may also influence the placement of the incision

Surgical Wound (Cont.)

- The nurse should inspect dressings every 2-4 hours for the first 24 hours
- On the day of surgery, most wounds will have sanguineous or serosanguineous exudates
- As the exudate subsides, it becomes serous
- Because pressure to the surgical wound retards bleeding, wounds are usually covered by a gauze dressing
- The nurse should inspect both the dressing or incisional area and the area under the patient; exudate follows the flow of gravity
Surgical Wound (Cont.)

- Fluid from the cells clusters with leukocytes along the vessel walls so that fibrin walls off the injury and begins to build a new cell
- The inflammatory response depends on the level of injury inflicted, size of the area involved, and physical condition of the patient
- Phagocytosis occurs when exudate from the injured cell is surrounded, engulfed, and digested by leukocytes
- An infectious process would be evidenced by an elevated WBC count

Wound Care

- Standard steps in care
  - Necessary for safety and well-being of the patient and nurse

Wound Care (Cont.)

- Care of incision
  - Surgical wounds, because they are aseptically created, generally heal well and quickly
  - Incision covering
    - Gauze
    - Semiocclusive
    - Occlusive
Wound Care (Cont.)

- Care of incision
  - Removing dressings
    - Sutured, clean wounds may not be dressed after surgery, or dressing may be removed within 24 hours postoperatively to allow air circulation
    - Sterile technique is followed whenever the wound or dressing is handled
    - A gown, mask, and protective goggles are worn if soiling or splashing of wound exudate is expected

- Dry dressings
  - May be chosen for management of a wound with little exudate/drainage
  - Protects the wound from injury, prevents introduction of bacteria, reduces discomfort, and speeds healing
  - Most commonly used for abrasions and nondraining postoperative incisions

- Wet-to-dry dressing
  - Primary purpose is to mechanically débride a wound
  - The moistened contact layer of the dressing increases the absorptive ability of the dressing to collect exudate and wound debris
  - As the dressing dries, it adheres to the wound and débrides it when the dressing is removed
  - Commonly used wetting agents are normal saline and lactated Ringer’s solution, acetic acid, sodium hypochlorite solution, povidone-iodine, and antibiotic solutions
Wound Care (Cont.)

- Care of incision
  - Transparent dressings
    - Self-adhesive transparent film is a synthetic permeable membrane that acts as a temporary secondary skin
    - Advantages
      - Adheres to undamaged skin to contain exudates and minimize wound contamination
      - Serves as a barrier to external fluids and bacteria, yet still allows the wound to breathe
      - Promotes a moist environment that speeds epithelial cell growth
      - Permits visualization of the wound

- Irrigations
  - Wound cleansing and irrigation is accomplished using sterile or clean technique
  - Cleansing solution is introduced directly into the wound with a syringe, syringe and catheter, shower, or whirlpool
  - Fluid retention is avoided by positioning the patient on his or her side to encourage the flow of the irrigant away from the wound
  - Promote wound healing through removing debris from a wound surface, decreasing bacterial counts, and loosening and removing eschar
Question 2

A gauze dressing is used on an incision to:
1. allow air to reach the wound.
2. permit oxygen but not air impurities to pass through.
3. prevent air and oxygen from passing to the wound.
4. protect the wound from becoming infected.

Complications of Wound Healing

• Impaired wound healing requires accurate observation and ongoing interventions
   Situation can be life-threatening
   Recognizing the seriousness of signs and symptoms is vital throughout the patient’s recovery phase

Complications of Wound Healing (Cont.)

• Wound bleeding
   Bleeding may indicate a slipped suture, dislodged clot, coagulation problem, or trauma to blood vessels or tissue
   If internal hemorrhage occurs, the dressing may be dry while the abdominal cavity collects blood
Complications of Wound Healing (Cont.)

- Dehiscence
  - Wound layers separate
  - Patient may say that something has "given way"
  - It may result after periods of sneezing, coughing, or vomiting
  - It may be preceded by serosanguineous drainage
  - Patient should remain in bed and receive nothing by mouth, be told not to cough, and be reassured
  - The nurse should place a warm, moist sterile dressing over the area until the provider evaluates the site

Complications of Wound Healing (Cont.)

- Evisceration
  - Abdominal organs protrude through an opened incision
  - Patient is to remain in bed, and the wound and contents should be covered with warm, sterile saline dressings
  - The surgeon is notified immediately
  - This is a medical emergency, and the wound requires surgical repair

Complications of Wound Healing (Cont.)

- Wound infection
  - Surgical wound becomes contaminated
  - CDC labels a wound "infected" when it contains purulent drainage (pus)
  - A patient with an infected wound displays a fever, tenderness, and pain at the wound site; edema; and an elevated WBC count
  - Purulent drainage has an odor and is brown, yellow, or green, depending on the pathogen
Staples and Sutures

- The surgeon’s goal is to enter the cavity involved, repair the injured or diseased area, and minimize trauma as quickly as possible
- Many options are available to the surgeon for closing the surgical incision
  - Sutures, staples, Steri-Strips, butterfly strips, and transparent sprays and films
  - Binder or bandage used to support the incision or secure dressings without the use of adhesive materials

Staple and Suture Removal

- Provider’s written order is always obtained before implementing either skill
- The time of removal is based on the stage of healing and extent of surgery
- Sutures and staples are generally removed within 7 to 10 days after surgery, or sooner if healing is adequate
- The provider determines and orders removal of sutures or staples one at a time or removal of every other suture or staple and replacement with a Steri-Strip as the first phase, with the remainder removed in the second phase

Staple and Suture Removal (Cont.)

- Sutures
  - Sutures are threads of wire or other materials (silk, steel, cotton, linen, nylon, and Dacron) used to sew together body tissues
  - Sutures are placed within tissue layers in deep wounds and superficially as the final means of wound closure
  - Deeper sutures are usually made of absorbable material that disappears in several days
  - Types include interrupted or separate sutures, continuous sutures, blanket sutures, and retention sutures covered with rubber tubing for strength
Staple and Suture Removal (Cont.)

- Staples are made of stainless steel wire, are quick to use, and provide ample strength.
- They are popular for skin closure of abdominal incisions and orthopedic surgery when the appearance of the incision is not critical.
- Leaving a staple in too long makes removal more difficult and increases the risk of infection.
- Removal of staples requires a sterile staple extractor and maintenance of aseptic technique.

Question 3

A 54-year-old patient had an appendectomy which opened unexpectedly 6 days postoperatively. When an incision opens like this, it is known as:

1. evisceration.
2. dehiscence.
3. an infection.
4. being a phase of wound healing.

Exudate and Drainage

- Exudate
  - Fluid, cells, or other substances that have slowly exuded from cells or blood vessels through small pores or breaks in the cell membrane.

- Drainage
  - Removal of fluids from a body cavity, wound, or other source of discharge through one or more methods.
Exudate and Drainage (Cont.)

- Serous
- Sanguinous
- Serosanguineous
- If the tissue is infected, exudate/drainage may be brown-green purulent
- Exudate/drainage from organs has its own particular color (bile from the liver and gallbladder is green-brown)

Exudate and Drainage (Cont.)

- The type and amount produced depend on the tissue and organs involved
- More than 300 mL in the first 24 hours should be treated as abnormal
- When patients first ambulate, a slight increase may occur
- Assess color, amount, consistency, and odor
- It may be contained either in a drainage system or on a dressing

Exudate and Drainage (Cont.)

- Drainage systems
  - They are used in procedures in which organs were removed or repaired
  - A mechanism is needed to assist gravity in removing exudates from the cavity
  - To facilitate drainage, an incision or a stab wound is made close to the surgical site and drains exudate away
Exudate and Drainage (Cont.)

- Drainage systems
  - Closed drainage
  - Open drainage
  - Suction drainage
- Requires close monitoring

Exudate and Drainage (Cont.)

- Drainage systems
  - Care of the T-tube drainage system
    - After surgical removal of the gallbladder, the bile duct is often inflamed and edematous
    - A drainage tube is frequently inserted into the duct to maintain a free flow of bile
    - The long end of the T-tube exits through the abdominal incision or a separate surgical wound
    - The tube drains via gravity into a closed drainage system
    - The collection bag is emptied and measured every shift

Exudate and Drainage (Cont.)

- Drainage systems
  - Wound vacuum-assisted closure
    - Uses negative pressure to remove fluid from surrounding the wound
Question 4
A 34-year-old female patient had a cholecystectomy (gallbladder removal). Preoperatively the physician explained she may have a drainage system because after surgery the bile duct is often inflamed and edematous. This type of drain is called a:
1. Penrose drain.
2. Hemovac.
3. Jackson-Pratt drain.
4. T-tube drain.

Bandages and Binders
- After a bandage is applied, the nurse should
  - Assess, document, and immediately report changes in circulation, skin integrity, comfort level, and body function such as ventilation or movement
  - Loosen or readjust as necessary
  - Have an order to remove or loosen a dressing applied by a provider
  - Explain to the patient that any bandage or binder feels relatively firm or tight
  - Assess to be sure it is properly applied and is providing therapeutic benefit; soiled bandages should be replaced

Nursing Process
- Nursing diagnoses
  - Impaired skin integrity
  - Imbalanced nutrition: more than body requirements
  - Imbalanced nutrition: less than body requirements
  - Ineffective tissue perfusion (specify type)
Question 5

When applying any type of bandage or binder, the nurse is responsible for assessing which of the following? (Select all that apply.)

1. Skin for irritation or abrasions
2. Underlying wound
3. Patient’s level of comfort
4. Ability of the patient to move independently before or after the application