Procedure LC: Skin Grafting

Directions: Listen to the following lecture on skin grafting. You will hear it twice. After the first reading, you will have one minute to look over your notes, and after the second reading, you will have one minute before you hear the questions. Circle the best answer for each question. Now, take one minute to study the vocabulary words below and the answer choices for each question.

Vocabulary:
1. compromised adj. – unable to function optimally
2. aesthetic adj. – attractive or appealing
3. to procure v. – to obtain
4. to harvest v. – to collect
5. to opt for v. – to choose
6. diligent adj. – hard-working, persevering
7. to abstain from v. – to refrain from
8. serous adj. – the clear portion of any body fluid
9. thermoregulation n. – a process that allows the body to maintain its core internal temperature

Notes to teachers: 1) Please pause for 3 counts at the end of each sentence and 5 counts between paragraphs; 2) Pause for 1 minute at the end of the first reading; 3) Allow students 1 minute to look over their notes at the end of the second reading; 4) Pause for 5 seconds after reading each question the first time and 8 seconds after the second reading.

Skin Grafting

The skin is the largest organ of the human body. It protects the body from fluid loss and helps regulate temperature. It also plays a role in preventing disease-causing bacteria or viruses from easily entering the body. When the skin is extensively damaged and left to heal on its own, the wound may develop excessive scarring and even impede movement of a limb. Moreover, a person’s overall health may be compromised, and major complications may result. These include infections, fluid loss, and worsening of the wound. In Kuwait, two common sources of skin damage are ulcers and skin burns. Ulcers are common because the incidence of diabetes in Kuwait is very high, affecting nearly 40% of the population. Of these diabetics, one-quarter develop lower limb ulcers that often result in chronic or non-healing wounds. The skin burn cases in Kuwait mainly occur at home due to cooking gas accidents, scalds from boiling water or very hot cooking oil, or from clothes catching on fire. Aside from ulcers and skin burns, skin damage due to diseases or pressure sores can be treated with a procedure known as skin grafting. Skin grafting is also used in cosmetic and reconstructive surgery. In this procedure, healthy skin is obtained from a donor site and is then transplanted onto damaged or missing skin. Skin grafting is performed in three stages: preparation, the actual procedure, and post-procedure care.

The first stage of the skin graft procedure is preparation, which takes place several weeks before the scheduled operation. During this time, the doctor examines the wound, and accordingly decides what type of graft to use. Split-thickness grafts can cover large areas on the recipient’s body, but they tend to be fragile, may appear paler than the patient’s adjoining skin and do not grow in size; in fact, they may contract. More
importantly, a split-thickness graft is only successful if the wound is largely superficial since the blood vessels that nourish the grafted tissue come from the dermis of the wound itself. To obtain the skin for the graft, the surgeon removes the top two layers of the skin, the epidermis and part of the dermal layer, from the abdomen, thigh, or back of the donor. Another type of graft is a full-thickness graft. It is created from donor blood vessels as well as the epidermal and complete dermal layers from the donor area. These grafts are generally used for small wounds but are also used for severe burn injuries. While they offer a superior aesthetic outcome, the donor site requires a long time to heal, and the graft on the recipient has a greater chance of failure than a split-thickness skin graft. The third type of graft is a composite skin graft, during which the surgeon removes, manipulates, and shapes various combinations of the donor’s dermis, fat, or cartilage for three-dimensional reconstruction. Combinations can be composed of skin and fat, skin and cartilage, or soft tissue and fat. For all three types of grafts, skin can be procured from various sources. An autograft is obtained from different areas of the patient’s own body. Alternatively, skin can be obtained from another person, which is called an allograft. If skin is used from an animal, it is called a xenograft. Allografts and xenografts provide only temporary covering; eventually they are replaced with an autograft.

The second stage is the actual procedure, which varies in duration from person to person, depending on the requirements of the patient’s wound. Initially, either local or general anesthesia is administered to the donor and recipient. Then, both the wound and donor site are cleaned with saline solution. In the next step, the wound is measured, and the size and pattern are traced and outlined over the donor site with a surgical marking pen. To allow for shrinkage, the outline on the donor site is enlarged by 3 to 5%. When the appropriate measurement and outline are complete, the donor tissue is removed with a scalpel, after which the donor site is closed with stitches. Throughout the procedure, the blood pressure and temperature of both patients are monitored. Once the surgeon has harvested the skin from the donor, he places it on the damaged site on the recipient and fastens it with stitches or staples. If the surgeon opts for a split-thickness graft, he may mesh the donor tissue by cutting holes in it and stretching it. In contrast, if a full-thickness graft is used, it is trimmed to further match the size of the wound. Lastly, a pressure bandage is applied over the new graft. The new graft initially survives on oxygen and nutrients from the underlying tissue. Within 36 hours, new blood vessels begin to grow. New skin cells then grow from the graft to cover the damaged area with new skin.

Once the patient returns home, he follows recovery instructions to prevent primary complications, which are infections, graft contractures, hematomas, and seromas, pockets of serous fluid. The patient is prescribed analgesics, antibiotics, and medication to relieve itching. The anti-itching medication should not be taken until bedtime as it results in sleepiness; however, this decision depends on the patient’s ability to withstand the itchiness. In addition, the patient must take the full course of antibiotics recommended by his doctor to avoid antibiotic resistance. While vitamin E promotes skin healing, the patient must not use it for 5 to 7 days after surgery since it further contributes to the development of hematomas and seromas. Aside from following the medication instructions, the patient must diligently protect his skin graft. This involves abstaining from vigorous activity and limiting movement for at least one month. To prevent scarring and skin color changes, the patient is required to avoid direct sunlight for at least 6 months after the surgery. When bathing, he uses mild soap, carefully pats the area dry with a soft towel, and applies a clean, new bandage. After 6 months of recovery, any mismatch in the color and texture of
the graft compared to the patient’s own skin can be corrected with spot dermabrasion, laser resurfacing, or vascular laser.

Conclusion is omitted.

Listening Comprehension Questions: Skin Grafting

1) Which type of graft is used for breast reconstruction after mastectomy in breast cancer cases?
   a) autograft
   b) split-thickness graft
   c) full-thickness graft
   d) **composite skin graft** lines 32-34 (3-D reconstruction)

2) In which order do the following events occur after the skin graft procedure?
   a) new blood vessels grow, new skin cells grow, graft covered with new skin, nutrients received from underlying tissue
   b) **oxygen used from underlying tissue, new blood vessels grow, new skin cells grow** lines 55-57
   c) new skin cells grow, graft covered with new skin, new blood vessels grow, oxygen used from underlying tissue
   d) nutrients received from underlying tissue, new skin cells grow, new blood vessels grow, graft covered with new skin

3) Which type of graft involves skin taken from an animal?
   a) autograft
   b) alternate graft
   c) allograft
   d) **xenograft** line 38-39

4) What damages the skin?
   a) burns line 8
   b) pressure sores line 12-13
   c) disease line 12
   d) **all of the above** lines 7-13

5) What is NOT a function of the skin?
   a) **absorb melanin** lines 1-2
   b) prevent fluid loss line 2
   c) thermoregulation line 2
   d) serve as barrier to disease lines 2-3
6) Which is NOT a complication of an untreated skin wound?
   a) impaired movement
   b) pressure sores
   c) loss of fluid
   d) none of the above

7) Which of the following is FALSE about a split-thickness graft?
   a) They can withstand considerable pressure.
   b) They can be used to form a mesh.
   c) Sometimes they are obtained from the donor’s back.
   d) They contract.

8) Skin grafts are sometimes unsuccessful.
   a) true
   b) false

9) Which of the following is NOT a purpose of a skin graft?
   a) to replace damaged or missing skin
   b) to serve as a temporary covering
   c) to cover scars
   d) to alter the appearance of the nose

10) In which order do the following events occur during a skin graft procedure?
    a) anesthesia administered, wound cleaned, donor tissue removed, pressure bandage applied
    b) anesthesia administered, wound cleaned, graft placed on recipient, donor site closed with stitches
    c) wound cleaned, graft placed on recipient, pressure bandage applied, donor site closed with stitches
    d) wound measured, wound site cleaned, anesthesia administered, graft placed on recipient

11) Which type of graft involves skin taken from another person?
    a) autograft
    b) allograft
    c) temporary graft
    d) xenograft

12) Which of the following is true in the case of a full-thickness graft?
    a) The graft could fail.
    b) Blood vessels are removed.
    c) It requires a long time to heal.
    d) all of the above