

Skin Grafting

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The Skin, being the largest organ of the body measuring about 1.6m² in a medium built adult, offers as wide a selection of grafting operations as one can imagine. It is documented that the Hindus in India performed skin transplants as early as 3000 years BC. However it was in the last century, that skin grafting was researched, revolutionised and put under the heading of Plastic and Reconstructive Surgery. The nursing care too, has to be specialised so as to deal with the different, delicate operations performed.

Skin Grafting is one of the basic procedures of Plastic Surgery. Skin Grafting is the removal of healthy skin from an area of the body (donor site) and the transplantation to another area (recipient area) where the skin has been damaged. The most commonly used donor sites are the buttocks, the thigh and the forearm.

The Skin

The skin covers the body and protects the deeper tissues from injury, from drying and from invasion by foreign organisms. It contains sweat glands and hair follicles which play an important part in the regulation of body temperature. Sebaceous glands help to maintain the skin soft and healthy, whilst the sensory nerve endings within form the sense of touch.

The skin is composed of two layers, the outer non-vascular layer is called the Epidermis whose surface is worn away whilst new cells are supplied thus protecting the underlying structures. The Epidermis in the weight bearing areas is much thicker. The deeper layer is called the Dermis and is made up of vascular connective tissue which is tough, flexible and highly elastic. This layer protects and nourishes the organs of the skin. This layer varies in thickness too, thus being thicker on the posterior aspect of the body than the front.

Skin Grafting is categorised into three types:

1. Split Skin Graft – This type involves the harvesting of the epidermis and a part of the dermis. The thinner the graft is, the more likely it is to take and increases the chances of pigmentation and contraction, whilst decreasing the healing time of the donor site. This type of grafting is most suitable in cases of severe burns where the donor area is limited and this same area has to be utilised again. A Braithwaite knife or a Dermatome is used to shave the skin graft from the donor site. The skin is then passed through a Mesher machine producing small slits which will allow any blood or fluid to pass through once the skin is transplanted. The skin graft is always stitched or stapled to the recipient area to prevent it from displacing. The graft is covered with a non-adherent, absorbent, light compression dressing and left covered for five days. The donor area is covered with a non-adherent, absorbent dressing and left covered for ten days. These patients are nursed with complete bed rest with the effected part elevated. Pain killers are given to alleviate pain at the donor area. These measures will help to prevent swelling, reduce pain and improve the chances that the graft will take. Once the areas are healed,

moisturising creams are applied, once or twice a day for as long as three months.

2. Full-Thickness Graft – For a better end result, a full-thickness skin graft is necessary. This type of graft involves the entire thickness of skin (Epidermis and Dermis). This skin graft is excised by using a scalpel and scissors. It is stitched to the recipient area using a tie-over of foam or cotton wool

so that all of the graft is made to maintain contact with the raw area for healing to take place. The outcome of the full-thickness graft is like that of normal skin, so it is recommended for areas where cosmetic appearance is needed eg. face. Damaged skin overlying joints is also replaced by this type of graft, to help maintain the full range of movement. Common donor sites are the areas behind the ears, the neck, inner side of the upper arm and the groin. The edges of the donor area are stitched together, or if the area is big, a split skin graft is applied. It is very

important to protect the area from trauma or stretching and maintain elevation for two weeks.

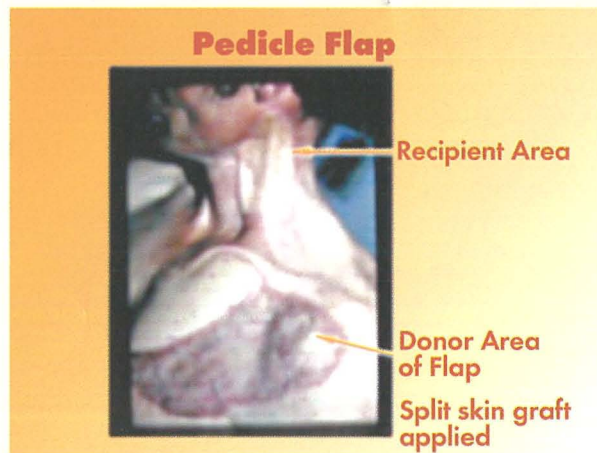
3. Composite Grafts or Flaps – Composite grafts are combinations of skin and other deeper tissues such as fat, fascia, muscle and bone. Such grafts are used in areas that require three dimensionality such as the nose, chin, breast, etc. Plastic and Reconstructive Surgery refers to such delicate and professional skill combined with artistic abilities of the surgeon.

Flaps are classified as being either Local or Distant.

A Local flap is an elevated piece of tissue attached at one end and which is constructed next to a wound. The flap is left attached so that the blood supply is left intact. The flap is then rotated and stitched over the wound. The area from where the flap is taken is closed with stitches. Its use is mainly on the face and any other part of the body where the blood supply is not compromised.

A Local Flap can be devised differently as:

- a. Rotation Flap;
- b. Advancement Flap;
- c. Transposition Flap.



Stomach Cancer: Preoperative Staging

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Figure 4b: Axial CT scan demonstrates an enlarged lymph node (arrowhead) in the hepatoduodenal ligament adjacent to the proper hepatic artery (arrow), which are barely visible on axial PET scans.

Detection of lymph node metastases in compartments III-IV can change the extent of lymph node dissection or may preclude unnecessary surgery. Metastases at these sites would be easier to identify at PET because they are located away from the primary lesion.

Solid organ metastasis is uncommon in primary gastric cancers at the time of initial diagnosis, but its detection is important in treatment planning. Hematogenous metastases from gastric carcinoma most commonly involve the liver because the stomach is drained by the portal vein (Figure 5). Other less common sites of hematogenous spread include the lungs, adrenal glands, and skeleton. In the case of ovarian metastasis (Krukenberg

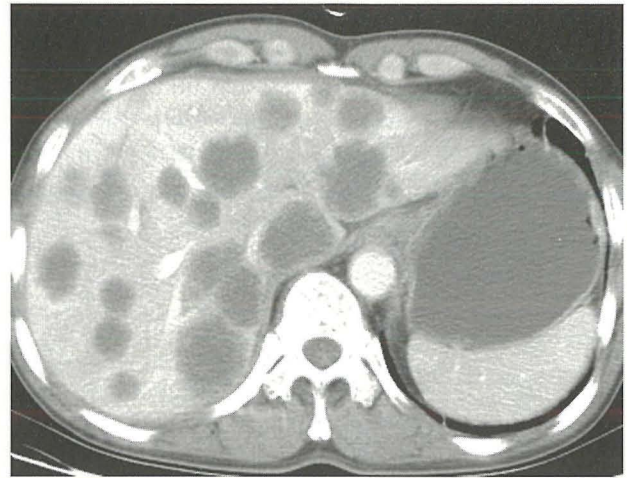


Figure 5: Multiple hepatic metastases in a 58-year-old man with stomach cancer.

tumor), three possible pathways have been considered: peritoneal dissemination, lymphatic spread, and hematogenous spread. CT readily detects distant solid organ metastasis. Peritoneal metastases are also readily seen by CT, while FDG PET is helpful when CT is equivocal.

CT is the imaging modality of choice for the preoperative staging of gastric cancer and the follow-up of affected patients. FDG PET is a useful adjunct for the detection of distant metastases and metastases in non-enlarged lymph nodes. In addition, FDG PET may play a valuable role in distinguishing residual cancer from scar tissue after therapy. ☐

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Distant Flaps are constructed from areas of the body specifically containing a named blood supply.

Distant Flaps can be either **Pedicle** or **Free**.

A **Pedicle Flap** is constructed by raising the tissues needed, leaving them attached to a small pedicle containing the supplying vessels and transplanting them on to the recipient area that may have lost skin, fat, muscle and bone. The blood supply remains intact at the donor site and is not cut loose until the new blood supply has completely developed at the recipient site.

Free Flaps are used when the recipient area is further away from

the donor site. Also called **Microvascular Free flap**, this involves detaching and reattaching the tissue and its blood vessels from one site to another. Microsurgery is used to attach the blood vessels.

Nursing care is very important in this process. Apart from helping the patient in every aspect, great care and observation is needed to prevent any undue pressure occurring over the Flap and its Pedicle. Preservation of the circulation to the Flap is vital. Such care must be continued up to at least six weeks. Afterwards, moisturizing creams are applied on both the grafted area and the donor site till need be. Both areas are protected from direct exposure to sunlight.

During the first couple of months the

areas involved look a bit like a patchwork which may be depressed or raised. It is never exactly similar to surrounding normal skin, but the appearance definitely improves with time. ☐

Acknowledgements

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