EQUINE SKIN GRAFTING – FULL AND PARTIAL THICKNESS
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Key Points
- Skin grafting is a viable technique in any equine veterinary practice.
- “Pinch” and “Punch” grafts require the least amount of extra equipment, and can be very effective.
- Grafting should be considered as soon as the granulation bed is healthy enough to accept grafts.

Skin grafting is generally reserved for wounds that have a very large skin defect that would not heal functionally or cosmetically with standard wound therapy intervention. The wounds should be treated with moist wound healing concepts to prepare the wound bed to receive the skin graft. The most common circumstances that will lead to failure in skin grafting are infection, poor granulation tissue, and excess movement at the graft site. Consequently, the wound bed must be free of infection and have a healthy granulation tissue bed prior to grafting. If a previous graft has failed, quantitative bacterial analysis should be performed prior to placing a second graft. If the wound is over a site of excess movement, some type of wound immobilization, such as splinting or casting, should be performed. Regardless of the location of the wound, it is recommended to leave the original dressing in place for seven days prior to changing. This will reduce the chance of dislodging the grafts.

Full thickness grafts including epidermis and dermis will give the best cosmetic result, while partial thickness grafts will provide the best chance at success.

When choosing the donor site, it is best to select a site that will not leave a significant cosmetic blemish. Either the side of the neck, under the mane or the ventral abdomen are the most common sites. A secondary consideration is the hair color.

Skin grafting can be performed using many different techniques. The techniques will be listed in order of easiest to most complex.

**Pinch Grafting**
Pinch grafting requires the least amount of equipment of the listed techniques. The grafting can be performed with a number 12 scalpel blade, a thumb forceps, and a mayo scissors. The skin is tented with the thumb forceps and cut off with the scalpel blade. The grafts should be no larger than 8 to 10 mm in diameter. The subcutaneous tissue is removed with scissors. Pockets are made in the granulation tissue with the scalpel blade, and the grafts are placed into the shallow pockets. The graft site is dressed with a non-adherent dressing such as Hydrasorb or petroleum impregnated dressings and a pressure bandage applied. This technique can be performed in the standing horse.

**Punch Grafting**
Punch grafting requires similar instrumentation as does the pinch grafting as well as 6 mm and 8 mm skin punches. The 8 mm punch is used at the donor site to cut through the epidermis and dermis. The sub-cutaneous tissue is trimmed from the graft, and the graft placed on saline soaked gauze. It is best to maintain normal orientation of the hair on the grafts for the most normal cosmetic result at the wound site. The 6 mm punch is used at the wound site to
remove a granulation tissue plug. The granulation tissue plugs are removed, cleaned of blood, and filled with the skin plugs. The graft site is dressed with a non-adherent dressing such as Hydrasorb or petroleum impregnated dressings and a pressure bandage applied. This technique can be performed in the standing horse.

**Tunnel Grafting**

Tunnel grafting requires removing long narrow strips of skin from the donor site. A long forceps is tunneled under the granulation tissue and used to grasp the skin graft. The skin is pulled (taking care to maintain normal orientation) though the granulation tissue, and the ends are sutured to the surrounding skin. The wound is dressed as described above. Approximately 6 to 10 days later, the granulation tissue is surgically removed over the skin grafts. More skin is placed into the wound than with pinch or punch grafts, but less specialized equipment is necessary when compared to sheet grafting. This technique generally requires general anesthesia.

**Sheet Grafting**

Full thickness sheet grafting will generally give the best cosmetic result. However, it requires the most specialized equipment, and has the greatest chance for failure. The biggest reason for failure is movement of the graft over the wound bed inhibiting the in-growth of capillaries. One way to reduce the problems with graft movement is to “mesh” the graft. Graft meshing is beneficial for two main reasons. It allows evacuation of exudate from between the graft and the wound bed, and it allows coverage of a larger area without having to remove as large of graft from the donor site. Full grafting is best performed with a dermatome that will remove a similar thickness sheet from the donor site. The dermatome can be set to remove a partial thickness, or a full thickness graft. The harvested graft can then be placed through a mesher to “mesh” the graft for the reasons previously described. The graft is sutured into place around the periphery of the wound and then dressed as previously described. This technique requires general anesthesia. “MEEK” grafting looks especially promising.

**Pedicle Grafting**

Pedicle grafting requires that there is enough skin close to the wound defect to be able to rotate skin into the area while still leaving at least some vascular supply intact. In most cases, this technique is used in the head region of horses, especially to cover fistulas over the maxillary sinus. The donor site may have to be left open to heal by second intention. The distal limbs do not have enough extra skin in most cases to rotate tissue. This technique requires general anesthesia.

**Suggested Reading**

- Wound Care Management for the Equine Practitioner, Dean A. Hendrickson, Teton NewMedia, Jackson, Wyoming, 2004
- Handbook of Equine Wound Management, Derek C. Knottenbelt, WB Saunders, Edinburgh, UK 2003