

SPEAKER 1: In this segment, we'll show you how to set up for and perform a good operative skin harvest and graft over a burn. First let's talk about the timing of excision and grafting. If a burn will not heal within three weeks, it ought to be treated surgically. If the burn is too deep to heal in that time, then grafting is the preferred solution. For a full discussion of how to assess the depth of a burn, watch the segment on burn assessments.

Grafts can be either full thickness or partial thickness. Full thickness grafts are generally used for coverage of areas that require excellent cosmetic or functional results. The size of full thickness grafts is limited by the available donor sites. The area behind the ear, redundant skin tissue on the extremities, and the groin. Donor wounds also need to be closed primarily, thus further limiting the extent of skin available. Split thickness allows for re-epithelization of the donor bed. In fact, the donor site can be thought of as a partial thickness burn.

Most importantly, the ability to mesh split thickness grafts allows you to provide broad coverage from a relatively small donor area. As your patient enters the operating room, think about patient positioning. The optimal patient position will allow comfortable access to the donor sites. Given time to heal, the same donor site can be used repeatedly. The inter lateral thigh is an optimal site for supine patients. Other common harvest sites include the back and buttocks. In larger burns, where harvest sites become limited, we may use less common donor sites such as the abdomen, chest, and arms. Donor sites may have significant scarring problems, so that less visible sites are desirable.

In infants and toddlers, the buttocks are often used because they can be simply dressed with silvadene diaper changes, and tend to be covered by clothing as the child matures. It's important to be sure that you plan to harvest enough donor skin. You never want to come up short when placing your graft. Grafts will contract after they're placed, so it's important to account for this primary contraction when planning how much skin you'll need.

Mesh grafts should never be stretched tightly over the graft site. The thicker the graft, the less primary contraction you'll see. The graft should also be large enough to overlap the margins of the wound, which will otherwise heal by secondary intention, and cause ugly scarring. Over time, secondary contraction will occur as the graft shrinks within the recipient bed, which is why grafted areas often appear much smaller over time. Although we'll talk first about harvesting skin, and then about grafting it, it is actually vitally important that the recipient bed be prepared before the skin is harvested.

Only when the recipient bed has been prepared will you know how much skin you'll need to harvest, and even if the wound is ready for grafting at all. Preparing the skin bed for harvesting obviously requires a complete surgical prep. The donor site is shaved and lubricated for the dermatome, using either oil or soap solution. The donor site can be further optimized for harvest by injecting a balance salt solution subcutaneously, to create a firm, flat surface ideal for harvesting.

This isotonic solution is injected subderminally, to avoid peau d'orange, but if you inject it too deep, it won't create the wheel effect. For aesthetic reasons, avoid putting the needle holes into the planned harvest area, if you can avoid it. Partial thickness skin grafts are obtained using a compressed air powered dermatome. The dermatome has a guide and a rapidly oscillating blade. The dermatome guide can be adjusted to varying skin depths to provide varying thicknesses of skin graft. From thick to thin, split thickness. Harvest techniques can be difficult to master.

The key is to provide a steady amount of force to the dermatome, while maintaining proper orientation of the blade to the plane of the skin. When starting a run with the dermatome, the blade is engaged into the skin to cut it at the upper dermis level, and held steady for the length of the harvest. Finally, the angle of the blade has dropped to provide a clean taper at the end of the strip. Both the harvest bed and the wound bed must have excellent hemostasis in order to heal properly. Our way of achieving this is to use Telfa pads soaked with a solution of 1 to 10,000 epinephrine, applied with the shiny side against the wound.

This will create vasoconstriction and hemostasis in the wound bed. Harvests skin can be applied as a sheet graft, or it can be meshed to provide broader coverage and less risk of hematoma or seroma. usual expansion ratios are 1 to 1, 1 to 2, and 1 to 3. Greater than 1 to 3 take a long time to heal, and should be reserved for when donor sites are in very short supply. The dermis is obviously applied against the wound bed, shiny side down is a good rule of thumb. Sometimes the dermis doesn't look that shiny. The other clue is that the graft tends to roll inward toward the dermis side.

Skin can be annealed to the wound bed with the aid of a fibrin sealant, and the edges secured with tape, sutures, or staples, depending on the size, orientation, and location of the wound. Proper dressing of the donor site is vital. There are many different strategies to dressing both the donor side and the graft site, and choosing among them is beyond the scope of this segment.

Simply put, a proper dressing will provide a moist environment for rapid healing, conform to the wound, and be relatively cheap, comfortable, and adherent. It should allow the wound environment to resist infection, should be transparent so the wound can be inspected, and should be easily and atraumatically removed. Unfortunately, no current product comes close to meeting all these requirements. So each burn dressing requires weighing the priorities for each individual wound.