Surgical instruments, suture and dressing materials

Gyong Moon Kim, M.D., Ph.D.

Department of Dermatology, The Catholic University of Korea, Seoul, Korea

Scalpel, scissors, forceps, skin hooks and hemostats, needle holders, curettes constitute the basic armamentarium. Scalpel handles and blades are basic instruments. Bard-Parker and Beaver handle type are available. There are many types of scissors available to the dermatologic surgeon, short or long, straight or curved, smooth or serrated, sharp or blunt. Many subtypes such as iris scissors, Gradle scissors, Westcott scissors, Metzenbaum scissors, LaGrange scissors, Supercut scissors, are used according to various purposes. Forceps may have tips of smooth, serrated, or toothed. Toothed forceps were developed to allow firm grasp of tissue with reduced crush injury. Adson, Brown-adson forceps, Bishop-Harmon forceps, Dejardin Graefe forceps are examples of commonly used forceps. Skin hooks are used for manipulating tissue that is to be sutured or to stimulate flap movements, or planning and removing dog ear defects with single or multiple prongs. Hemostats are used for hemostasis of bleeding. Its main use is in clamping off vessels either for electrocoagulation or ligation with suture. Jacobson hemostat is well known for easy grasping of small vessels. In cases of needle holders, a general rule is to use a small needle holder with small needle and a large needle holder with large needle. Crile-Wood needle holder is used for larger suture materials, Webster needle holder is used for fine suture work. Castroviejo needle holder has a detachable spring handle and is used for extremely delicate procedures such as those on the eyelid. Curettes are used for the treatment of benign or low grade malignant tumors and debulking tumors prior to Mohs micrographic surgery. Other instruments for dermatologic surgery are towel clamps, periosteal elevators, bone chisels, nail splitters.

Suture and needle selection depends upon the type and location of wound closure as well as the size of associated suture materials. Smaller 5-0 and 6-0 sutures are used on the face and the neck, while 3-0 and 4-0 sutures are used on the trunk and extremities.

Wounds with a great deal of tension will require 3-0 or 4-0 sutures. The broadest distinction in suture materials is between absorbable and nonabsorbable sutures. Absorbable suture lost most of its tensile strength within 60 days of placement and used for buried stitches to close the dermis and decrease the epidermal wound tension. Surgical gut, polyglycolic acid (Dexon), polyglactin 910 (Vicryl), polydioxanone (PDS), and polyglyconate (Maxon). Nonabsorbable sutures are resistant to
degradation and will retain most of their tensile strength at 60 days after placement. The most common are silk, nylon, polypropylene, polyester, and stainless steel. Needles are designed to carry suture material through the skin with minimal tissue trauma. The needle is divided into shank, body, sharp point. The curvature of the needle arc are from 3/8 to ½ circle. The needle point is divided in three variants like as conventional cutting, reverse cutting(minimize the risk of tearing), and round with a tapered point(fascia, muscle, aponeurosis). The material and caliber of the suture and the type and size of the needle influence execution of the buried vertical mattress suture. In most cases, a dissolving rather than a permanent suture is ideal for buried sutures.

Dressing materials cover the wound, absorb drainage, apply pressure, and provide moist environment. Dressings should be selected to keep wound moist, but not too wet nor too dry. Moist wound healing enhances epithelial migration, stimulates angiogenesis, helps in retention of growth factors, facilitates autolytic debridement and fibrinolysis, protects against exogenous organisms and maintains voltage gradients. Healing of acute wound is accelerated in a moist environment. In chronic wounds, moist dressing can relieve pain, promote autolytic debridement, and decrease the frequency of dressing changes. Various types of occlusive dressings, as well as skin grafts and skin substitutues, are currently available as dressing options. Various types of occlusive/moisture-retentive wound healing dressings (such as foams, films, hydrocolloids, hydrogels, alginates) are available.