SURGICAL DRESSINGS

A material used to protect a wound and to heal is called a surgical dressing. They serve various functions for the injured site. They remove wound exudates from the site, prevent infection, and give physical protection to the healing wound and mechanical support to the supporting tissues. A good quality of dressing should be durable, easy to handle, sterilized, formed from loose threads and fibres, and it should not adhere to the granulating surface.

Surgical dressings are classified as:

(1) Primary Wound Dressings

Primary wound dressings are applied over the wound surface to absorb pus, mucus and blood. They minimize maceration. Some dressings adhere to the wound surface and cause pain on removing them. Now nonadherent dressings are available such as petrolatum-impregnated gauge, viscose gauze impregnated with a bland, hydrophilic oil-in-water emulsion or an absorbent pad faced with a soft plastic film having openings.

(2) Absorbents

Absorbent cotton is widely used to absorb wound secretions. Other absorbent materials are rayon wool, cotton wool, gauze pads, laparotomy sponges, sanitary napkins, disposable cleaners, eye pads, nursing pads, and cotton tip applications. They are used in the shape of balls or pads.

(3) Bandages

A bandage is a material which holds dressing at the required site, applies pressure, or supports an injured part or checks haemorrhage. The bandages may be elastic or nonelastic in nature. Common gauze roller bandage and muslin bandage rolls are employed most frequently. Elastic bandages may be woven to form elastic bandage, crepe bandage and conforming bandage.

(4) Adhesive Tapes

Surgical adhesive tapes may be a rubber-based adhesive or an acrylate adhesive. Rubber adhesive tapes are cheap, superior and provide strength of backing. In case of operation or postoperation acrylate, adhesive tapes are used to reduce skin trauma.

(5) Protectives

Protectives are employed to cover wet dressings, poultices, and for retention of heat. They prevent the escape of moisture from the dressing. Some protectives are plastic sheeting, rubber sheeting, waxed or oil-coated papers, and plastic-coated papers.

SUTURES AND LIGATURES

A surgical suture is a thread or sting used for sewing or stitching together tissues, muscles, and tendons with the help of a needle. If these threads or fibres are used to tie a blood vessel to stop bleeding without the use of a needle, then they are digested in animal tissues,for example, catgut, kangaroo tendon, and synthetic polyesters. If the sutures are not absorbed in the body, they are called nonabsorbable sutures, for example, silk, cotton, nylon, synthetic polyester fibres and stainless steel wire. A good quality of suture should be well-sterilized, nonirritant; having well-mechanical strength, fine gauze and with minimum time of absorption.

(1) Absorbable Sutures

(a) Surgical catgut

Catgut is a sterilized fibre or strand prepared from collagen of connective tissues obtained from healthy animals like sheep and cattle.

Preparation

- The submucosal layer of small intestine of a freshly killed animal is used for the preparation of catgut.
- About 7.5 m long intestine is cleaned and split longitudinally into ribbons.
- The inner most mucosa and two outer layers of submucosa, muscularis, and serosal layers, are removed with the help of a machine leaving behind the submucosa.
- Up to six such ribbons are stretched, spun and dried to form a uniform strand.
- These fibres are polished to get smooth strings, gauzed for their diameter, cut into suitable lengths and sterilized by placing the catgut in glass tubes filled with anhydrous high-boiling liquids like toluene or xylene and then heating in an autoclave.
- Sterilization may be done by irradiating the suture by electron particles or by gamma rays from cobalt-60.

Kangaroo tendons, used in hernia and bone repairs, are prepared from the tails of kangaroo by the identical method adopted for the preparation of catgut, Chromicized surgical catguts are prepared by soaking the ribbons in solutions of chromium salts for tanning the tissues. These fibres are not affected by proteolytic enzymes in the body and they are not absorbed rapidly in the body.

(b) Synthetic polyesters

The polymers obtained by condensation of cyclic derivatives of glycolic acid (glycolide) with cyclic derivatives of lactic acid (lacticide) are used to prepare synthetic absorbable sutures. These sutures have high tensile strength and are degraded by hydrolysis and absorbed in the tissue.

(2) Nonabsorbable Sutures

Nonabsorbable sutures are not affected by the body fluid and remained unchanged for a long period. They are removed after healing of the wounds. Silk, cotton, nylon, and metallic sutures are classified as nonabsorbable sutures.

(a) Silk sutures

Silk sutures are prepared by spinning or twisting silk fibres into a single strand of varying diameters. The sutures are smooth and strong and braided by combining several twisted yarns into a compact mass. The strands are sterilized and boiled with water to soften them.

(b) Cotton sutures

Cotton sutures have uniform size and recommended in critical parts where strength of the sutures is required for long time.

(c) Nylon sutures

The microfilaments of nylon are braided into strands of required diameter. These sutures are strong, water resistant, and used in skin and plastic surgery.

(d) Linen suture

A linen suture is cheap, very strong under moist condition but not uniform in diameter.

(e) Metallic sutures

Metallic wires of silver or stainless steel are used as surgical aid. These wires are available as mono-filaments, twists, and braids.