Procedures in Practice

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REMOVAL OF DRAINS AND SUTURES

Reasons for insertion

Although drains and sutures are inserted at the end of an operation, when the important parts of the procedure seem to be over, they play an important and at times vital part in the recovery of the patient. It is wise to have a rule that the surgeon who inserted a drain or sutures is the person who decides on removal.

Drains provide a mechanical means of removing material that would otherwise be harmful to the patient, and this may be pus, air, blood, urine, or alimentary secretions. There are three main reasons for inserting drains—namely, to remove air and blood that will delay healing and recovery, to drain abscesses, and to provide a safe and convenient route for secretions to leave the body—and these differing reasons will dictate the way in which the drains are managed.

Removal of air and blood

Although in many operations—for instance, inguinal hernia repair—there is no need to insert any drain, in many clean, planned operations considerable areas are opened up. After total mastectomy air is trapped under the skin flaps and blood and serum will, however good the haemostasis, drain from the chest wall and prevent the skin flaps from adhering if drainage is not provided. A haematoma can be dangerous after thyroidectomy and delay healing after excision of the rectum. In all these circumstances efficient drainage is important, but it is equally important that the drain track should provide no entry for bacteria, so a secure system of closed drainage is essential. Most surgeons now use a "Redivac" type of drain, in which a fine tube with multiple side holes is inserted through a stab wound and attached through closed tubing to a suction bottle: this has proved effective and bacteriologically safe.

The drains are removed when they cease to be useful—usually 24-48 hours after thyroidectomy. After an extensive operation like mastectomy it is important to measure the volume of fluid drained each day, and it is often five to six days before this has dwindled sufficiently to permit removal. These drains are secured by a suture, and on removal this stitch is cut and the drain swiftly withdrawn so that air does not re-enter the wound through the side holes in the tubing.

Intrapleural drains require special care because disconnection will result in pneumothorax. All these drains are attached to underwater seal bottles, and, if suction is not being applied to the open end of the bottle, there should be a respiratory swing in the level of fluid in the tubing.

Management of these drains is always under the control of the surgeon. When the drain is ready for removal the suture securing it to the skin is cut, a pad made of a thick square of tulle gras surmounted by several layers of gauze is pressed firmly over wound and drain, and the drain is swiftly withdrawn; the pad is strapped firmly over the drain hole. In this way entry of air into the pleura during removal should be avoided.

Drainage of abscesses and secretions

Sometimes drains have to remain in position for a long time. After drainage of a subphrenic abscess or an empyema a large cavity is left, which will contract and heal only slowly: the tube must not be removed until the cavity is obliterated. This process is followed up by injecting sodium diatrizoate (Hypaque) along the drain every seven to 10 days and exposing x-ray plates.

Drains inserted to remove secretions are usually placed in the abdomen. After operations such as cholecystectomy and ureterolithotomy the surgeon hopes that there will be no drainage of bile or urine but cannot be certain of this. Accumulation of bile or urine in the body can cause serious complications, so a soft latex-rubber drainage tube (Sterivac) is placed beside the operation site and attached to a sterile transparent plastic bag. If no appreciable drainage is seen in the bag after 48-72 hours these drains may safely be removed.

When urine is being deliberately diverted through a tube—for example, after suprapubic cystostomy or nephrostomy—the timing of removal depends on the reason for drainage and is decided solely by the operator.

After gastrectomy or intestinal resection and anastomosis there is a period of five to seven days during which the anastomosis is healing but still depends on the integrity of the sutures, so it is essential for the drainage tube beside the anastomosis to remain until this period is over and leakage from the suture line is unlikely. There is always a tendency for fibrinous adhesions to occlude an intraperitoneal drain, so it is wise to shorten such drains after four or five days: this often disturbs adhesions and allows a sealed-off collection of fluid to drain. It is essential to fix the shortened drain securely (use 0.5-in zinc-oxide adhesive tape) so that it cannot be accidentally pulled out.

The advantages of using a soft tube instead of corrugated rubber are that the fluid passing along it can be collected, measured, and analysed, and the secretion does not contaminate the abdominal wall. This can be extremely important if, for instance, a pancreatic or small-intestinal fistula should form. Modern disposable drainage bags easily permit collection and measurement and keep the drainage system closed, preventing reflux of air and bacteria along the tubing.

One of the serious aspects of duodenal and pancreatic fistulae is that the enzymes are proteolytic and can cause serious digestion of wounds. With the development of intravenous feeding it is possible to wait while fistulae gradually contract and heal, during which time it is sometimes helpful to use a sump drain. This allows secretions to be aspirated near to their point of origin, which protects the tissues from digestion and keeps the patient comfortable.

Insertion of T tube

After exploration of the common bile duct a T tube of latex rubber is usually inserted to permit direct drainage of the infected and distended duct. The external end of the tube is placed into a sterile plastic bag (sealed drainage) hanging beside the bed, and the volume of bile drained is recorded every 24 hours: occasionally this volume is high and constitutes an important source of water and electrolyte loss. After eight to 10 days' drainage cholangiography is usually performed to ensure that there is free drainage into the duodenum and no sign of a residual stone. The T tube is withdrawn by steady traction 24 hours later.

Removal of skin sutures

Suture marks—the imprinted scar of the pressure of suture material on the skin surface—are determined by the time for which a suture is left in place, its tension, and its position. The aim must be to remove sutures as soon as their purpose is achieved, and on the face and neck scars heal quickly, so that sutures can usually be removed in 24-72 hours. These sutures are small and fine, and it is essential when removing them to have the patient lying comfortably, to work in a good light, and to have a sharp, fine-pointed pair of scissors and fine, non-toothed dissecting forceps. Always divide the suture close to the skin below the knot and then gently pull the suture out towards the side on which it was divided, using the points of the scissors to give counter pressure on the wound.

Incisions that are made in the line of skin creases heal quickly, and sutures in, for example, an inguinal hernia wound can usually be removed in six or seven days. Vertical abdominal wounds heal more slowly and sutures are removed in seven to 10 days; and sutures in the skin of the back and calf need to remain for 10-12 days. If deep nylon retention sutures are placed in an abdominal wound the surgeon will probably keep them in position for 12-14 days.

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