

Surgical Drains

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Although one of the most common and the oldest of the surgical procedures, the effectiveness, indications and efficiency of drains remains the centre of great surgical controversy.

Drains are mechanical conduits for the passage of pus, blood, air, urine, or alimentary secretions to the exterior of the patient. They are broadly classified as (a) passive and (b) active drains.

Passive drains function by over-flow and depend upon pressure differential and gravity, the capillary action of the tube and the absorbent action of the dressing do not contribute much to its function. Thus, passive drains function most efficiently when placed at dependent position and in cavities at greater pressure than the exterior.

Active drains have a source of vacuum connected to them, and are of two types, namely, (a) Sump drains, which are open and (b) closed wound suction, which are not open to the atmosphere.

Drains can be used either prophylactically or therapeutically. The prophylactic use of the drain is intended to prevent the accumulation of blood, pus, bile, intestinal contents, pancreatic secretions or fluid, and rarely to permit the early detection of surgical complications.

When the thorax is in its resting position, the pressure in the upper abdomen varies between -5 cm to -8 cm of water. (Moss, 1981). The prophylactic use of passive drains for upper abdominal surgery, and for all other locations- at negative pressure, yields poor results for obvious reasons. Thus, in the United States and Great Britain the prophylactic use of passive drainage after cholecystectomy, has been found to be the major factor in prolonging the length of hospitalization. (Ross, and Quinland 1975). After splenectomy, the passive drainage is associated with increased incidence of subphrenic abscess. (Olson and Beaudoin 1969). The use of active drainage under all such situations is more scientific and rational, and of the two, closed wound suction is better suited for prophylactic purpose. (Bourke et al., 1976). Besides effective removal, closed wound suction, also provides better healing of the wound, lessens the incidence of wound infection, reduces wound margin necrosis, eliminates bulky dressings, reduces the frequency of dressing changes and is more comfortable to the patient. Closed wound suction is being exceedingly used after mastectomy, plastic and hand operation, abdominoperineal resection, thyroidectomy, orthopaedic procedures, amputations, groin dissection and in renal transplants (Jochimsen 1976).

Presence of pus, necrotic debris, a fistula or premature closure of wound are therapeutic indications for drainage (Hermann 1969). In wounds with raised pressure and where gravity assists the flow, passive drains, function quite satisfactorily. However, they are ineffective in deeper cavities, because fluid can not climb up the drain. At such situations sump drains provide more efficient drainage. A sump drain is twice as effective in removal of fluid from the peritoneal cavity (Hannan 1970). Other indications for sump drainage are severe pancreatitis, fistulas of the gastrointestinal tract, pancreas or urinary tract, abscess cavities and certain intra-abdominal traumas (Chaffin 1934, Chaffin 1954, Cleland 1954).

Although inserted at the end of an operation, drains, play an important and at times vital part in the recovery of the patient (Koruth and Jones 1980).

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